Green Urbanization and Environmental Improvement

Round Table of the China Council for International Cooperation on Environment and Development, Task Force on Green Urbanization and Environmental Improvement. The Hague, The Netherlands, 8 April 2019

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The Round Table convened under the aegis of the China Council for International Cooperation on Environment and Development (CCICED), at the invitation of and with material support by the Secretary-General of the Ministry of Infrastructure and Water Management of The Netherlands. Substance of the programme and reporting was coordinated by PBL Netherlands Environment Assessment Agency, in collaboration with the China Academy of Urban Planning and Design (CAUPD). Presentations and discussions at the round table are summarized based on notes by Jan Bakkes, Like Bijlsma and Kersten Nabielek. Chinese translation: EWUC

Planbureau voor de Leefomgeving

Ministerie van Infrastructuur en Waterstaat

Executive summary

International evidence on recent dynamics of urban form

The balance of international evidence indicates a mixed pattern of growth and shrinkage of cities in the age of the Internet. The strong growth in central cities dominates this pattern, disproving the 1990s hypothesis that we would soon see 'the death of distance'.

Current developments in urban form are strongly linked to long-term changes in fundamental drivers, such as demography, production structure, climate change and technology. At the same time, they are unique to each situation.

Processes of urban renewal are long-term, typically taking decades, involving long-lived spatial patterns and requiring strategic foresight.

Specifically for China, six key imbalances were identified, including an oversupply of urban development and serious negative externalities of transport.

This PBL report, containing insights (including references) gained during the round table, is made available to CCICED by courtesy of the international co-chair of the task force.

An emerging Task Force agenda

Round tables that are held, occasionally, by one of the CCICED Task Forces prove to be a good and efficient format. In addition to the 2018 Brussels' round table held by the Task Force on Global Environmental Governance, the current round table showed that case studies are essential. Each situation is different, with its own challenges and opportunities.

On the basis of empirical material from multiple case studies, round tables could be convened, on occasion, by the co-chairs of a particular task force. Such round tables could, for example, explore the significance of findings from various policy studies throughout the CCICED work programme, seek connections, study interesting contradictions, and lead to more specific results rather than general statements.

Occasional round tables could explore connections by applying a 'lens' specific to that task force. For example, the round table in The Hague applied the 'lens' of changes and persistence in urban form, at many geographical scales. This provided a solid base for discussion of, for example, the implications of techno-economic changes, new challenges in sustainability such as decarbonization and circular economy requiring space, governance as reflected in institutional arrangements, and conditions for participation by people and enterprises. Other task forces could apply their own type of 'lens', according to their focus and evolving interest.

With this in mind, the Chief Executive Officers of the Task Force on Green Urbanization and Environmental Improvement are proposing to prepare a round table for the spring of 2021. They propose that this round table discusses the potential of, and experience with, environmental policies and spatial planning policies working together. It's discussion could be based on a comparison of developments in the economic basins of the Rhine and the Yangtze, 1950–2050, including the role of cities in these basins.

Such a comparison seems particularly powerful and could also be of interest to international partners. It seems that, in the green development 'ecology first' of the Yangtze corridor, Chinese organizations will be facing multiple challenges—either in quick succession or simultaneously—whereas in Europe in the past, these types of challenges presented themselves decades apart. These challenges relate to, for example, industrial pollution,

flood safety, urbanization, agriculture, climate change adaptation, and greening of the petrochemical industry.

Having accurate background information is essential for implementation of this proposal. Older case studies on the two river corridors should also be reviewed. It will be of great value, in China and abroad, if lessons could be extracted for addressing the emerging issues in an integrated, forward-looking manner, rather than one-by-one, mindful of the undercurrent of techno-economic and social change.

Responsibilities and resources should be allocated this year (2019) if the CCICED leadership considers this a productive way forward.

Executive Summary (in Chinese)

摘要

关于近期城市发展模式动态的国际趋势

国际发展趋势的平衡表明在互联网时代城市增长与萎缩是相互交替而进行的。在这种模式下，中心城市的快速增长占了主导地位。这反驳了20世纪90年代的设想，即我们很快就会看到城市间“距离的死亡”。

近期城市模式的发展与人口统计学，生产结构，气候变化和技术等基本驱动因素的长期变化紧密相连。同时，它们在每种情况下都具有其独特性。

城市更新之过程是漫长的，通常需要数十年，涉及持久的空间模式及需要战略远见。

特别是对中国而言，影响城市发展不平衡的六个关键性因素被确定下来，包括城市发展供过于求和运输的严重负外性。

这些见解，包括案例，将作为圆桌会议的总结报告提供给国合会（CCICED），由课题组的国际联合主席提供并由荷兰环境评估署（PBL）制作。这就是当前提交的报告。

课题组的新议程

国合会课题组偶尔举行的圆桌会议是一种良好而有效的工作方式。除在2018年布鲁塞尔举办的全球环境治理课题组圆桌会议之外，本圆桌会议表明案例资料至关重要。每种情况都不同，具有自己的挑战和机遇。

在多个项目案例真实资料的基础上，由课题组联合主席召集的临时圆桌会议可以探索整个国合会工作计划中各项特殊政策研究新发现的重要性；寻找相互关联；理解有趣的相反现象，能得出超越性的结论。

不定期的圆桌会议将通过应用假设于该课题的“镜头”来探索其关联性。例如，海牙的圆桌会议在许多不同地理层次中应用了城市模式变化和持久性的“镜头”。这为讨论技术 - 经济变化的影响提供了良好的基础；可持续性城市发展所面临的新挑战，如脱碳和循环经济需要更多的空间；体制安排中所反映的管理；人们与企业社会参与的条件。其他课题组将根据他们各自兴趣，将应用他们的“镜头”来聚焦于其课题。

为了使工作更好地进行，绿色城镇化和环境质量改善课题组的首席执行官们建议筹办2021年春季圆桌会议。这个拟议的圆桌会议应该对环境和空间规划共同发展政策的潜力与经验进行讨论。它的讨论基于1950 - 2050年莱茵河和长江流域经济发展的新对比，包括城市在这些盆地中所起的作用。

这些项目案例的比较非常重要，国际合作伙伴也对此很感兴趣。在长江走廊“生态第一”的绿色发展策略中，中国机构组织将面临多重快速及同时之挑战，而在欧洲，这些发生在过去和未来的挑战则出现在几十年时间段中。这些以往及未来之挑战涉及到工业污染；防洪安全；城市化；农业问题；适应气候变化和绿色石化工业。

内容丰富与精心编写的项目案例资料对提案至关重要。我们也要加强关于两条河流走廊旧案例研究的回顾。在中国及国外，不应是一个接一个地单独解决新出现的问题，而应是以一种综合性，前瞻性的方式来解决它们在技术 - 经济和社会变革中问题。这些经验教训将具有重要价值。

如果国合会领导层认为这是一种富有成效的工作推进方式，则应在今年（2019年）**做出工作**计划落实其责任与财政资源。

Contents

Main report

Scope and purpose of the round table

At the round table, to be held on 8 April in The Hague, we will discuss how urbanization processes and patterns may influence environmental improvement, in both China and elsewhere in the world. During these discussions, the Task Force on *Green Urbanization and Environmental Improvement* will showcase preliminary results from its Special Policy Studies (SPSs). International experts will present their research findings and case studies and reflect on the SPSs preliminary results, from the perspective of Chinese urban development towards 2035 and the key forces shaping it. These discussions are directly linked to field visits within the Netherlands (Amsterdam and Rotterdam) which will take place after the round-table event.

Background

Urbanization patterns have a considerable impact on urban performance, on various scales —regionally, on a city scale, and the scale of the urban fabric (i.e. buildings and streets). The pattern of urbanization results from location, form and size of cities. It also concerns the use of buildings, building typology and infrastructure. Some examples are provided below.

Many international organizations and experts are advocates of high-density and mixed-use cities, which provide optimal conditions for economic, social and environmental performance. However, with respect to size, many cities around the world have reached their limit, while the socio-economic gap between urban and rural areas remains a reason for concern. Meanwhile, urbanization will continue to accelerate and expand. One country where this is particularly important is China.

Urbanization rates in China will soon reach global historical record levels. Moreover, currently, urbanization in China is increasing at a rapid pace. This is related to other large changes, such as in the economy, in the form of demographic and social shifts, and the welfare gradient that is moving from the rich seaboard to the developing provinces. Demographic and social shifts include ageing of the population and an ever-increasing share of highly educated and therefore wealthier people, which in turn leads to a demand for a different type of housing and other types of consumption.

Focus and scope

Urban agglomerations offer a close-up view of the key challenges and opportunities for the next decades—many of which have a strong technological flavour. New and future technologies, such as in ICT, transport, e-commerce, and energy and resource supply, may lead to or allow for significant changes in urbanization patterns. Urban managers need to adapt to climate change—in a way that is smart, ambitious and cost-effective—in terms of water management, resource management, health risks, sheer urban size, and a changing air quality. Self-driving cars and high-speed rail allow for longer commuting distances, while internet connections may reduce the need for physical contact. Or will they? The round table is aimed to critically compare experiences across the globe.

The focus of this round table will be on urbanization, taking advantage of early findings in all three SPSs [1], as these are closely related.

[1] The CCICED Special Policy Studies (SPSs) on ***Redefining Urbanisation***, ***Ecological Compensation and Green Development Institutional Reform in the Yangtze River Economic Belt*** and ***Environmental Improvement Goals and Pathways by***

Key questions

In this round table on *Green Urbanization and Environmental Improvement,* we will discuss how and to what extent these new developments may shape urbanization and its effect on sustainability and climate adaptation.

- What policies could be employed to enable green urbanization and environmental improvement? By considering international best practices, we will look at how and under which institutional conditions sectoral challenges could be dealt with by an integral design. What are the opportunities that may present themselves in which type of future and at what scale?
- What do emerging insights from the Task Force's SPSs tell us? Should the SPSs adjust their focus and horizon?
- What are the exiting cases that may emerge, from which the international community could learn and that could be compared with current Chinese projects?

Envisaged results

Informed by global urban developments, advice could be provided, via CCICED, to Chinese leaders in relation to:

- green urban development
- development of the Yangtze economic corridor, comprising China's urban and rural areas
- China's environmental goals for 2035, in view of the longer term goals for 2050?

In addition, suggestions could be made to CCICED leadership about bolstering ongoing CCICED studies as well as initiating new policy studies in key areas.

2035 *are all part of the CCICED Task Force on Green Urbanization and Environmental Improvement*

Structure

Chair: Mr. Hans MOMMAAS (Director-General of PBL Netherlands Environmental Assessment Agency – Special Advisor CCICED)

08:45 Start

09:00–10:30 **Overview of Special Policy Studies under the Task Force on *Green Urbanization and Environmental Improvement***

- Mr Hans Mommaas: Welcome and introduction to the Round Table (5 min)
- Ms Zhang Min, Programme Officer at CCICED Secretariat, Introduction to Taskforce and preparation to AGM (10 min)
- Mr LI Xiaojiang (former President of the China Academy of Urban Planning & Design, China): SPS on Redefining Urbanization (15 min)
- Mr Wolfgang Seidel: SPS on Environmental Improvement Goals and Pathways by 2035 (15min)
- Mr Knut Alfsen: SPS on Eco Compensation and Green Development Institutional Reform in the Yangtze River Economic Belt (15 min)
- Discussion (30 minutes)

10h30-10:45 Coffee break

10:45–12:00 **Sustainable urbanization patterns in relation to new urbanization**

- Mr LI Xiaojiang (former President of the China Academy of Urban Planning & Design, China): Regional planning in JingJinJi region/ Xiong'An (15 min)
- Ms Linda VLASSENROOD (International New Town Institute, the Netherlands): Sustainability of international new towns (15 min)
- Mr Serge SALAT (UN Environment Cities Unit and Urban Morphology Institute): Low Carbon Livable Urban Forms in China (15 min)
- Mr Peter VERVOORT (Flemish Government, Belgium): Financial Consequences of future urbanization patterns in Flanders (15 min)
- Discussion (30 minutes)

12:00–13:00 Lunch

13:00–14:45 **Regional Scale and governance**

- Mr Otto RASPE (PBL, Netherlands): Urban regions as engines of economic growth (15 min)
- Mr Theo DEUTINGER (TD architects, Flachau, Austria): Core & Periphery (15 min)
- Ms Shang Jing (CAUPD): Regional Planning for the Yangtze River Region (15 min)
- Ms Lv Xiaobei (CAUPD): Urban regeneration in Western China (15 min)
- Mr Hu Jingjing (CAUPD): Spatial Planning reform in China (15 min)
- Discussion (30 minutes)

14:45-15:00 Coffee/Tea break

15:00 hrs –16:30 **Sustainable urbanization patterns in relation to technology**

- Ms Ioulia OSSOKINA (Eindhoven University of Technology, the Netherlands): Role of transport infrastructure in sustainable urbanization: an economic view (15 min)
- Ms CHEN Yixing (Deputy Director, Information and innovative Center, CAUPD): Smart Cities in China (15 mins)
- Ms Marcia van der VLUGT (Ministry of the Interior and Kingdom Relations, The Netherlands) National Sustainable Urban Planning in the Netherlands (15 min)
- Mr Aldert DE VRIES, Sustainability in Utrecht Municipality (15 min)
- Discussion (30 minutes)

16:30-17:00 discussion, final observations, conclusions and follow ups

Summary of presentations and discussion

As part of the introduction round, dg Hans Mommaas briefly sketches the position of PBL, the organizer in substance of the round table, on behalf of the Ministry of Infrastructure and Water Management. PBL Netherlands Environment Assessment Agency provides solicited and unsolicited analyses to the government of the Netherlands regarding the physical environment. It does so at various scale levels, from cities to the planet. PBL is government-owned and independent in its findings. PBL is one of three government assessment agencies; the sister agencies concern the economy and social-cultural domain, respectively. Interestingly, PBL does its work without owning the underlying data. A key approach is outlook studies, based on forward-looking analyses. These can be based on stories, modelling, or both. The current programme of work of PBL is structured around four key transitions: energy/climate; food and agriculture; the circular economy; and urban/regional changes. These are sometimes referred to as transitions by themselves, but they are not: they will fail if taken one-by-one. A common factor facilitating PBL's knowledge exchange with Chinese peer organizations is that large parts of both China and the Netherlands are urban deltas – be it with a different constellation of circumstances. To a regional economist, China's Eastern seaboard and the European 'blue banana', from London to Milan, have much in common. Urban and regional development in the Netherlands has long been based on the notion of 'bundled deconcentration'. That has been an ongoing struggle, based on alternating concepts and producing fifty years of interesting history. PBL has a memorandum of understanding with the China Academy of Urban Planning and Design.

Block 1: Overview over the current Special Policy Studies under the Taskforce on Green Urbanization and Environmental Improvement

CCICED STRUCTURE AND ANNUAL MEETING

Zhang Min provided a brief orientation on the CCICED structure and its upcoming annual meeting. CCICED's current programme of work is structured around four permanent task forces, each comprising a number of shorter-lasting special policy studies. Two of the task forces (not the current one) will probably be asked to start additional policy studies. The annual general meeting is a large event, with cabinet officials up to the vice-premier participating, as well as a set of open forums. The 2019 annual meeting will take place 2-5 June in Hangzhou. This year's theme will be Towards a new world of green prosperity. The first day, Sunday 2 June, will be devoted to discussions of policy research, including an open forum on One Belt One Road and Green Urbanization.

SPS REDEFINING URBANIZATION

Li Xiaojiang summarized the approach of the *SPS* on Redefining Urbanization. It is investigating upcoming changes in the driving factors of urbanization and the environmental impacts that come with various types of urbanization. A new balance between nature and city is needed. It would follow after a period in which there was blind conversion of agricultural land and wetlands to make room for mass production systems. Output of the latter is for domestic consumption but especially for export the world over.

By way of background to this from an urbanization perspective, Li Xiaojiang additionally highlighted current imbalances. The service life of Chinese buildings is very short. The

current stock is not practical, comprises too much high-rise and typically has to be demolished after 20 years. The rate of land development is much higher than the population growth rate; the investment level is out of balance. The urban rural boundary will blur and new uses will arise here. While air and water pollution are now being vigorously addressed, little is done to sustainably manage China's land resources. Sustainable peri-urban development to enhance urban and rural livelihood is key.

In summary, the six main imbalances are:

- Urban space: disorderly development, in terms of volume and location
- Resources, environment and ecosystems: policies are full of contradictions and challenges
- Infrastructure: backward development in general
- Housing & buildings: imbalance between supply and demand, price and value; building codes are insufficient or insufficiently adhered to
- Transportation: low quality of service, enormous growth in car use and serious negative externalities
- Urban safety and security: numerous hidden troubles and weak management

One specific difficulty is that local governments in China are reluctant to take on difficult things. [Note JB: a similar observation has been made in the SPS Beautiful China 2035. There the example was given of re-training the workforce in industrial towns that face changes.]

SPS BEAUTIFUL CHINA 2035

Wolfgang Seidel summarized work of the SPS on Goals and Pathways for Environmental Improvement for a Beautiful China by 2035. The study aims at examining goals of environmental quality improvement for 2035 and at developing corresponding pathways. Recommendations include strengthening local governments, starting demonstration zones, linking health and environment and Information Disclosure of Enterprises and Governments. Pathways to 2035 should consider the eventual goals of 2050. Environmental challenges should be positioned as an intrinsic part of China's economic, social and spatial changes – as opposed to yet another burden on local governments and sector managers.

Among the questions still to address are: is it advisable that China adopts the principles of the Aarhus convention; can a policy of green demonstration zones and green front runner industries be organized in a fair and defendable way; how to prioritize the large volume of policy suggestions collected by the team.

The study team benefitted greatly from a recent study tour to urban agglomerations in the economic heart of Western Europe. These were London, focusing on current and future air quality policy in relation to transport; and the Ruhr area, showcasing long-term persistence for development away from coal, towards becoming a Green Capital of the EU (Essen) and further towards sustainable chemistry (Industriepark Marl).

SPS YANGTZE

Knut Alfsen summarized work of the SPS on Eco-compensation and Green Development Institutional Reform in the Yangtze River Economic Belt (YREB). One of the supporting organizations is the Asian Development Bank. The study addresses the need for eco compensation mechanisms, institutional and governance arrangements and a legal reform, leading to the following recommendations:

- Adopt a Whole-of-Ecosystem Approach (from 'Mountain to Ocean') in environmental protection planning across the Yangtze River Economic Belt. Two issues that require special attention are solid waste management in rural areas and plastic pollution.
- Adopt a multiple stakeholder engagement approach to carefully identify and address any negative impacts on communities and livelihoods. Design institutional frameworks to incentivize long-term financial sustainability for ecological compensation and environmental protection programmes.

The possibility, in June, to present recommendations for the 14th five-year plan is a great opportunity because the development of the Yangtze corridor will be an important element in that plan. Interestingly, parallels can be drawn between Rhine and Yangtze.

DISCUSSION

The discussion after this session emphasized the importance of the governance structure and the institutional setting. Responding to the summary by Wolfgang Seidel, Hans Mommaas reflects that the work of this group illustrates the difficulties of linking far-away targets to location-based perceptions. A short exchange between Knut Alfsen and Li Xiaojiang underlines the aging of the Chinese population as an important undercurrent that needs more attention, with many implications. For example, in the context of question marks regarding the overall building volume.

Block 2: New towns and future urbanization

REDUCING ENERGY USE IN BUILT-UP AREAS

Serge Salat spoke by video-link from Egypt. He summarized the four-step approach to reduce energy use and carbon dioxide emissions in built-up areas.

- Urban design planning is the crucial first step, impacting urban form;
- next comes the efficiency of buildings, ideally including passive buildings;
- then optimization across various installations;
- and finally, changing people's behaviour.

These should be seen as consecutive steps, to be taken in this order. Urban design should consist of: articulated density, accessibility, proximity, mixed use programme and be adaptive. The street pattern should be dense as well. This approach is quite an opposition to the super blocks as seen in China. Super blocks do not deliver density, contrary to common belief. This is an example of things that look good, or green, but aren't. Share-bikes is another example, only fueling increased consumption. [Note by JB: during block 1, Li Xiaojiang made exactly the same comment.] An integrated view is missing in these cases.

Urban agglomerations feature large differences in density, as expressed in gross value added per km^2, or, conversely, length of streets per unit of GDP. A comparison by LSE found differences by a factor of 6 in a sample of four cities.

By following this urban planning/design concept, sustainability goals go along with economic advantages. Among the obstacles in China are the too narrow boundaries around projects, defeating attempts at transit-oriented-development.

There are many international examples for references, including Hannover Kronsberg, Freiburg Vauban, Hongkong, London King's Cross and Singapore. Among the various factors, urban form is the primary enabler.

XIONG'AN NEW URBAN AREA

Li Xiaojiang: Xiong'an is new urban area in which form and arrangement of blocks is highly important. This matches the previous presentation, by Mr. Salat. In 2015 the new area Xiong'an was announced. China has a few hundred new areas under development, but this one is special. Its purpose is to relocate many activities that not necessarily have to be in Beijing. Xiong'an is 105 km from Beijing. The design applies lessons from good developments such as in Barcelona and Amsterdam: having modest-size roads, dense, well made, convenient cities. Xiong'an is a new model city in which the city and its surroundings will be upgraded. Shenzhen and Pudong (near Shanghai) are very good existing examples for this.

In the centre of the future Xiong'an area is an important wetland. Therefore, water management is the first priority of the urban plan. The plan has to learn from the last thirty years of Chinese urban planning. The plan has to combine nature, form of the city, the rural area and culture.

DEVELOPMENT OF NEW TOWNS: PRINCIPLES

Linda Vlassenrood presented principles for the development of new towns (put forward by the International New Town Institute, next to more general recommendations by UN Habitat and implications of the SDGs). A new town is technical term, denoting a settlement where previously was no town, and of at least 30 000 inhabitants from the start. Traditionally, governments had an all-important role in the development of new towns, catering for specific population categories. More recently, new town development has become part of global financial market. By implication, development of these recent new towns tends to be oriented towards more affluent market segments.

In essence, the principles are:

1 planning is an ongoing process (monitoring and evaluation)

2 plan for adaptivity (strong infrastructural system)

3 no new town is an island (look at the context -> Milton Keynes)

4 Use no cut and paste 'universal' model (look at the local context)

5 embrace new ideas

6 from the start: offer transport infrastructure for all

7 use blue-green infrastructure (-> Finger plan, DK)

8 incorporate local cultural heritage, tangible as well as intangible

9 combine top-down and bottom-up

10 New towns need diversity (built for a cross-section of the population)

THE COST OF SPRAWL

Peter Vervoort shared findings of the Flemish research on the costs of urban sprawl. Sprawl is a well-known and very visible phenomenon in the North of Belgium (region name: Flanders). The region is quite dispersed: the average amount of road per unit of surface area is 86 m/m^2 (in cities: 9 m/m^2). The research considers effects on infrastructure, mobility, loss of ecosystems and monetizes the costs. Impact mechanisms include extra car ownership (because jobs are also dispersed outside cities, practically everyone throughout Flanders needs a car) and extensive soil sealing. With the cost estimates, the research explored the financial consequences of future urbanization in Flanders by way of three scenarios (Business As Usual (BAU), spatial policy plan Flanders, anti-urban sprawl). BAU is the most expensive and the Anti Urban Sprawl scenario is the cheapest option. The latter includes giving land back to nature. In the scenarios, existing spatial patterns do not change much. Benefits by 2050 can be attained especially by interventions in mobility.

Block 3: Governance and the various scales of urban interventions

URBAN REGIONS AS ENGINES OF ECONOMIC GROWTH

Otto Raspe reported from his empirical research at European scale. Productivity is correlated with urban densities. However, not every city is a winner. There are winners and losers. Also within a city. We have to understand the mechanisms if we want to develop strategies and policies. In the regression analysis important elements are: Agglomeration economies: mechanisms for sharing, matching and learning, specific clusters of industries, knowledge institutes, human capital; and the living environment.

The factors emerging as most robustly correlated and significant are:

- High density
- Human capital (education, health)
- Quality of Living (culture, restaurants, education)
- Accessibility (also international and internet)

Congestion is negatively related; bad environmental quality is negatively correlated.

In colloquial terms: urban success appears when you have local buzz + global pipelines + a high quality environment. The policy aim should be a total innovation system; economic and spatial, and economic renewal and bottom up, diversifying the economic territory. On top strong and adaptive institutions are necessary.

Having said this, each case is context specific. One interesting case is Munich, in Southern Germany. Munich is right in the middle of this belt of concentrated economic activity through North-Western Europe (‘the blue banana’). Munich, during the past decades, has grown strongly and is still growing. This is especially due to high-end technology and innovative, capital and knowledge-intensive industries. Its case clearly shows the importance of multilevel governance: city, region and state.

One key advice for regional economic policy, based on this Europe-wide research, would be not to pick winners but to back challengers.

CORE AND PERIPHERY

Theo Deutinger summarized his study core and periphery. It undertakes to better understand the logic of the current economic heart of Europe, namely this curved belt approximately from Liverpool to Genoa (often nick-named The Blue Banana, after Roger Brunet, 1989). The Core and Periphery study applies an urban model, which has also been used in historical geography. It has been operationalized with parameters such as population density; number of internal connections and trade volumes; and cultural factors such as religion, diet and 'Ikea-ization'.

Amazingly, this urban model helps to read the map of Europe as if it were a core city cum periphery. On Deutingers map, the river Rhine effectively stands out as the backbone of the 'blue banana'. What is more, the core/periphery model and its quantification help to frame the reversed trends in financial flows in the EU after its radical enlargement in 2000. Further still, the One Belt One Road initiative can also be depicted in terms of an urban field. This perspective matches the intuitive notion that BRI would not immediately make the largest difference to the core areas it connects, but to the peripheries in between.

THE YANGTZE CORRIDOR

Shang Jing's presentation concerns the Green Development of the Yangtze river. The river is of huge ecological importance. Parts of the Yangtze corridor are very dense in terms of population and economy. Together with the Pearl River, it is the mother of culture of China. It has a diverse cultural heritage and very large cities as well as small settlements.

Water quality is a severe problem. In addition, huge lakes are drying up. Also a number of species are threatened. Additionally there are security risks in regard to production and handling of chemicals, especially near in the port areas. These risks are exacerbated by climate change. For example, there is glacier retreat near the source of the Yangtze river on the Tibet plateau. There is also a severe poverty in eight of the fourteen areas in the Yangtze Economic Belt, and imbalance between agriculture and economic development.

Preliminary thoughts on addressing these challenges are as follows. Spatial planning of the economic belt has to be reconsidered according to sustainability measures. There is a need to think about resources, climate and social aspects. Prior to development projects in the Yangtze corridor, specific assessments should be carried out, namely

- an evaluation of the environmental resource carrying capacity
- an evaluation of suitability in terms of territorial development.

These ex-ante assessments should inform decision making on, for example, urban development or on location of villages in relation to agriculture.

Transport systems have to be reconsidered on regional and local scale with multimodality in mind, including air. The new economy in the economic corridor should not only be centered on heavy industry. The landscape resources should be relied upon to build a

national scenic and cultural heritage corridor and to activate the leisure consumption and to promote balanced development of regional, urban and rural areas. In order to prepare for this, cultural heritage should be mapped – for example, the 'tea and horse ancient road'.

The system mechanism should be innovated in order to promote regional coordinated development. There will be a new law on protection of the environment which will be built out to a planning framework next year. Task forces are foreseen, or have been set up, for water protection; banks of the river; and protection of the environment.

URBAN REGENERATION

Lv Xiaobei elaborated on China's urban regeneration. The past and present urbanization can be divided in three periods:

1978-2000: planned city expansion

2000-2015: coexisting of urban regeneration and expansion

2015-present: new trends in urban developments. Small scale, old residential blocks, urban villages etc.

In China, the population growth is slowing. The government is strict on sprawl. This to regeneration tasks and this, in turn, adds to changing methods in urbanization. New industries are being integrated in project developments, for example Yanjingli Community, Beijing, which is a retrofit of a big compound. There is a drive to (i) upgrade urban industries and (ii) regenerate old industrial areas.

There is an increase of Chinese interest in culture and experiences. This can be seen for example in the Columbia Circle, Shanghai. Or a new landmark for example: Huangpu river bank, Shanghai.

One concept is named organic regeneration: seeking connection to local culture and local values, participating in social activities. Dashilar, for example, is a historic neighbourhood in Beijing where multi stakeholder engagement in city governance is experimented with. Planners become organizers and coordinators of community engagement.

Another example Q city in Shenzhen: Micro generation plan through the internet. And also the urban villages in Shenzhen. They were seen as deprived and criminal areas but now they are seen as not only slums but an integral part of the spatial and social structure of the city.

In the last decades new principles and targets for regeneration have started. Basic principles are important. Why urban regeneration; for whom; how? It is important to find the real demand of local people and match these interests with the planners.

REFORM OF SPATIAL PLANNING IN CHINA

Hu Jingjing informed the round table on the reform of Chinese spatial planning.

The spatial planning in China is undergoing a reformation right now. It has a new name and is integrally organized now by the Ministry of Natural Resources (MNR). It is focusing on the national resources.

Urbanization under urban planning: the background has changed. Ecological civilization has to focus on the demand. What do the people need for a better life? 1. Clean air 2.

Good water (where does the water come from, which lakes etc.) 3. Natural scenery. These are important aspects in modern urban planning.

In the past, the economy was dominant in planning, but now it is the human interest that is driving urbanization: the leadership has to follow the wishes of the people. This is currently a priority issue for China's spatial planning.

The two biggest challenges are:

- Involvement of many government departments in the planning
- Development and regulation (regulation determining what you cannot do).

Naturally, conflicts occur between departments. Actually there are many illegal projects now because of different frameworks of ministries. There should be one body coordinating spatial planning. The Chinese planners need to reconsider the system also because the growth in economic production is leveling off since 2009.

Urban planners should first assess the land resources and determine its capacity. Then you can make plan and create the demand for resources. Planners have to understand the people, the land, the resources and the buildings and have to balance these. To protect the resources there should be three planning contours: for a minimum of arable land; and waterbodies; and a maximum to the city areas. Good planning has a data system which communicates with local platforms and national platforms: Dynamic management of our resources. The goal is eco-civilization, to contribute to New Urban Agenda.

There is a high density in the cities just like in Europe, so to compare China with Europe is very useful. Important topics include infrastructure and innovative technologies.

Block 4: Technology, policy instruments & their influence on urban form

TRANSPORT TECHNOLOGY AND URBAN FORM: AN ECONOMIC VIEW

Ioulia Ossokina stresses the need to study people's behaviour, especially their economic choices. Transportation shapes cities, but:

- people, not structures, determine a city's success
- transportation shapes cities through people's behavior
- can we expect the death of cities through new technology? Not likely.

People cluster in attractive locations. Key factors are jobs and amenities. In relation to transport and transport infrastructure, equilibrium establishes between the benefits of agglomeration (sharing, matching, learning) and the cost of congestion (open space deficit, pollution, traffic congestion). The factors determining a city's attractiveness react to each other's changes and maintain the equilibrium: better amenities and higher wages make a city more attractive, causing changes in people's behaviour. The resulting increases in travel times and land prices moderate the increase in attractiveness.

The effect of new transport technology differs, depending on the exact technology and on the category of city:

- self driving cars would not necessarily make inner cities more livable but would probably stimulate suburbanization;
- automated rapid transport would probably make cities more attractive, stimulating urbanization.

- On balance, in this case, large cities win; cities outside metropolitan areas, such as the Randstad, lose.

Important policy challenges are emerging:

1. New automated transport requires new policy approaches. For example, the traditionally powerful tool of parking policy will no longer work
2. New technology attracts people to large cities. This poses a dilemma between two ideologically charged positions: let cities grow at the expense of livability? OR restrict growth, making cities affordable for the rich only?
3. Improved transport connections to metropoles can change the function of smaller cities.

At the same time, against this background, there is exiting work to do applying and teaching big data methods in behavioral research.

SMART CITIES IN CHINA: DIGITAL TWINS

Chen Yixing introduced the cooperation of CAUPD and Alibaba in the Urban X Lab, applied to the Xiong'An new area. The essence is to have a digital city synchronized with the real city. The Lab comprises three major innovations: 1) Sensibility within all temporal and spatial dimensions 2) Connected regulatory flow between physical city and digital city, 3) Iteration through all lifecycles. The real city and the platform will be digital twin cities.

Challenges are to fully incorporate the spatial dimension, and standards. The project incorporates a Model Bank, based on human intelligence and artificial intelligence, of city cases. It also incorporates an 'Urban Gene Bank' of 300 cities x 150 factors, covering 12 broad categories.

UPCOMING CHANGES TO SPATIAL PLANNING IN THE NETHERLANDS

Marcia van der Vlugt highlighted the upcoming changes in the spatial planning system in the Netherlands. The Netherlands is about to change its somewhat famous system of spatial planning. The overall idea is to integrate and simplify procedures. How the new system performs in reality will be carefully monitored and assessed by PBL. Spatial planning will always remain a multilevel affair and will require recognition that each city has different needs and every situation deserves its own special focus. The most important objective is cooperation of all government layers and multi government departments; including private interests; and enabling participation.

A key notion in this context is the 'ladder' for sustainable urbanization, ranking options in terms of efficient use of space.

HEALTHY URBAN LIVING: THE CASE OF UTRECHT

Aldert de Vries elaborated on the efforts that the city of Utrecht makes to improve the living environment in the city. Utrecht is the fastest-growing city in The Netherlands. This trend never went down. Its central location is probably an important factor, plus attractive surroundings, including scenery. It is a vibrant city, with a notable student presence (university as well as vocational).

The Utrecht city government mapped life expectancy in good health of its inhabitants, by neighbourhood. It identified undesirable differences.

Utrecht embraced the growth while strategically prioritizing living in good health. Consequently, it decided to work on serious densification. Related to this are efforts to create more space for non-motorized mobility. The use of private cars was already being discouraged in the inner city. Over and beyond that, a residential area was recently developed without parking spaces at the suggestion of its future inhabitants. This of course generates its own problems. It is also necessary to diversify the city's bicycle strategy, because of serious and growing congestion of that transport mode.

Other elements of the strategy are mobility-related, too. Water has been brought back to the city again by digging up a canal that had been replaced by an inner city motorway 50 years ago. For changes in the city's energy system, vehicle-to-grid solutions are experimented with.

The bottom line is that greening and densifying the city can go hand in hand. This can be done in existing cities for the existing population.

Final discussion at the end of the day

CATERING FOR GROWTH OR FOR SHRINKAGE

Jan Bakkes: Many presentations were related to the need to connect to changes in the economy. For example, the admonition by Otto Raspe not to pick any winners but instead back challengers. Others, too, spoke of what makes a city successful. An important question is: should we focus on strengthening the winning cities or support the weaker city regions? How is this played in practice?

Hans Mommaas: The Netherlands is moving towards multi-level governance. Taking care of all regions is an important aspect of that.

INFLUENCES ON URBAN CHANGE

Knut Alfsen: What makes cities grow? (referring the presentation of Otto Raspe) How does new tech effect urban developments? Is that different compared to historic developments?

Ioulia Ossokina: The impact of new technology on urban development might be overestimated. Physical contact is still very important. Take for example this famous experiment by Edward Glaser in which he compared the effectiveness of communication between two groups. One group met 10 minutes in person. The other group met 30 minutes via a technical interface. The group that met in person was more efficient, despite of less time.

Li Xiaojiang: I agree: face to face is most important. Also the change of transportation is very important driver for the change of urban development. We had two presentations on Chinese urbanization: there are metropolitan areas and rural areas. How convenient is the transportation between the areas?

Chen Yixing: In terms of successful cities, the West of China is behind the East. People were leaving the East, but now they are coming back to the East. People are also returning to rural areas because they have a higher quality of living. There are a number of aspects involved: cities with less development also have new qualities.

APPROACHES TO DENSIFICATION

Hu Jingjing: A question related to the developments in Utrecht: how and where to densify? Do you build in areas with ecological value?

Aldert de Vries: No, urban densification is using brownfield areas close to the central station

Hans Mommaas: However, there is some tension and discussion about densification (urban or rural). Housing prices have increased strongly. Building infill is more complex and expensive. Municipalities of big cities steer on infill strategies.

More generally, the presentation by Lv Xiaobei was a good reminder that it will be valuable to compare experiences in urban regeneration. I say that because regeneration typically includes the difficult business of solving planning mistakes of the past. This is the part where you want to focus on quality and less on quantity.

OPERATING AT MULTIPLE SCALES

Arjan Harbers: It is also important to look at different scale (from national, regional and local).

Ton Dassen: For bringing together central-decentral we need to be adaptive. Also in the Netherlands, planners have made significant mistakes. For example, in the 1960s, planning for 20 million people in the year 2000. We also need to take future uncertainty into account.

Hans Mommaas: In addition, looking forward, the Netherlands has big plans -- with big spatial implications and challenges -- concerning the energy transition. One challenge is how to connect big plans and big changes to local people. This will be a rich learning environment from a perspective of central-decentral dynamics.

INVOLVING THE PRIVATE SECTOR AND CITIZENS

Li Xiaojiang: Thank you for the excellent presentations. We need to discuss this all together. All three special policy studies need to have to have a common future perspective. We need to be careful not to be too utopian. Development is always in small steps. We need a good long-term view and we need to be realistic.

Regarding the current institutional reform in China: I am a little bit worried about the institutional changes in China. The Chinese system has limitations. Single central steering also has risks. The government is very enthusiastic, but people and enterprises are more reluctant. How can we invite private enterprises and citizens to take part in new urban developments?

Concluding observations

NOTABLE POINTS FROM THE ROUND TABLE

Jan Bakkes: From the results of this day, the following points emerged, because they were common between contributions, or because they received somewhat less attention in the CCICED discussions about urbanization.

1. Current changes in urban form and size are driven by powerful trends in underlying factors, such as economy and trade, demography, and significance of space and distance. Regarding the last factor, something like 'the death of distance', as hypothesized in the 1990s, cannot be observed, generally speaking. In reality, the opposite happens rather frequently. But the relationship between urban and rural is changing. In Europe, empirical economic research on a regional scale showed a decisive influence of regional government policies, causing some cities to grow very successfully, in terms of employment.
2. Investments in transport infrastructure were mentioned by many speakers as a key theme, often in a problematic sense. Conversely, it was pointed out that, in China, transit-oriented development is very difficult to achieve, because projects are typically very tightly fitted around the infrastructure nodes. This is important, as TOD could help to break the pattern of ever-expanding built-up areas.
3. Ongoing climate change, and the need to increase the adaptation to it, was mentioned by many speakers as a key phenomenon for the next decades. (Note: this was echoed by those speaking on behalf of the cities of Utrecht, Rotterdam and Amsterdam, during the site visits.)
4. Well-researched comparison of cases, as presented at the round table, is very powerful. Each case is unique and we are still learning.
5. Cultural heritage, tangible as well as intangible, was mentioned more than before in a CCICED setting. This is a useful link to the concept of Beautiful China. Note that one SPS specifically studies the 2035 targets in relation to this concept.
6. The notion of core and periphery was applied as a frame to understand the whole of the One Belt One Road project – as well as the expansion of the EU in the 2000s.
7. Some phenomena were pointed out that look good but are not. For example, mega-blocks, high-rise buildings and shared bicycles. An integrated view quickly revealed that these are not using resources efficiently.
8. Monitoring progress was mentioned many times, with various ramifications, including (i) the need to establish a framework for monitoring, (ii) trustworthy information as a basis for participation by citizens, enterprises and various government bodies, and (iii) specifically in China, accountability of cadres. This last point is important, because local governments are responsible for key factors in urban renewal. However, mayors—at least those in China—are not often enough prepared to do difficult things.

Last but not least, a framework was tabled by Li Xiaojiang, identifying six key imbalances in China's current urbanization. This can be useful as a framework.

THE WAY FORWARD

Hans Mommaas: An agenda seems to emerge for our task force in relation to various ongoing studies by the CCICED. At the centre is urban form, on many scales. This is our 'lens'. Other task forces will have theirs. Our 'lens' of urban form enables the in-depth discussion of at least four important aspects:

1. People — in terms of needs, health and participation
2. Techno-economic changes — such as challenges, opportunities, disruptors and sources of important uncertainty
3. Sustainability — with its new challenges in order to decouple economic activity from environmental impacts. One thread connecting this to urban form is that decarbonization, circular economy and the like all require urban space – more space, or a different use of it.
4. Governance — of urban and rural regions, in terms of structures, institutions, multilevel situations and arrangements for participation and involvement.

These four key aspects viewed in close-up through the lens of developments in urban form could be a framework for comparative case studies.

CONNECTIONS WITHIN THE CCICED WORK PROGRAMME

Knut Alfsen: In what way could the Task Force on Green Urbanization contribute to CCICED? My own opinion: this task force has the advantage of being closely connected to people.

Wolfgang Seidel: Related to CCICED, it would be very helpful to connect different aspects of the Task Force on Green Urbanization with the various ongoing SPSs, to look for common ground. Look at the governance of city regions. This could be common ground and contribute to other task forces.

Hans Mommaas: Going from the 'what' to the 'how' question (governance). We agree that we do not look for 'blueprint' generic planning but we need to relate to national goals. Can we take the three SPSs and formulate an answer to the question of how to manage urban development?

Ton Dassen: I am thinking of the goals of the task force, how I could contribute as a researcher? Otto Raspe touched upon the governance research. I would like to plead for international cooperative governance studies. Looking at advantages and weaknesses of the governance system in city regions in China and Europe.

Hu Jingjing: It is very valuable to connect the SPS projects, looking for common ground. From the perspective of spatial planning, we want many cities to rethink their spatial planning. It is all about the living environment of the cities, and we wish to include that aspect in spatial and urban planning to develop a long-term view (to 2035). Also, related to ecological compensation, how can we adjust our plans to that aspects? That may take many years. We hope that the Yangtze belt study can be part of future CCICED work related to urbanization.

THE WAY FORWARD

Hans Mommaas, as chair: Thank you very much, this has been a valuable and productive discussion and a good starting point for setting a new agenda for the Task Force on Green Urbanization and Environmental Improvement, also in relation to its three special policy studies.

END OF THE ROUND TABLE

Concluding observations (in Chinese)

结论性意见

圆桌会议引人深思之要点

Jan Bakkes：在当天的会议收获结论中，有以下几点引人深思，因为它们是许多发言者之共同点，或者是因为它们在以往国合会关于城镇化的讨论中还没有受到如此多的关注。

1.目前城市模式和规模的变化是由以下潜在因素的强大发展趋势而推动的： 如经济和贸易，人口，空间和距离的意义。关于后者，在20世纪90年代假设的"距离的死亡"大都没有被观察到。实际上，相反的情况经常发生。城乡之间的关系正在发生变化。在欧洲，高分辨度的实证经济研究显示了地区政府政策的决定性影响，致使一些城市在就业方面取得非常成功。

2.许多发言者提出对运输基础设施的投资是一个关键因素，往往具有问题性的倾向。相反，有人指出，在中国面向转型性的经济发展很难实现，因为项目通常紧密地设置在基础设施节点周围。这很重要，因为转型性经济发展可以帮助我们摆脱不断扩大城市建成区发展的经济模式。

3.许多发言者提到当前的气候变化以及提高对气候变化适应性是未来几十年工作的关键因素。 （注意：在调研访问期间，乌得勒支市以及鹿特丹和阿姆斯特丹市的发言者都提出这个问题。)

4.圆桌会议上所阐述的经过深入研究的案例比较是非常重要的。每个案例都极为独特，引人深思。

5.在本次会议中比以往更多地提到了有形和无形的文化遗产。这与美丽中国概念息息相连。请注意，其中一个特殊政策研究课题（SPS）对2035年目标专门研究与此概念相关。

6.城市核心和边缘的概念被用作来理解中国一带一路之项目以及欧盟在21世纪扩大之框架。

7.有些现象被指出表面上看起来很好，但事实并非如此。例如：巨型建筑板块; 超高楼; 共 享自行车等。综合性的评价表示这些资源并未被有效的利用。

8.会议中多次提到进展监测具有各种结果，包括（i）需要建立监测框架; （ii）作为公民，企业和多个政府实体参与的基础及可靠信息; （iii）特别是在中国干部责任性极为重要，因为地方政府是负责城市更新的关键因素。但不经常 - 至少在中国 - 市长们会挑战于困难之事。

最后但并非不重要的是，李晓江先生提出了一个框架，确定了中国目前城市化的六个失衡关键，这将成为非常有用的框架。

未来推进计划

莫马斯先生（Hans Mommaas）：我们课题组的工作计划似乎与国合会正在进行的各种研究一致。城市模式在许多不同规模上都占有中心位置。这是我们的'聚焦镜头'。其他课题组将会有他们的计划。我们城市模式的"聚焦镜头"使我们能够深入讨论至少以下四个重要方面：

1.人 - 在需求，健康和社会参与方面

2.技术经济变化 - 作为挑战，机遇，破坏因素和重要不确定性的来源

3.可持续性 – 作为新的挑战，将经济活动与环境影响分开。把城市模式贯穿在一起的是脱碳，循环经济及需要更多的城市空间，或城市空间的不同用途。

4.管理 - 城市和农村地区的结构，机构，多层次属性以及人们的社会参与。

以上四个重要方面 - 通过城市模式发展"镜头"的观察，可成为比较案例研究的框架。

国合会工作计划中的相互联接

Knut Alfsen：绿色城镇化课题组能以何种方式为国合会做出贡献？我个人认为：这个课题小组的优势在于它与人息息相关。

Wolfgang Seidel：对国合会来说，将绿色城镇化课题组的不同方面与不同（正在进行的）特殊政策研究联系起来，寻找其共同点非常有益。比如说专注于城市地区的管理，这可能是一个多方研究的共同点，并有助于其他课题组的研究。

Hans Mommaas：从管理"什么"到"如何"管理。我们同意我们不寻求"通用规划"之蓝图，但我们需要其与国家发展目标相一致。我们能否将三个特殊政策研究共同进行并制定一些如何控制城市发展的政策？

Ton Dassen：我在考虑课题组的目标，作为研究人员将如何做出贡献？奥托拉斯佩先生（Otto Raspe）谈到了城市管理研究。我希望将举行城市管理研究的国际合作，借鉴于中国和欧洲城市管理体系的优势与不足。

胡晶晶：连接各个特殊政策研究项目，寻找其共同点是非常有价值的。从空间规划的发展角度来看，我们希望许多城市重新思考其空间规划。实际上为了提高城市的生活环境。我们希望将这方面纳入空间和城市规划。通过制定长远规划（2035年）及与生态补偿相关的计划，我们如何来调整我们的计划？这将需要很多年。我们希望长江三角洲领域的研究可成为未来国合会与城镇化研究相关的一部分工作。

Hans Mommaas，执行主席：非常感谢，这是一个非常有价值及富有成效的讨论，也是为绿色城镇化和环境改善课题组制定新议程的良好起点，也与三项特殊政策研究息息相关。

Annexes

Annex 1. Tuesday 9 April 2019 site visits

Rotterdam

MEETING AT TOWN HALL

Alderman and Vice-mayor Arno *Bonte*: Rotterdam has a partnership with Shanghai. Together with UN Rotterdam hosts the global centre of adaptation in Rotterdam, to make cities more resilient. Since Rotterdam is a delta city, this is a specific topic of interest. That's why Rotterdam is doing research on this topic. And it is also working on the resilience of areas. For example the ZoHo area, an award winning project which you will visit.

Li Xiaojiang: Goal of the visit is to get to know the way Rotterdam works on its resilience. We are facing the same problems as European cities, caused by climate change. We are interesting in policies adapting to climate change. The general interest is green urbanization, sustainability and water management, integrated strategies. We would also like to know more about regeneration of old harbour areas. We would like to compare the Rhine and Yangtze river in a research, also comparing other cities along the two rivers.

Hans Mommaas: In Rotterdam a lot of different challenges are coming together. That is why it is interesting to study this area. While Europa and China both face the same challenges, the pace of development is completely different. Issues are decarbonization of the economy, regeneration, green infrastructures. In harbour cities like Rotterdam a lot of these challenges are coming together. Our primary aim is knowledge exchange. Because Rotterdam has been able to create co benefits, we think it is an interesting case to study.

Arno Bonte: We have a lot in common, I'm looking forward to a cooperation to study both rivers.

Arnoud Molenaar, resilience officer of Rotterdam. Rotterdam has formulated seven resilience goals. It follows a holistic approach, also aiming at, for example, social resilience and cyber resilience next to climate resilience and flood security.

The elevation map shows Rotterdam at between 6 m below and 6 m above sea level. The highest terrain is the part adjacent to the river, so every drop of rainfall has to be pumped up in order to be drained. Challenges are peak rainfall, heatwaves, dry periods. Part of the infrastructure needs to be re-engineered – for example, the movable bridges. The strategic response is to use the water to become adaptive and attractive as a city.

The climate adaptation strategy of 2013 aims to design robust solutions as part of holistic, multi-level and multi stakeholder strategies. The strategy should provide flexibility to face climate change. The approach is layered: spatial planning added to conventional water engineering, and now adding resilience measures. Citizen-level measures are added on top of hard-core engineering. One feature of the strategy is that any climate adaptation intervention should also contribute positively to urban quality. For example, instead of installing bigger storm drain pipes Rotterdam devises solutions like plazas that can be used for overflow, such as water squares. One of them is a theatre as well. Green roofs are a part of the strategy as well as a programme to work together with citizens to "de-pave" their gardens, because 60% of the surface is in private hands. Flood security measures combine warning systems with physical interventions. It is a learning cycle.

Li Xiaojiang: What is the time horizon of the measures? Is there a plan B if sea level rise is going beyond two metres, which is still doable?

Arnoud Molenaar: Then other plans have to be developed. Not only in the city itself but also upstream. Upstream measures have to be taken as well. These negotiations were

already developed in the 1990s, the river basin approach. In fact, this repeats the story of 1950-1980, when water quality was a big problem.

Hans Mommaas: this is interesting because it shows that downstream cities have a stake in upstream developments and can act on that. The Rotterdam experience, now as well as in the past, can be useful.

Herman Sips, Global Centre on Adaptation

The Global Centre on Adaptation is a recently established international Institution. Figureheads are Bill Gates (Gates Foundation), Kristallina Georgieva (World Bank) and Ban Ki-moon (UN). Heads of government initiated its setting up and the establishment of the high-level commission to which the center relates. Offices are being set up. The first two are hosted by Rotterdam and Groningen; the Beijing office will open soon and after that offices will be set up in the Americas and in Africa. Aim is to accelerate the climate adaptation worldwide. The Netherlands sees itself as a solution broker, being the managing partner of the Global Commission on Adaptation. The Center is action based, on six tracks: food security and rural livelihoods, finance, cities, infrastructure, nature based solutions, empowering local action. The centre itself has no money to spend on pilots but it can help to get funding for specific projects.

Amsterdam

WATERNET

Waternet features an integration of all water-related services in the Amsterdam area: ground water level management; drinking water services; sewage services, treatment and sludge disposal. The integration includes energy services between the Waternet installations, including recovery from sludge fermentation. The Waternet comprehensive service operation is remarkably cost-effective in terms of the annual fee per household. A special feature in newly developed residential areas is that sewage treatment takes place in small installations, well integrated in the neighbourhood. This is a radical reversal of the trend towards ever larger treatment installations.

AMS AMSTERDAM INSTITUTE FOR ADVANCED METROPOLITAN SOLUTIONS

AMS is a joint undertaking of three universities: Delft, Wageningen and MIT. It intimately connects research, education and innovation. Its approach is characterized by (i) working from a legacy position and (ii) being a 'living lab'. Its wide interest and mix of disciplines show from the issues AMS is addressing in Amsterdam, namely: tourism; decaying canal walls; and the human capital agenda.

BUIKSLOTERHAM

Buiksloterham is a district in the North-East of Amsterdam where residential functions are replacing industrial functions. It is a brownfield where experimental rules enable a high ambition concerning circular economy project development. Project developers, among them Collective Private Commissioners, may tender for developing land.

Here, sustainability ambitions play a decisive role in obtaining the development rights. Typically, the contract price for developing one or more apartment buildings would be a priori fixed. Bidders would be awarded the contract on the basis of points scored by their tender on issues like energy use and solutions for eventual recycling of the building. Contracts are for small series. The typical additional building cost per square metre would be 10 per cent, not seriously affecting a good developers margin. The result is an array of innovative solutions.

Annex 2. Participants

Mr. Hans MOMMAAS, Director-General of PBL Netherlands Environmental Assessment Agency, Special Advisor CCICED

CCICED Secretariat:
ZHANG Min, Programme Officer

SPS on Green Urbanization Strategy and Pathways Towards Regional Integrated Development:
Mr. LI Xiaojiang, Former president of CAUPD
Ms. SHANG Jing, Director, Research Institute of Regional Planning, CAUPD
Ms. CHEN Yixing, Deputy Director, Information and innovative Center, CAUPD
Ms. LV Xiaobei, Chief urban planner, western branch of CAUPD
Mr. HU Jingjing, Deputy Director, Department of Management and Operation, CAUPD

SPS on Environmental Improvement Goals and Pathways by 2035:
Mr. Wolfgang SEIDEL, German Environment Agency (UBA)
Ms. Anna ROSENBAUM, German Environment Agency (UBA)
Ms. ZHAO Lizhi, German Environment Agency (UBA)

SPS on Ecological Compensation and Green Development Institutional Reform in the Yangtze River Economic Belt
Mr. Knut ALFSEN, CCICED Chief Advisors Team

Experts:
Ms. Ioulia OSSOKINA, Eindhoven University of Technology, the Netherlands
Mr. Serge SALAT, UN Environment Cities Unit and Urban Morphology Institute, France
Mr. Peter VERVOORT, Flemish Government, Belgium
Ms. Linda VLASSENROOD, International New Town Institute, the Netherlands
Mr. Theo DEUTINGER, TD architects, Austria
Mr. Otto RASPE, senior researcher, PBL Netherlands Environmental Assessment Agency
Ms. Marcia van der VLUGT, Ministry of the Interior and Kingdom Relations
Mr. Aldert de VRIES, Utrecht Municipality

Other participants:
Mr. Jan BAKKES, PBL Netherlands Environmental Assessment Agency
Mr. Arjan HARBERS, PBL Netherlands Environmental Assessment Agency
Ms. Like BIJLSMA, PBL Netherlands Environmental Assessment Agency
Mr. Kersten NABIELEK, PBL Netherlands Environmental Assessment Agency
Mr. Ton DASSEN, PBL Netherlands Environmental Assessment Agency
Mr. Joost TENNEKES, PBL Netherlands Environmental Assessment Agency
Ms. XIAUCUN Ruan, East & West Urban Consultancy

Interpreters:
Ms. Mathilda BANFIELD
Ms. (Lily) Lin Su

Annex 3. Profiles of presenters and chairperson

Knut H. Alfsen, born 1952, is currently Senior Researcher at CICERO – Center for International Climate and Environmental Research Oslo and member of Chief Advisor's Group to China Council for International Cooperation on Environment and Development (CCICED). Previous positions include Director of Research in the Research department of Statistics Norway, Director of Research at Institute for Energy Technology (IFE) in Norway, Director and later Head Research Director and Strategic Director at CICERO. He has a PhD in theoretical physics from the University of Oslo, but has worked as an environmental economist most of his carrier. He has worked, in collaboration with SEB, on second opinions for green bonds since the start in 2007.

Theo Deutinger is an architect, writer and designer of socio-cultural maps and studies. He is founder and head of TD, an organization that combines architecture with research, visualization and conceptual thinking, on all scales and levels, from global planning and architecture to graphical and journalistic work.

胡京京 **Hu jingjing**
中国城市规划设计**研究院**经营**管理**处**副**处长，**高**级**城市**规划师，**中国城市科学会城市治理委**员**会委**员，**法国**总统项目**"五十名中国**规划师**在法国**"项目**成**员。**学**术**特点**：**城市空**间发展战略、历史**文化**遗产**保**护、**国**际**城市**规划**比**较**研究**。

Hu Jingjing, deputy director of project management department of CAUPD, senior urban planner, member of the urban governance committee of CSUS, member of the French President's project 'fifty Chinese urban planners in France'. He is specialized at: urban spatial strategy, historical & cultural heritage preservation, international cities comparative studies.

李晓江 **Li Xiaojiang**
第五届国合会委员，**中国城市**规划设计研究院原院长，教授级高级规划师，国务院特殊津贴专家，京津冀协同发展专家咨询委员会专家，**北京市政府、上海市政府、武**汉市政府顾问。

Li Xiaojiang, member of the fifth CCICED committee, former President of the China Academy of Urban Planning and Design (CAUPD), Senior Urban Planner (Professor level, Chinese classification for planner's qualification), national expert (receiving State Council special allowance), member of the Expert Committee of Jing-jin-ji regional development, advisor of Beijing Municipal Government, Shanghai Municipal Government and Wuhan Municipal Government

吕晓蓓：**Lv Xiaobei**
教授级**高**级**城市**规划师，**中国城市**规划设计研究院西部分院总规划师，《**重**庆市国土空间规划》，《**深圳2050城市**远景发展策略》，《遵义市城市总体规划》《深圳市福田区城市更新发展规划研究》等重大项目的项目负责人，**参与了《中国**县域城镇化研究》等多个国家级重大课题。参与的项目获得了住建部的一二三等奖。

Lu Xiaobei, senior urban planner (professional level), chief urban planner of West Institute of CAUPD, project manager of 'Chongqing spatial planning', 'Shenzhen 2050 future development & strategy', 'Zunyi city master plan', 'Shenzhen Futian district planning & urban renewal research' and other major projects. Furthermore, she has been engaged in the study of Chinese county's urbanization and other important researches on national level. Her projects & researches have won the first -third prizes from the Ministry of Housing and Urban-Rural Development.

Hans Mommaas: Since 1 November 2015, Hans Mommaas (1955) has been the Director-General of PBL Netherlands Environmental Assessment Agency in The Hague. He also holds the position of Professor of Regional Sustainability Governance at the Tilburg Institute for Law and Regional Governance (TiREG) of Tilburg University.

Hans Mommaas studied Western Sociology at the former Wageningen Agricultural College. In 1993, Hans Mommaas obtained his PhD degree from Tilburg University with his thesis 'Modernity, Leisure and the City' (Moderniteit, Vrijetijd en de Stad). Between 2002 and 2015, he was Professor of Leisure Studies at Tilburg University, and, from 2014 to 2015, at NHTV in Breda.

In his position as member of the former VROM-council, between 2005 and 2010, he chaired committees that issued the following advice documents: 'Groeten uit Holland, Vrije tijd, Toerisme en Ruimtelijke kwaliteit' [Greetings from the Netherlands, Leisure, Tourism and Spatial Quality] (2006); 'Wisselende coalities' [Changing coalitions] (2008); and 'Duurzame verstedelijking' [Sustainable urbanization] (2010).

Over the 2005–2010 period, Hans Mommaas was one of the Science Directors of Transforum, an innovation programme for agriculture and green space, where he was in charge of the knowledge field of 'Organising Innovations and Transitions'. Between 2006 and 2011, he was Professor of Urban Dynamics and Culture at Utrecht University. Between 2010 and 2015, he was associate member of the Dutch Council for the Environment and Infrastructure (Rli) and co-author of policy advice documents on the Common Agricultural Policy. From 2010 to 2015, he held the position of Visiting Professor of Culture Management at the University of Antwerp.

From 2004 to 2015, Hans Mommaas was Science Director at TELOS (Brabant Centre for Sustainable Development), where he was involved in developing integral monitoring tools for regional sustainable development (provinces and municipalities), and providing research and development support for area development processes.

In 2000, he authored a WRR study on 'the leisure industry in city and countryside' (De vrijetijdsindustrie in stad en land). In 2009, together with co-author Nienke van Boom, he published a study on 'Comeback cities'. In addition, he co-authored many articles, book chapters and research documents on subjects intersecting leisure time, culture, sustainability and urban and regional development (see the list of main publications).

Ioulia Ossokina is Assistant Professor at the Department of the Built Environment of Eindhoven University of Technology, the Netherlands. She is also affiliated with Erasmus School of Economics (Rotterdam, the Netherlands) as a lecturer. Before moving to Eindhoven, she worked for 13 years as economic researcher at CPB Netherlands Bureau for Economic Policy Analysis, the influential financial think tank of the Dutch Government. She graduated from the University of Tilburg in 1998 and obtained her PhD in 2003 at Erasmus University Rotterdam.

Ioulia does empirical research on the economic analysis of cities, urban planning, real estate and transport markets, using big data and modern econometric techniques. Her models answer questions, such as: Why do people choose to live and work in cities? What are the effects of investments in urban transportation on the demand for housing? Which retail and office locations are more likely to have high rents and which high vacancies? Ioulia's research often benefits from cooperation with academic colleagues as well as experts from various governmental and market organizations. She strongly believes that this interaction helps to create new scientific insights that are useful in practice.

Ioulia is a member of national and international networks of urban and transportation economists. She is regularly invited to speak about her research, both in the Netherlands and abroad. She serves as a reviewer and guest editor for national and international journals. She gives courses on urban economics, financial planning in real estate, and cost-benefit analysis.

Otto Raspe studied Economics at Tilburg University (1992–1997). After graduation, he started working as a researcher and consultant at The Netherlands Organization for Applied Scientific Research (TNO), where he advised on the topics of spatial economic development, the impact of spatial investments (using impact analyses and cost-benefit analyses), industry studies and regional economic benchmarks. Since mid-2002, he has been employed as senior researcher at PBL Netherlands Environmental Assessment Agency in The Hague. Here his focus is on the impact of the rise of the knowledge economy, as well as on innovation and entrepreneurship. Otto successfully defended his dissertation on The Regional Knowledge Economy on 14 December 2009 (Utrecht University). He is often invited to hold lectures, and regularly publishes on these topics, both nationally and internationally.

Serge Salat. An architect with a master's degree in Mathematics and Physics, a PhD in Art History and in Economics, and 30 years of experience in urban studies and city planning, Serge Salat is Senior Adviser to UN Environment's Cities Unit and President of the Urban Morphology and Complex Systems Institute in Paris. He is Professor of Urban Morphology at École Spéciale d'Architecture in Paris and Visiting Professor at the National University of Singapore (NUS). He is a pioneer in the development of a science of cities, applying cutting-edge complexity science and big data analytics to policy-making, with a focus on spatial economics and the relationships between urban morphology and resource & energy efficiency, resilience, and sustainability. Serge Salat is an urban policy adviser to the United Nations (UN Environment and UN-Habitat), and to the World Bank. He is a member of the UN Environment International Resource Panel and an author of IPCC's Fifth Assessment Report on Climate Change. He is a lead author of the latest IRP Report on *The Weight of Cities, Resource Requirement of Future Urbanization* (2018) and the *Urban Sustainability Framework* (2017) of the GEF Global Platform for Sustainable Cities. A 35-year specialist on China, a Mandarin speaker and reader, author of two influential books published in China, Serge Salat has contributed, either as author or lead author, to key reports presented to Chinese top leadership and to China's Prime Minister. In 2017, he received in New York the Global Human Settlements Outstanding Contribution Award for his work on urban sustainability.

Wolfgang Seidel: Since 2014, Dr Wolfgang Seidel has been the Head of the President`s Office of the German Environment Agency (UBA), in which capacity he is also responsible for the agency's international relations. From 2004 to 2014, he headed the Administration, Verification and Financing unit of the German Emissions Trading Authority (DEHSt), at the German Environment Agency. He joined the agency in 2002, after which he organized the establishment of DEHSt as competent national authority for the EU ETS. From 2005 to 2011, he was also responsible for the Kyoto Mechanisms JI and CDM. In this capacity, he was involved in sustainable mobility projects under the flexible mechanisms. Dr Seidel is an experienced lawyer and holds a doctorate degree from the Bavarian Julius-Maximilians-Universität (JMU) Würzburg.

商静 Shang Jing

中国城市规划设计研究院 **区域**规划研究所所长，**天津大学城市**规划硕士。**美国加州大学洛杉**矶分校访问学者。**主要从事城**镇化研究与**区域**规划、**城市**总体规划、**新城新区**规划**和城市**设计等**方面工作。主持**过贵州省、**河北省、重**庆市、**云南省等地区的城**镇化**研究和区域**规划项目；**佛山、石家庄等大城市**总体规划项目；**云南滇中新区、重**庆**两江新区等国家**级新区规划项目。**目前参与国土空**间规划**先行先**试**工作**。

Shang Jing, director of the Institute of Regional Planning of CAUPD, hold a master degree of urban planning at Tianjin University, has been a visiting scholar of UCLA, is specialized in urbanization research and regional planning, city master planning, new city planning and urban design. She has been responsible for the urbanization studies for Guizhou province, Hebei province, Chongqing, Yunnan etc and their regional planning, also for

masterplans of Foshan, Shijiazhuang and other large cities and new developments in Yunnan-central new area, Chongqing two-rivers new area (national level new area planning projects). Currently she has been involved in the national spatial planning task force project.

Peter Vervoort is an engineer in the field of architecture and has a degree in urbanism and spatial planning. He has been working for more than 12 years for the Government of Flanders (the Northern federated state of Belgium) at the Departement of Environment and Spatial Development. He coordinates and conducts policy-related scientific research on spatial and environmental issues and processes in Flanders. He works closely with several academic institutions and research groups and is member of the monitoring committee of ESPON, a European research programme on territorial cohesion policy.

Linda Vlassenrood is an architecture historian specialized in urban planning history and contemporary urban development. She is an independent curator and programme manager at the International New Town Institute (INTI). Here, she set up the international research and exchange programme New Towns. Why we need to rethink the city of tomorrow todayin Shenzhen in 2012. She aligned with the innovative forces in Shenzhen and initiated research to understand which social, economic and environmental factors needed to be improved to strengthen the city's potential. Until 2016, the programme acted as a catalyst for the exchange of knowledge between international students, researchers, design professionals, developers, policymakers and politicians by initiating research, conferences, design workshops, exhibitions and publications.

Currently, the main focus lies on collaboration with Guangming. Guangming and INTI have been collaborating since 2015 to improve the overall quality of the urban development of the district. More specifically, Linda Vlassenrood set up an interdisciplinary Dutch consultancy team to regularly advise the urban planning department on comprehensive new town planning through several workshops per year. It is a modest, but long-term attempt to intervene in the top-down urban planning processes and steering mechanisms.

Before she joined INTI, Linda Vlassenrood worked as a curator at the Netherlands Architecture Institute (NAI), where she started in 2000 and served as chief curator from 2008 to 2011. The NAI used to be one of the largest architecture centres in the world. Her department worked successfully on a rich and diverse programme of exhibitions, lectures and debates, events and educational programmes for professionals as well as broader audiences. Linda Vlassenrood has curated a significant number of noteworthy exhibitions and events on architecture in its broadest sense. She furthermore curated exhibitions on landscape and urban planning, such as *Hybrid Landscapes* (the Dutch contribution to the International Architecture Biennale in Venice in 2004). Crossovers between architecture and design were examined in shows such as *Reality Machines* and *Tangible Traces* (Dutch contribution to the International Architecture Biennale in Sao Paulo in 2007). In 2006, she placed contemporary Chinese architecture on the international map with the exhibition entitled *China Contemporary*.

Linda Vlassenrood recently curated a cultural programme (2015–2017) with workshops, lectures and exhibitions around data and the smart society, in collaboration with Het Nieuwe Instituut and the city of Eindhoven. Linda Vlassenrood frequently lectures and publishes in the Netherlands and abroad.

Marcia van der Vlugt studied System Engineering Policy Analysis and Management at the Delft University of Technology, where she is currently on the advisory board for a new leadership education programme.
Van der Vlugt is Spatial Planning International programme manager for the Ministry of

the Interior and Kingdom relations, after having worked on, for example, the Delta Plan on Spatial Adaptation and the Innovation Expo 2018.

Aldert de Vries, currently, occupies the position of Senior Policy Advisor at the Municipality of Utrecht, where he manages the urbanization and mobility programme of the Dutch region of Utrecht. Until 2017, he was programme manager for the Urban Agenda of the Netherlands, at the Dutch Ministry of the Interior and Kingdom Relations. His career path leads through various research institutes and public administrations in the Netherlands, Spain, Latin America and Asia, where he applied integral territorial analysis to a wide range of situations and topics, such as land rights, land use, housing, economic development, and income distribution. Aldert holds a master's degree in Physical Geography from the University of Utrecht.

Ms. **Zhang Min** is a Programme Officer of the Policy Research and Project Management Department of CCICED Secretariat. She has been managing a series of special policy studies (SPS), including for example Yangtze River Economic Belt eco-compensation and green development, green urbanization, green BRI and SDG 2030 and South-South cooperation. She has also organized some successful, big events and draft materials for Premier Han Zheng, Minister Xie Zhenhua, and takes the role as assistant to chief advisor Liu Shijin. In addition, she has cooperated and maintained a sound relationship with a wide variety of stakeholders, ranging from governments to NGOs, such as ADB, UN Environment, DRC of the State Council, MOFCOM and the Chinese Academy of Environmental Planning.

Annex 4. Summary of the presentations

MS ZHANG MIN, INTRODUCTION TO TASKFORCE AND PREPARATION TO AGM

The China Council for International Cooperation on Environment and Development (CCICED) was founded in 1992 as a high-level international advisory body. Along with rapid economic and social progress, the CCICED has witnessed and taken part in China's historical shifts in its development philosophy and model. It has played a unique role in championing sustainable development. It has opened the door to international experience on sustainable development and built a bridge between China and the international community on environment and development. As Vice Premier Zhang Gaoli noted in 2016, CCICED shall serve as a platform for exchanges on environment and development policies between China and the international communities, for promoting collaborative efforts to achieve ecological civilization, and for advocating innovative and better governance system of the global environment.

The CCICED has conducted 4 Task Forces targeting emergent issues, such as ocean governance, green urbanization, sustainable consumption and BRI. Under the framework of the TF, 8 special policy studies are underway, running 2–3 years, with a group of outstanding domestic and foreign experts. With their concerted efforts, policy recommendations will be condensed, presented during the Annual General Meeting and submitted to the Government of China.

CCICED 2019 AGM will be held from 2 to 5 June, in Hangzhou City of Zhejiang Province, with the theme of New Era: Towards a New World of Green Prosperity. The event will be combined with the World Environment Day, which is expected to attract wide attention and exert huge impact on China and the world.

MR WOLFGANG SEIDEL: SPS ON ENVIRONMENTAL IMPROVEMENT GOALS AND PATHWAYS BY 2035

The Special Policy Study (SPS) aims to examine 'Goals and Pathways for Environmental Improvement for a Beautiful China in 2035'. The working group is developing environmental goals for 2035, to prepare for the period of the 14th Five-Year Plan and beyond, in order to set the course for China's environmental and development goals for 2050. China's pathway to environmental targets for 2035 must reflect both improvement in current gaps in environmental quality and 'must have' changes enabling further achievements on the way to 2050.

In March 2019, the SPS members participated in a study tour to London and various cities in Germany. Special attention was given to environmental transformation. Related cases include air quality management in London since 1950s, green transition policies in the Ruhr Valley (Zeche Zollverein) since the coal phase-out and sound management of chemicals and waste of the chemical industry in Germany.

The policy recommendations of the SPS reflect the discussions on issues, such as multi-level governance, consumption patterns, public participation, industrial, energy and transport sectors, green evaluation system and environmental health.

Further discussion is needed on planning tools, such as scenario planning and monitoring networks, on the coordination between public health and environment in risk assessment and also on the urbanization and population situation when designing the pathway for environmental improvement. The Chinese team members introduced the idea of Beautiful China demonstration zones as role models for regions, taking into account regional differences within the country.

MR KNUT ALFSEN: SPS ON ECO COMPENSATION AND GREEN DEVELOPMENT INSTITUTIONAL REFORM IN THE YANGTZE RIVER ECONOMIC BELT 2019 WORK PLAN

In 2017, Asia Development Bank (ADB) formalised a partnership with CCICED through a special policy study (SPS) on the Yangtze River Economic Belt (YREB). The study is focused on **eco-compensation** and **institutional and legal reform** to achieve environmental outcomes anchored on ADB's USD 2 billon portfolio of projects under its YREB strategic framework.

SPS Outputs

1. Output 1 – Eco-Compensation mechanism pathway for implementation
    - Provide policy and research support for the implementation of the Eco-compensation national action plan and Ecological Recovery national action plan
    - Identify current institutional gaps
    - How to establish a proposed Eco-compensation Fund for the YREB provinces
    - Local case studies on the Chishui River watershed and Xin'an River watershed
    - INBAR scoping study on the role of bamboo in green development

2. Output 2 – Institutional and governance arrangements for achieving goals in the YREB development plan
    - Institutional and governance reform needed to support the effective implementation of the new Ministry of Ecological Environment (MEE) Water Bureaus
    - Investigation how such an Eco-compensation Fund (Output 1) could be introduced, including business sector engagement and contributions

3. Output 3 – Legal reform to support the goals in the YREB development plan
    - Propose an overall legislative framework for the Yangtze River Protection Law.
    - Support for the development of specific legislative components to facilitate effective institutional and governance reform

4. Policy recommendations put forward at AGM 2018

The concept of the Yangtze River Economic Belt (YREB) is distinctive and represents a significant new way of approaching river basin management for China and, possibly, also the rest of the world. The YREB is a prime candidate to become China's leading experiment of constructing an ecological civilisation.

1. Adopt a Whole-of-Ecosystem Approach (from 'Mountain to Ocean') in environmental protection planning across the Yangtze River Economic Belt. Focus remediation and restoration efforts, strategically, on problems that have a disproportionately large impact on overall river basin health. Two areas that require special attention are solid waste management in rural areas and plastic pollution.
2. Adopt a multiple stakeholder engagement approach to carefully identify and address any negative impacts on communities and livelihoods. Integrate gender via a multiple stakeholder engagement approach to good governance. Design institutional frameworks to incentivise long-term financial sustainability for ecological compensation and environmental protection programmes**.** Development of both compulsory and voluntary instruments will best ensure robust business-sector participation in conservation finance.
3. Establish appropriate legal and institutional mechanisms.

MS LINDA VLASSENROOD (INTERNATIONAL NEW TOWN INSTITUTE, THE NETHERLANDS): SUSTAINABILITY OF INTERNATIONAL NEW TOWNS

The International New Town Institute (INTI) is a non-profit, scientific research institute based in the Netherlands. Founded in 2008, the institute's objective is to improve the quality of life in new towns worldwide. INTI believes that, in order to improve the quality and sustainability of our urban future, we can learn from existing new towns today. INTI studies the past, present and future of planned communities. It plays a unique role in bringing together multidisciplinary expertise and experience in a wide range of activities, in collaboration with public, private and academic partners. INTI initiates the exchange of knowledge by organising workshops, research, conferences and publications.

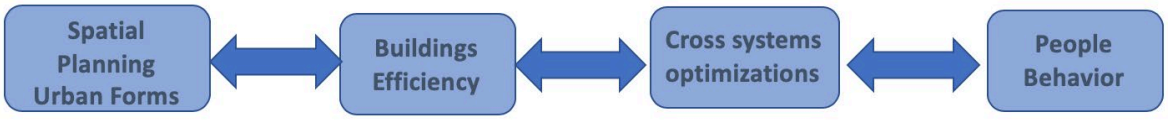
Ten years after the global financial crisis of 2008, the construction sector is again operating at full speed, worldwide. A growing economy goes hand in hand with urbanisation and new towns are back on the agenda. This no longer applies only to China and Asia, but increasingly also to Africa. Are these cities good enough to stand the test of time or are they purely commercial projects that will only aggravate the most urgent contemporary problems of inequality, segregation and climate change? What resources could be provided by urban planning and design, to make new towns future-proof? Linda Vlassenrood will present INTI's 10 principles, which have been developed as an addition to the New Urban Agenda by the United Nations (2017) to address the often overlooked specific urban planning issues related to the development of new towns.

These 10 principles include 'planning is an on-going process' to 'plan for adaptivity' and 'use the blue-green infrastructure as the central framework'. Each principle will be illustrated by one or more examples of strategies introduced in new towns around the world. The culture of new towns has always been forward looking, with an emphasis on innovation and experimentation. They are therefore ideal testing grounds for green urbanisation. INTI strongly believes that sustainable new towns should be the result of an integrated approach to urban design with technological as well as social, cultural, political and financial innovation.

MR SERGE SALAT (UN ENVIRONMENT CITIES UNIT AND URBAN MORPHOLOGY INSTITUTE): LOW CARBON LIVABLE URBAN FORMS IN CHINA

UN International Resource Panel report, '*The Weight of Cities. Resource Requirements of Future Urbanization',* suggests a new approach to focusing on low-carbon, resource-efficient, inclusive cities. The report calls for a new strategy for 21st century urbanisation, and presents the parallel actions on urban planning, sustainable design, resource-efficient components, and infrastructure for cross-sector efficiency that are required for a transition towards low-carbon, resource-efficient and socially just cities. Serge Salat, lead author of the report, will present the actions on urban planning and urban design, as recommended in the report. The report suggests a cascading approach in four levers, potentially leading to a 90% reduction in urban energy and resource use and in associated CO_2 emissions.

The 4-step approach is summarised in the following chart:



International research suggests that each of these steps has the potential to at least halve the urban energy loads and associated greenhouse gas emissions. The four steps have a multiplicative impact on energy and resource efficiency with cascading effects. The actual improvements in energy and resource productivity are not simply the sum of

all interventions, but are multiplicative if they are implemented in mutually reinforcing ways.

Serge Salat will also present the key findings of a recent World Bank-GEF study he directed in four Chinese cities. Key findings of this recent study include that the thermal energy consumption per capita is highly dependent on urban forms, that is the pattern of cities at block level. It can vary by more than 150% within the total area analysed (43 blocks in 4 cities). The per-capita energy consumption for heating in a 'super block' is 2.5 times higher than in a 'fine-grain block', irrespective of the level of insulation (applying same building code), the efficiency of the heating system (same efficiency) and the behaviour of the residents (same assumptions). The study also unveiled that the shape of the urban form allows for a 60% reduction in the cooling loads, all other factors being equal. The variation is even larger for the influence of urban form on the variation in per-capita energy consumption for transportation, as the variation between super blocks and fine-grain blocks in Beijing is 6.5 times greater.

Starting with spatial planning and urban form, the cascading cumulative effect of measures, over time, will eventually benefit the whole city. Both outdoor and indoor thermal comfort will be improved, the city will become more accessible with more inclusiveness and productivity gains derived from agglomeration, and energy consumption and greenhouse gas emissions will be reduced.

Mr Peter VERVOORT (Flemish Government, Belgium): Financial consequences of future urbanisation patterns in Flanders

Flanders is a highly urbanised region, characterised by a very dispersed morphological pattern. The urban sprawl rate is one of the highest in Europe. Due to this fragmentation, addressing different social and spatial issues is challenging. The Department of Environment and Spatial Development calculated the cost of infrastructure, mobility and loss of ecosystem services due to the current urbanisation pattern in Flanders. The research shows that distinct urbanisation patterns also have important financial consequences.

Last year, the Government of Flanders decided to radically change course. The future Spatial Policy Plan Flanders (SPPF), which is currently being developed, will diminish the degree of land take, focus further urbanisation within the settlement area and adopt a transit-oriented development strategy. Our research also analysed the future costs of various land-use scenarios to provide an evidence base for future policy. A growth-as-usual scenario (GAU), a Spatial Policy Plan Flanders scenario (SPPF) and an even more ambitious anti-urban-sprawl scenario (AUS) have been considered. The analysis showed large differences in future annual costs, depending on the land-use scenario. Investing in an SPPF scenario, and certainly in an AUS scenario, will significantly reduce future annual costs, in comparison to a policy that would allow further dispersed spatial growth.

MR OTTO RASPE (PBL, NETHERLANDS): URBAN REGIONS AS ENGINES OF ECONOMIC GROWTH

According to the recent PBL study 'Urban regions as engines of economic growth', in most countries, new regional economic policies are needed. Policies in which national and regional agendas are coordinated reinforce each other. Since urban regions function as engines of economic growth, cooperation between national government and regional authorities is important, not only for the national government to set regional priorities, but also to streamline national instruments into a joint strategy for growth.

In economically successful regions, government plays an active role by investing in and facilitating growth. It is up to regional authorities to formulate a joint strategy and forge alliances between public and private parties and with national government and provincial authorities. In successful regions, policy is focused primarily on factors that are

important for growth and innovation and on creating attractive residential and employment locations.

Economic growth is largely path-dependent; historical structures and events in the past determine the course of later developments. The challenge is that of finding the right policy mix around a common goal that is in keeping with the economic structure and dynamics of a particular region. Effective regional economic policy, therefore, combines current positive elements, while focusing on a transformation that includes new activities and technologies.

The study introduces a conceptual framework, based on a literature review. Econometric estimates present factors that are robustly connected to growth, while case studies focus on the mechanisms behind growth processes and the role of government authorities in these processes.

MR THEO DEUTINGER (TD ARCHITECTS): CORE & PERIPHERY

The current relationship between urbanity and economic growth seems to be clear-cut. In areas where there is a high concentration of people, there is a high concentration of connections, which, in turn, leads to a greater flow of information than in less-populated areas. Such a greater flow of information results in higher exchange rates and consumption levels. Thus, according to this theory, high population density is good for business.

The study 'Core & Periphery' re-evaluates this logic by looking at the European continent. It also analyses the dimension and shape of the Core of Europe, which is illustrated following Roger Brunet, who defined the continent's core as Blue Banana, in 1989. This highly populated area spans between Liverpool and Genoa, with the river Rhine at its centre.

The Core of Europe is not the result of good spatial planning, but rather grew over the past centuries along the most important infrastructural element that connects the heart of the continent with the ocean: the river Rhine. The study 'Core & Periphery' seeks to find the current logic behind this centrality, along economic, social-political and cultural parameters.

The dynamics and dependencies can be explained with the help of the core-periphery model. The parameters inserted in this model are inhabitants, trade volumes and infrastructure, as well as language, religion and dietary habits. For planners, the most intriguing part of this model is its lack of scale, which is why it can be applied not only to cities but also to companies, social groups and the world at large.

MS IOULIA OSSOKINA (EINDHOVEN UNIVERSITY OF TECHNOLOGY): ROLE OF TRANSPORT INFRASTRUCTURE IN SUSTAINABLE URBANISATION: AN ECONOMIC VIEW

Urbanisation in China is proceeding at a fast pace; the population of cities and towns will increase, from 58% in 2016 to a projected 80% by 2050. To steer these developments in a sustainable way, a transdisciplinary approach is needed. My talk will provide economic and behavioural insights into what role transport infrastructure—conventional and new—can play in the green urbanisation strategy. I largely build on my own empirical research for the Netherlands, a country where urban areas house 75% of the population and 80% of jobs. I will also discuss recent studies into the economic effects of transport infrastructure in China.

Five statements below give a preview:

[1] Faster transport connections attract economic activity to the more productive urban areas. This may increase urbanisation.

[2] Within an urban area, better transportation leads to suburbanisation of population by making the hinterland more attractive. This will relieve central cities.

[3] New highways may improve environmental quality by reducing congestion in city centres.

[4] New transportation technologies—such as self-driving cars—may counterbalance urbanisation. They can also make cities more attractive.

[5] Even with very low transportation costs, 'death of cities' is unlikely. Face-to-face contacts are crucial for productivity growth.

MS MARCIA VAN DER VLUGT (MINISTRY OF THE INTERIOR AND KINGDOM RELATIONS, THE NETHERLANDS) NATIONAL SUSTAINABLE URBAN PLANNING IN THE NETHERLANDS

The Netherlands does not have one large metropolis such as London or Paris, but it has a network of smaller and medium-sized interconnected cities. Those cities have a high quality of life. Although the Netherlands is a densely populated country, we have been able to maintain green spaces in close proximity to our cities. Cities are highly interconnected with their outer areas.

Our land areas can only only be used if and when various parties collaborate to keep them safe, dry and liveable. This has resulted in the well-known Dutch 'polder model' (i.e. consensus decision-making). Spatial planning, traditionally, is in the hands of local government.

We work with a legal basis for spatial planning called the Spatial Planning Act, according to which the spatial plans of the national government, provinces and municipalities are constructed.

The interests described in the National Policy Strategy for Infrastructure and Spatial Planning are partly covered by the Implementation decisions.

This legal basis will be redefined and, in the near future, this policy strategy will be replaced by the Environment and Planning Act. With a view to ensuring sustainable development, the habitability of the country and the protection and improvement of the physical environment, this new policy strategy will be aimed at achieving the following interrelated objectives:

a. to achieve and maintain a safe and healthy physical environment and good environmental quality, and

b. to effectively manage, use and develop the physical environment in order to perform societal needs.

In the first place, the policy strategy is intended to improve and simplify the system of environmental regulations. Secondly, it will be aimed at creating a more integral policy and regulatory approach to various aspects of the physical environment, as well as enlarging the possibilities for local government to assess spatial-planning-related decisions. Finally, it should make the decision-making process more efficient.

Currently, the Netherlands faces a number of challenges related to spatial planning, such as urbanisation, population ageing, climate change, the energy transition, scarcity of resources, and traffic congestion. These subjects are among the main challenges for the new national spatial strategy on spatial planning and the environment. The projected increases in population and urbanisation in combination with environmental issues urge planners to innovate. Innovation should happen in two stages: technical innovation and innovation in policy-making and implementation. Both are necessary and will reinforce each other.

What can national planning do?
Stimulating and making use of technical innovation, thinking about other solutions, non-technical measures, such as those related to influencing behaviour, seeking new ways of creating and implementing policy, sharing responsibility for green urbanisation, such as in City Deals and Green Deals.

MR ALDERT DE VRIES, SUSTAINABILITY IN UTRECHT MUNICIPALITY

Utrecht is the fourth-largest city of the Netherlands and the fastest growing city in the country. The city attracts businesses and people because of its central location, attractive living conditions and high quality surrounding landscape. Population growth could put pressure on these assets. However, the city has embraced growth as an opportunity to foster healthy urban living by a combination of policies, such as densification of the city, a modal shift from car use to bicycles and public transport, focus on high quality public space, reducing differences in life expectancy between neighbourhoods, and bringing water back to the city. This makes Utrecht a laboratory for the sustainable, healthy and inclusive city of the future.

Annex 5. Further reading

Otto Raspe

https://www.pbl.nl/sites/default/files/cms/publicaties/pbl-2018-urban-regions-as-engines-of-economic-growth-3296.pdf

Ioulia Ossokina

http://ossokina.com/pdf/Spatial_effects_automated_driving_2912a.pdf

Serge Salat

http://documents.worldbank.org/curated/en/228051552366795612/Chongqing-2035-Spatial-and-Economic-Transformation-for-a-Global-City-Overview

http://www.resourcepanel.org/reports/weight-cities

Peter Vervoort

https://biblio.ugent.be/publication/8587883/file/8587887.pdf

Linda Vlassenrood: Rising in the East:

https://www.researchgate.net/publication/323055935_Rising_in_the_East_Contemporary_New_Towns_in_Asia/download

Theo Deutinger: Core and Periphery

http://beyondplanb.eu/plugins/files/download.php?file=workbook_2.pdf

Buiksloterham Amsterdam

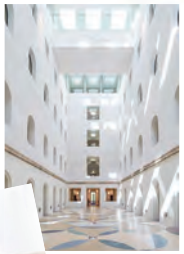
https://buiksloterham.nl/project/1301/living-lab-en-manifest--rapport--report

Annex 6. Presentations

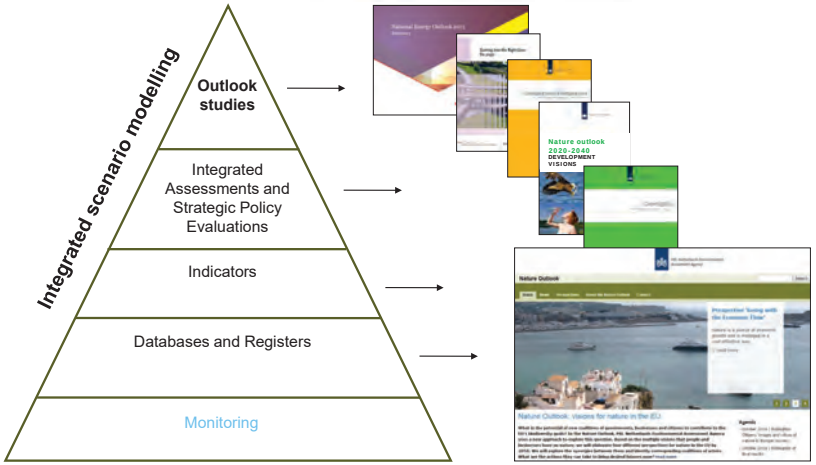
Planbureau voor de Leefomgeving

Welcome to PBL in The Hague *!*

Prof. Hans Mommaas, April 2019



- PBL is the Netherlands' institute for strategic policy analysis in the fields of **the environment, nature and spatial planning**.
- It contributes to the quality of the politico-administrative decision making by conducting **evaluations**, **analyses** and **outlook studies** in which **an integrated approach** is paramount.
- PBL is first and foremost **policy-oriented**; It performs both solicited and unsolicited research, **independently** and **science based**.



Working Program: four strategic environmental challenges

Climate & Energy

Food, Agriculture & Nature

Green & Circular Economy

Resilient (city) regions

Planbureau voor de Leefomgeving

Worlds meet:

People's Republic of China:

1.42 billion people

pop. density: 137/km2

Bohai Bay Region

Yangtze River Delta Region

Pearl River Delta Region

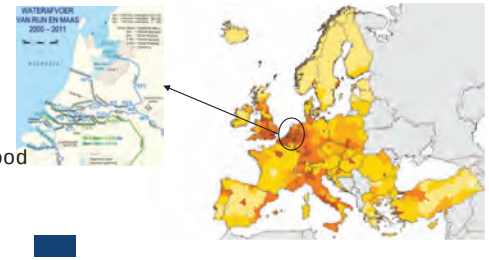
Kingdom of the Netherlands:

17 million people (EU 740 mln)

pop. density: 393/km2

Rhine-Meuse-Scheldt Delta region

delta economy: water-management, food production, logistics, energy / petro-chemical industries, spatial planning



Planbureau voor de Leefomgeving

National Spatial Planning History (1960-2020)

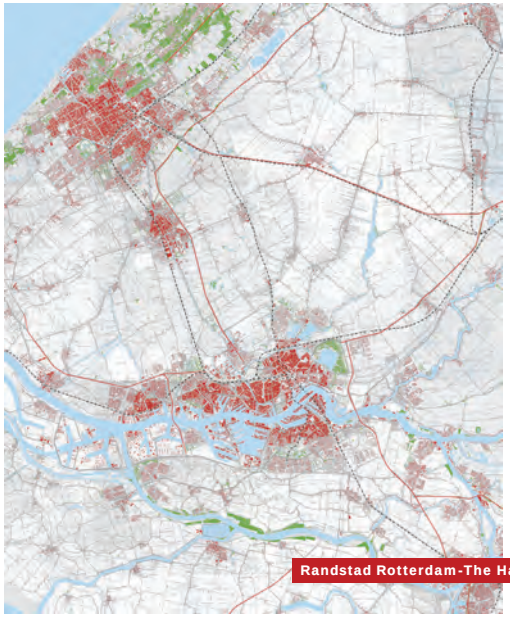
- Context:

  Ongoing struggle to meet demographic growth / housing shortage and demand for 'well ordered' social, economic and green space (socio-spatial order; delta-economy, food & agriculture; nature)

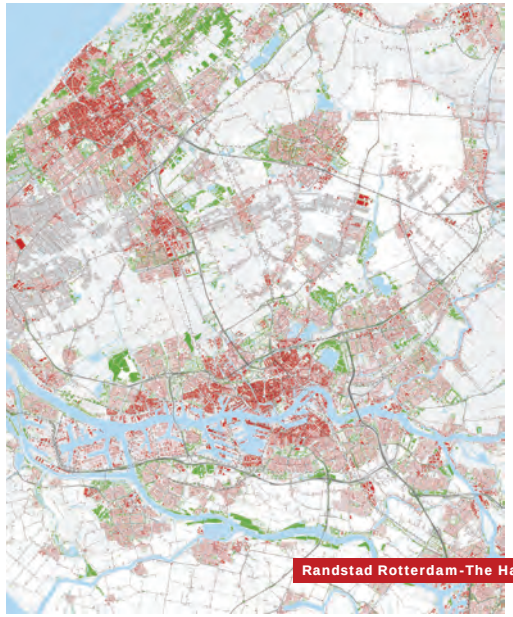
- Dominant Principle:

  'Bundled deconcentration' to relieve pressure in the West, but maintain open space

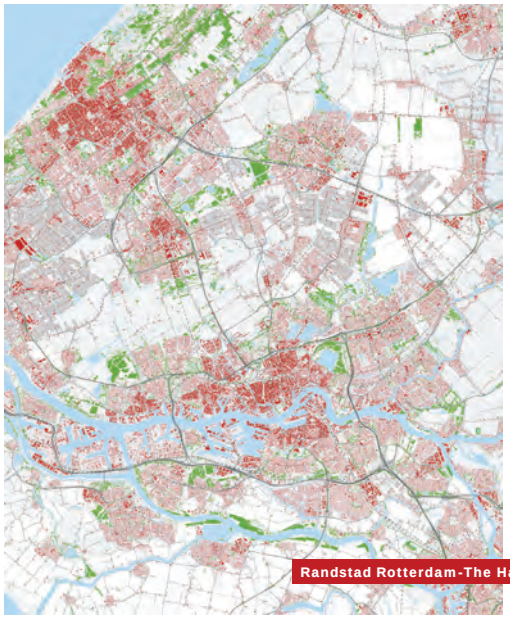
- Alternating Concepts
  - Randstad / Green Heart & Buffer zones
  - New Town Planning & New Suburban Areas
  - Compact Cities
  - Decentralization of Spatial Planning



Randstad Rotterdam-The Hague region, 1970



Randstad Rotterdam-The Hague region, 1990



Randstad Rotterdam-The Hague region, 2010

Planbureau voor de Leefomgeving

Quick scan of results of Dutch spatial planning

- The networks for infrastructure, nature and water are among the best in world.
- Planning prevented unrestrained sprawl, but not the (sub)urbanisation of open space in parts of the 'green hart' of the Randstad
- Spatial planning did not prevent the growth of mobility by car, but the car share might have been much higher without planning
- Spatial planning restricted sprawl around urban areas, but at the cost of high prices on some of the urban housing markets.
- Spatial planning prevented the existence of seriously deprived neighbourhoods in the Netherlands.
- Now search for effective central-decentral policy model, to meet renewed urbanisation pressures on the one hand, and the new demand for space for sustainable development on the other (renewable energy, decarbonised production, circular economy: new industrial clusters, new patterns of transportation, housing, agriculture & land use)

CCICED

Phase VI and 2019 AGM

April 8, 2019

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development
WWW.CCICED.NET

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I. CCICED Phase VI

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CCICED Phase VI

01 CCICED PROFILE

02 POLICY RESEARCH PROJECTS

03 MAJOR EVENTS

1. CCICED Profile

Positioning

A high-level Think Tank Platform

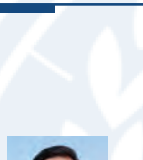
Vision

Building a green and prosperous China and the world

Missions

1) Serving as an inclusive platform for policy dialogue on global environment & development
2) Providing policy recommendations for China's green development
3) Sharing Chinese policies and experience of green development with the world

1. CCICED Profile



HAN Zheng
Chairperson of CCICED Phase VI
Vice Premier of the State Council

LI Ganjie, Minister of MEE
CCICED Executive Vice Chair

Catherine MCKENNA, Minister of Environment and Climate Change, Canada; CCICED Executive Vice Chair

ZHOU Shengxian
Deputy Director of the Committee of Population, Resource and Environment; CCICED Vice Chair

XIE Zhenhua
China's Special Envoy on Climate Change; CCICED Vice Chair

Erik SOLHEIM
Executive Director, The United Nations Environment Programme,CCICED Vice Chair

Achim STEINER
UNDP Administrator, CCICED Vice Chair

Vidar HELGESEN
Former Minister of Climate and Environment of the Kingdom of Norway,CCICED Vice Chair

1. CCICED Profile

Leadership and membership

- 66 council members
- Chairperson – the leader of China's State Council
- Executive Board – Executive and Vice Chairs.
- Secretary General

Working Mechanisms

- Council Member Meeting
- Chief Advisors
- Special Advisors

AGM and other activities

- AGM: the plenary, high-level forum
- Roundtables, workshops

2. Policy Research Projects

Policy Research

4 Task Forces (TFs) with each one lasting 4~5 years

Special Policy Study (SPS) under each TF which could last several months or 1-2 years

TF on Global Environmental Governance and Ecological Civilization

- Global Climate Governance and China's role
- Post 2020: Global Biodiversity Conservation
- Global Ocean Governance and Ecological Civilization

TF on Green Urbanization and Environmental Improvement

- Green Urbanization Strategy and Pathways towards Regional Integrated Development
- Ecological Compensation and Green Development Institutional Reform in YREB
- Goals and Pathways for Environmental Improvement in 2035

TF on Innovation, Sustainable Production and Consumption

- Green Transition and Sustainable Social Governance

TF on Green Energy, Investment and Trade

- Green Belt and Road Initiative (BRI) and 2030 SDGs

3. Major Events

International Business Roundtable on Innovation and Green Development

- Time: June 5
- Location: Changsha, Hunan Province

3. Major Events

2018 Annual Gneral Meeting

- Time: Nov 1-3
- Location: Beijing

- Theme: Innovation for a Green New Era
- Han Zheng presented activities
- Well attended by over 800 people including Council Members, Special Advisors, experts and observers from home and abroad
- Policy Recommendations to the GOC

II. CCICED 2019 AGM

国合会2019年年会　CCICED 2019 AGM

- 时间：2019年6月2-5日（周日至周三）
- 地点：浙江省杭州国际博览中心
- 主题：新时代：迈向绿色繁荣新世界

- Time: June 2-5, 2019 (Sun. – Wed.)
- Location: Hangzhou International Expo Center, Zhejiang Province
- Theme: New Era: Towards a New World of Green Prosperity

年会暂定日程 Draft Agenda

时间/Date		活动安排/Agenda
6月2日 June 2	上午 Morning	政策研究对话会 （开放会议） Policy Research Dialogue (Open-door session)
		主席团会议 Executive Meeting (Closed-door session)
	下午 Afternoon	年会主题论坛 Parallel Open Forums
6月3日 June 3	上午 Morning	年会开幕式及全体会议 AGM Opening Session and Plenary Meeting
	下午 Afternoon	全体会议 Plenary Meeting
6月4日 June 4	上午 Morning	“千村示范、万村整治”工程实地考察 Site Visit to Anji County: Zhejiang’s Green Rural Rivival Programme
	下午 Afternoon	“绿水青山就是金山银山”专题全体会议 “Green is Gold” Plenary Meeting
6月5日 June 5	上午 Morning	年会闭幕式 Closing Session
		世界环境日活动 World Environment Day Activities

论坛主题 Themes for Open Forums

主题 Theme	承办方 Organizers
中国经济高质量发展与“十四五”绿色转型 Economic Development and Green Transition during the 14th Five-Year Plan	部环境发展中心 Environmental Development Center for MEE
卡托维兹后的全球气候治理 Post-Katowice Global Climate Governance	能源基金会、清华大学EF, Tsinghua University
生物多样性保护2050全球愿景 Global Vision 2050 for Biodiversity Conservation	世界自然基金会 WWF
蓝色经济与全球海洋治理 Blue Economy and Global Ocean Governance	美国环保协会 EDF
“一带一路”倡议与绿色城镇化 Belt and Road Initiative and Green Urbanization	部对外合作与交流中心 IECO for MEE
全球环境治理与工商业最佳实践 Global Environment Governance and Best Practice in the Business Industry	世界经济论坛、世界可持续发展工商理事会、中国可持续发展工商理事会 WEF, WBCSD, CBCSD

中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development
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重新定义城镇化

——数字绿色时代城镇化战略路径研究

Redefining Urbanization

—— Green Urbanization Strategy and Pathways in Green & Digital Era

研究进展报告
Progress Report

SPS on "Green Urbanization Strategy and Pathways towards Regional Integrated Development"

Sept 20, 2018

回答三个大问题
Three major questions：

Q1：城市从哪里来?

Where is city from?

Q2:城市到哪里去?

Where is city going?

Q3:如何实现绿色城镇化转型?

How to achieve Green Urbanization?

主要研究内容：三大板块
Research Topics：three components

板块一：重塑城镇化（Component 1: Reshaping Urbanization）

1）中国绿色城镇化总体战略研究：挑战、路径、政策

Overall strategy of Green Urbanization

2）数字绿色时代中国城市决定因素的深刻变化及其冲击(determining factors of urbanization and its impact)

(交易效率的变化:互联网、高铁、物流等的快速发展。公共产品和公共服务提供方式的变化：数字时代公共产品内容和方式的变化。发展内容的变化。)

3）未来城市形态与结构(Reshaping China's urban pattern and structure)

(经济活动的空间分布：基于大数据的城市空间测度。已有城镇如何在数字绿色时代的再造。新兴城镇如何实现。新兴城乡关系的构建。)

4）绿色城镇化的支撑体系研究(supporting system)：新型绿色基础设施和集成生态技术及其实施面临的挑战

(交通模式、分布式能源、被动式绿色建筑、装配式建筑、污水处理系统、生态垃圾处理……)

主要研究内容：三大板块
Research Topics：three components

板块二：绿色乡村振兴（Component 2: Revitalizing countryside through green transformation）

重新定义乡村：数字绿色时代，乡村不再只是传统意义下的“三农”（农业、农民、农村），而是可以承载大量新兴经济活动的新型地理空间。

1）传统发展道路与乡村环境文化社会后果

——环境：工业化&化学农业：环境污染后果（工业污染+化学农业+养殖污染+生活污染）+ 生态后果（污染引发+滥捕滥采引发+生态链破坏引发+industrial agriculture导致农业生物多样性下降）

——社会、文化

2）乡村绿色新供给：重新定义下的乡村绿色再造

3）绿色教育与乡村振兴

4）文化活化与乡村振兴

主要研究内容：三大板块
Research Topics：three components

板块三：绿色转型与城乡及区域关系

（Component 3: green urbanization and environmental improvement）

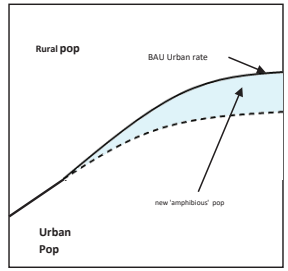
——不同发展内容和方式如何影响城乡关系（案例研究：概念、内容和组织方式等方面的本质区别）

——区域关系：不同发展内容和模式下不同地方发展优势的变化及其后果（案例研究）

New urban-rural spatial pattern in China 2020-2050

- **城市和乡村的界限不再像工业时代**
- **那样泾渭分明，乡村会具有更多新**
- **功能。**

The rural-urban boundary will become blur, and many new activities could take place in the redefined countryside.



中国环境与发展国际合作委员会
China Council for International Cooperation on Environment and Development

绿色城镇化视角的中国城市建设现状评析
Evaluation and Analysis of Current Urban Development in China from the Perspective of Green Urbanization

第五届国合会中方委员　中国城市规划设计研究院　李晓江

Li Xiaojiang

Chinese Member of the 5th China Council for International Cooperation on Environment and Development

China Academy of Urban Planning & Design

2019.04.08

1 问题梳理 Overview of Problems

- 城市空间：发展无序
  Urban space：disorderly development
- 资源环境生态：矛盾性与困难性
  Resources, environment and ecosystem: full of contradictions and challenges
- 基础设施：整体滞后
  Infrastructure: backward development in general
- 建筑：供需与价值双失衡
  Housing & buildings: imbalance between supply and demand, price and value
- 交通：服务品质不高，负外部性突出
  Transportation: low quality of service and serious negative externality
- 城市安全：隐患众多、管理薄弱
  Urban safety and security: numerous hidden troubles and weak management

城市空间：发展无序
Urban Space：disorderly development

■ **空间增长无序：25年空间扩张超过3倍，新城新区过多、过滥**

- 1990-2014年，全国城镇建设用地从**2.7万km²**至**8.9万km²**
- 2015年全国共计**3494个**新区，平均每个县级单元**1.8个**
- 1990-2000年，城镇用地增长是人口增长的**1.71倍**，2000-2015年，城镇用地增长是人口增长的**1.92倍**

■ **Disorderly growth：Urban space has expanded more than 3 times in the last 25 years with excessive new towns and new areas developed.**

- Land for urban construction nationwide up from 27 thousand km² to 89 thousand km² from 1990 to 2014.
- There are 3494 new areas in total nationwide in 2015, i.e. 1.8 per county.
- The growth rate of the land for urban construction is 1.71 times of the population growth from 1990 to 2000; and 1.92 times from 2000 to 2015.

城市空间：发展无序
Urban Space：disorderly development

■ **空间开发无序：自然保护重视不够，跟风式开发建设**

- 1949年至今，全国天然湖泊已减少了约**1000个**，全国湿地开垦面积达**1000万公顷**
- **“高铁机场建新城，临港临江搞化工”**

■ **空间供需无序：土地增速长期快于人口增速，生产、生态、生活空间内部供给失衡**

■ **Disorderly development：not enough attention to environment protection; blind development and construction**

- The number of the natural lakes has reduced by around 1000. About 10 million ha of wetland has been cultivated since 1949.
- **“to build new towns near high-speed railway station and airport, to develop chemical industry adjacent to port and river”**

■ **Unbalanced supply and demand: land development has outpaced population growth for a long time, leading to unbalanced land supply for industries, ecosystem and households.**

资源环境生态：矛盾性与困难性
Resources, Environment and Ecology: Full of Contradictions and Difficulties

■ **资源能源的供、需、用，三者矛盾**

- **供给：人均拥有量低**

2015年全国**300余**座城市供水不足；

2015年全国可利用的后备建设用地仅有**28万km²**

- **需求：消耗巨大，且仍快速增长**

2014年消耗标煤、水泥，分别占全球总量的**23%**和**60%**；

- **利用：低效利用问题突出**

2014年单位GDP能耗为**175吨**石油/百万美元，为世界平均水平的**1.4倍**

■ **Contradiction among supply, demand and utilization of resources and energy**

- **Supply: low per capita possession**

Inadequate water supply in > 300 cities nationwide in 2015;

Only 280 thousand km² available land reserved for construction in 2015.

- **Demand: consumption is huge yet still growing fast**

Consumption of coal equivalent and cement in 2014 accounts for 23% and 60% of the world's total;

- **Utilization: low utilization efficiency is prominent.**

Energy consumption per unit of GPD in 2014 was 175 tonnes of oil / million dollars, 1.4 times of the world's average.

资源环境生态：矛盾性与困难性
Resources, Environment and Ecology: Full of Contradictions and Challenges

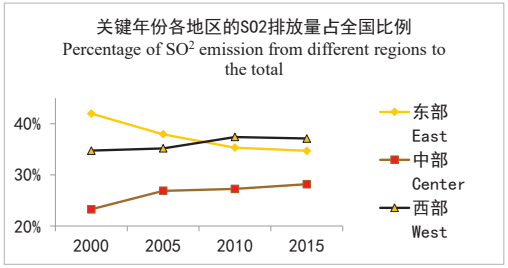
■ **生态环境治理困难**

- **生态环境治理难度大、进展慢**

2015年环境污染治理投资总额高达**9000亿**元，是10年前的**3**倍，占GDP的**1.3%**

- **城镇群和中西部成为生态环境恶化重灾区**

大气污染、土壤污染、黑臭水体等环境恶化集中在**京津冀、长三角、珠三角**、长江中游和中原城镇群地区



■ **Challenges in ecological and environmental management**

- **Great difficulties and slow progress**

Total investment in environment and pollution management in 2015 was 900 billion RMB, 3 times of that 10 years ago, or 1.3% of GDP.

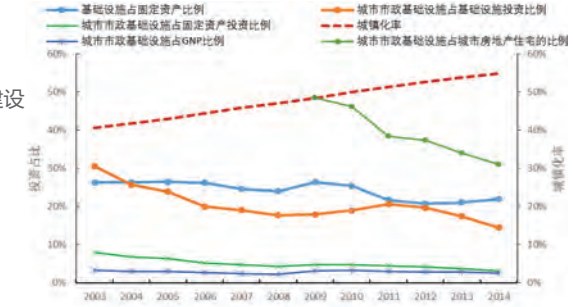
- **City and town clusters and Central and Western China became the major affected area of ecology and environment deterioration**

Environmental deterioration such as air pollution, soil pollution, black and odorous water is mainly in Beijing-Tianjin-Hebei, Yangtze River Delta, Pearl River Delta, as well as city clusters in the middle reaches of Yangtze river and central China.

基础设施：整体滞后
Infrastructure: backward development in general

■ 基础设施建设滞后于城市发展速度
- 投资比例持续下降，已不足5%
- 供给能力无法满足城市需求，约3200万人依靠自建设施供水

■ 基础设施技术水平滞后于时代要求
- 垃圾分类滞后、清洁能源利用率低
- 供水管网漏损偏高
- 地下管线综合建设管理水平低
- 行政管理机制缺乏协调



■ Infrastructure construction is lagging behind urban development
- Investment in infrastructure is continuously dropping with a current share of less than 5%.
- The supply cannot meet the demand, hence around 32 million people still rely on self-constructed facilities for potable water.

■ Technology in infrastructure cannot meet the need of the time.
- Inadequate waste sorting and insufficient application of clean energy;
- High leakage in the water supply network;
- Low standard for construction and management of underground pipelines;
- Lack of coordination in administrative mechanism.

建筑：供需与价值双失衡
Housing&buildings：Imbalance between Supply and Demand, Price and Value

■ 盲目建设，房地产市场供大于求
- 2010年新建**20亿㎡**，2013年新建**40亿㎡**，商品住宅大量积压

■ 公共建筑超标建设，浪费严重
- 高铁站规模贪大，不节能、不环保
- 办公建筑远超实际需求

站名	站场规模	建筑面积（万m2）	总投资（亿）
西安南站	18台34线	42.5	61
郑州东站	16台34线	41.2	94.7
昆明南站	16台30线	33.4	31.8
贵阳北站	15台32线	25.5	66.7
杭州东站	15台30线	34	98
广州南站	15台28线	33.6	130
南京南站	15台28线	45.8	140

■ Unchecked construction leading to the oversupply of real estates
- Two billion square meters of newly-built commercial housing in 2010 and 4 billion square meters in 2013 resulted in a considerable unsold stock of commercial housing units.

■ Enormous waste caused by the excessive scale of public buildings
- High-speed railway stations are always built at an oversized scale, not energy-efficient or environment-friendly.
- Office buildings exceed the practical need.

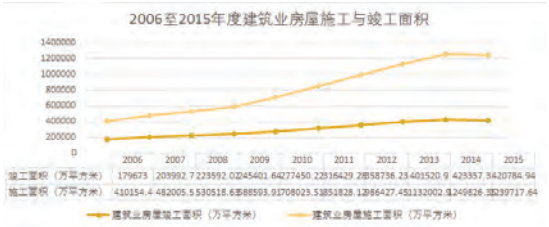
Railway Station	Number of platforms/lines	Construction Area（1,000 m2）	Total Spending（million RMB）
Xi'an South	18 / 34	425	6100
Zhengzhou East	16 / 34	412	9470
Kunming South	16 / 30	334	3180
Guiyang North	15 / 32	255	6670
Hangzhou East	15 / 30	340	9800
Guangzhou South	15 / 28	336	13,000
Nanjing South	15 / 28	458	14,000

建筑：供需与价值双失衡
Housing&buildings：Imbalance between Supply and Demand, Price and Value

■ 建筑寿命过短
- 我国新建建筑的平均寿命仅为**25-30年**
- 大拆大建现象严重，质量寿命过短

■ 高层住宅比例过高
- 消耗大量建设和运营资源
- 运行成本高、更新困难、生活质量低

■ 建筑规范标准与设计机制不完善
- 现行国家建筑规范标准基础数据陈旧
- 建筑设计机制有待完善



■ Short service life of buildings
- The service life of China's newly-built construction averages only 25-30 years.
- Short service life are attributable to the early demolition of old buildings to give way to new ones on large scale.

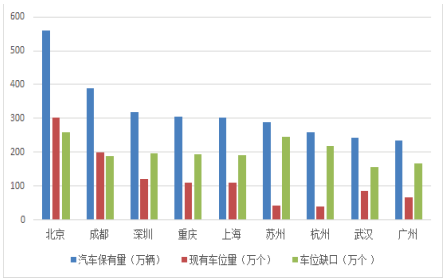
■ Excessively large proportion of high-rise residential buildings
- Highly resource-consuming in construction and operation
- high operational cost, hard to be regenerated, poor living quality

■ Unsound construction codes, standards and design mechanism
- The basic data for current national construction codes and standards are obsolete.
- Construction design mechanism has much room for improvement.

交通：服务品质不高，负外部性突出
Transportation：Low Quality of Service and Serious Negative Externality

■ 道路与交通高投入刺激私人交通高增长
- **资本投入高、空间投入高，反而刺激私人交通高增长：**
  北京小汽车出行比例（全方式、全日）2000年23%，2010年34%
- **公共交通服务水平不高**
- **停车矛盾突出**
- **非机动出行环境差**

各大城市公共停车泊位供需缺口统计
Statistics on the Supply Gap of Public Parking Lots in Megacities



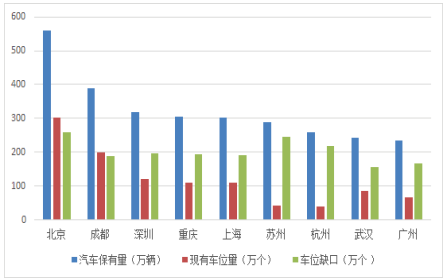
■ Huge spending in road and mobility stimulates rapid growth of private car transportation
- **High spending and space allocation for mobility stimulates rapid growth of private car rides:**
  Auto trips accounts for 23% of the total trip made in 2000 and 34% in 2010.
- **Low quality of public transportation service**
- **Big supply gap in parking spaces**
- **Unfriendly environment for non-motorized mobility**

交通：服务品质不高，负外部性突出
Transportation : Low Quality of Service and Serious Negative Externality

■ 巨大的负外部性

- **能源高消耗：**中国汽车耗油约占整个石油消费量的1/3
- **污染高排放：**大城市颗粒物的首要污染源是机动车
- **交通拥堵加剧：**交通拥堵常态化，秩序混乱

各大城市公共停车泊位供需缺口统计
Statistics on the Supply Gap of Public Parking Lots in Megacities



■ Serious negative externality

- **Heavy energy consumption：** oil consumption by cars accounts for 1/3 of total oil consumption in China.
- **High pollutant discharge:** cars are the major source of particulate pollutants in megacities.
- **Aggravating congestions：** traffic jam as a "new normal" resulted in disorderly transportation.

城市安全：隐患众多、管理薄弱
Urban Security: Numerous Hidden trouble and Management

■ 城市灾害形势严峻、安全性脆弱

- 我国**70%**以上的城市分布在自然灾害高风险地区
- SARS、禽流感、H1N1、爆炸事故等公共灾害事件影响重大，增大城市风险

■ 安全管理隐患突出

- 城市空间布局安全隐患大
- 城市安全管理体制不健全

■ Cities are vulnerable to disasters with fragile safety

- Over **70%** of China's cities are located at high-risk areas of natural disasters.
- SARS, bird flu, H1N1, explosion and other public disaster events increase the risk of cities with enormous influence.

■ Hidden trouble of safety management is conspicuous

- Serious safety hidden trouble of unban spatial layout
- Unsound management system of urban safety

长输油气管线切改方案
Renovation program of long-distance oil and gas pipeline

高压燃气重点监控地区图
Key monitoring areas of high pressure gas

北方某市：随着城市扩张，原有城市边缘众多高危管线，成为城市内部安全隐患。包括：长输油管线、高压燃气线

A city in North China：as the city expands, the oil pipelines and high-pressure gas pipelines located on the fringes of the city have become significant safety hazards.

2 问题评析与思考
Problem Review, Analysis and Solution

- 中国城市建设可持续发展的问题凝练
  A Review of Problems in Sustainable Urban Development in China
- 中国城市建设可持续发展问题的原因剖析
  An Analysis of Causes for Problems in Sustainable Urban Development in China
- 基于政策实质效果的多维度评析框架
  A Multi-Dimensional Evaluation Framework Based on Actual Performance of Policies

中国城市建设可持续发展的问题凝练
A Review of Problems in Sustainable Urban Development in China

城市空间 Urban Space	资源环境生态 Resources, Environment & Ecology	基础设施 Infra-structure	建筑 Buildings	交通 Traffic	城市安全 Urban Safety

建设理念利用粗放、冲击生态 Construction concept is extensive and impacts the ecosystem	建设模式高耗能、环境差 Buildings feature high energy consumption and poor environment	建设材料缺乏本土化、地域化 Construction materials are not locally sourced	建设标准低，无法满足新需求 Low standard of construction cannot meet new needs	建设强度过高，脱离人的尺度 Construction intensity is too high to be human scale	建设管理不精细，造成巨大浪费 Construction management can be careless and wasteful	建设机制单点逐利，忽视系统性 Construction mechanism is Profit-driven, not systematic

城市与资源环境不和谐 Disharmony between city and environment/resources	城市内部各系统不协调 Discordance of various systems within a city	代际不可持续 Unsustainable between generations

可持续发展问题的原因剖析
An Analysis of Causes for Problems in Sustainable Urban Development

(1) 机制体制：经济单维度发展价值观导向
Mechanism and system: Economics is the single metric for value

经济单维度发展价值观
Single metric of economics
增长 Growth　效率 Efficiency　产出 Output

考核机制：
只追求经济增长速度，不顾资源环境消耗
Performance evaluation:
only after economic growth, not consider resources and environment

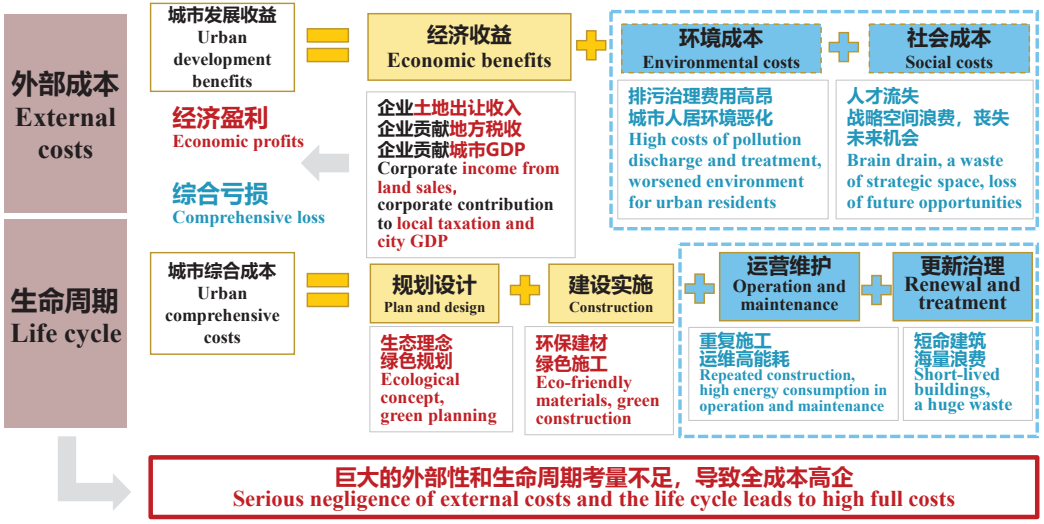
发展模式：
土地财政、房地产依赖，重投入、重消耗、重资产
Development mode:
land finance, high reliance on real estate, capital-, consumption- and asset-intensive

政府体制：
城市型政府管理区域，忽略广大乡村地区，资源过度向城市聚集
Government system:
City-centered government governs a whole region, sometimes overlooking the rural areas. Too much resources is allocated to cities

资源过度消耗、发展效率低、城乡区域不公平
excessive resource consumption, low development efficiency, and unfairness to rural areas

可持续发展问题的原因剖析
An Analysis of Causes for Problems in Sustainable Urban Development

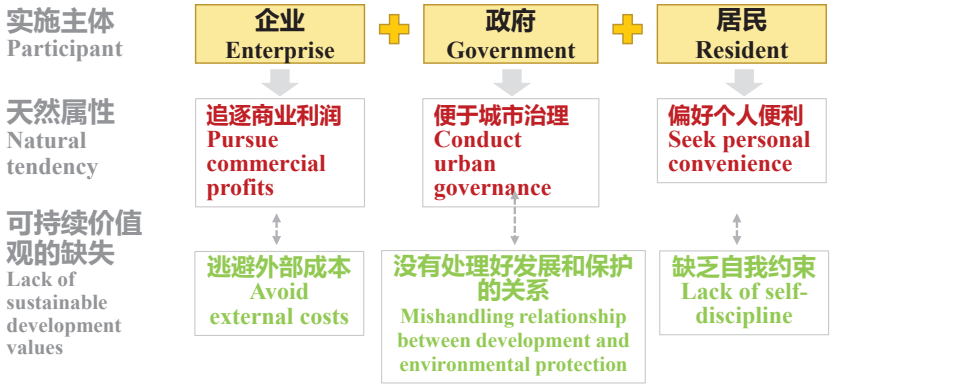
(2) 评价体系：缺乏全成本、全周期考量
Evaluation system: a lack of consideration of the full costs and the full cycle



巨大的外部性和生命周期考量不足，导致全成本高企
Serious negligence of external costs and the life cycle leads to high full costs

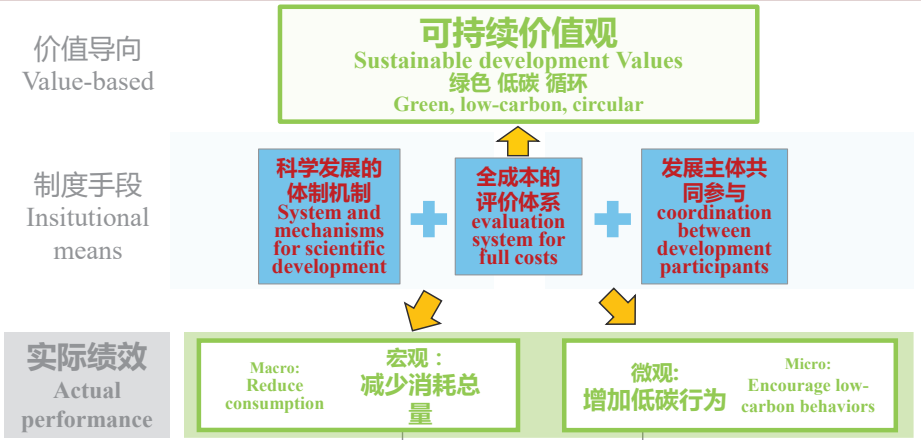
可持续发展问题的原因剖析
An Analysis of Reasons for Problems in Sustainable Development

(3) 发展主体：政府、企业、居民的行为缺乏合力
Participant in Development: insufficient coordination between government, enterprises and residents



碎片式的发展追求，无法形成可持续发展合力与共同愿景
Separate missons of development that lack coordination and a shared vision for sustainable development

基于实际绩效的可持续治理框架
A Framework for Sustainable Governance Based on Actual Performance



人与自然和谐 系统协调 代际永续
Harmony between human and nature
Systematic coordination
sustainability between generations

理念、总量、行为一体的综合评价方法
Comprehensive evaluation of concept, amount and action

	限制小汽车 Control private cars	共享电动汽车 Share electric cars	共享单车 Share bicycles	征收环境税 Levy environmental tax
导向是否可持续 Whether the concept is sustainable 可持续的价值观导向 Based on sustainable development values	√	√	√	√
总量是否趋减 Whether the amount is reduced 供给、消耗与排放总量导向 Based on amount of supply, consumption and discharge	√ 机动车保有量增速下降 2017年我国汽车产销增速比上年同期**回落11.27%和10.61%**	× 36家车企加入共享汽车布局 VS 带来的汽车供给总量需求	× 共享单车投放已超1000万辆，**产生30万吨废金属**	√ 污染物减排量将在经济杠杆下减少
行为是否低碳 Whether actions are low carbon 企业与个人行为模式导向 Based on corporate and personal behaviors	√ 私人小汽车出行占比下降 北京：**由44%下降为39.3%**	? 载客人次/空车率约束单位车循环利用率的约束	√ 小汽车短途出行**减少了55%** **70%的黑摩的司机选择转行**	√ 企业主动通过技术改造减少污染物

24

谢谢！

Thank you!

German Environment Agency

Umwelt Bundesamt

China Council for International Cooperation on Environment and Development (CCICED)

SPS on Goals and Pathways for Environmental Improvement for a Beautiful China in 2035

Wolfgang Seidel
SPS International Deputy Team Leader
Head of Department, President's Office,
German Environment Agency (**UBA**)

Aim and tasks of the Special Policy Study (SPS)

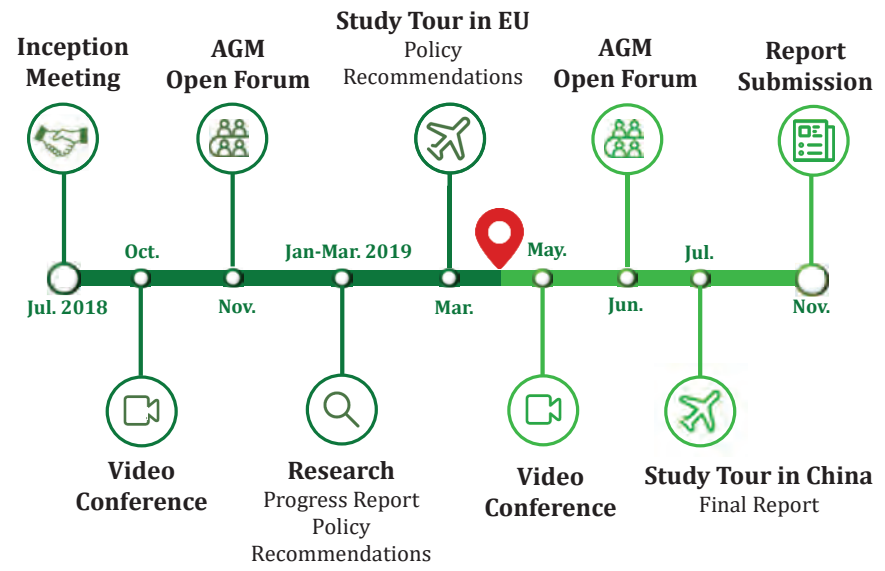
AIM:

Examine **goals of environmental quality improvement for 2035** and develop corresponding **pathways to achieve a Beautiful China**

TASKS:

- Set concrete environmental goals for 2035
- Prepare for the period of the 14th Five-Year Plan and beyond
- Set the course for China's environmental and development goals for 2050

Time Schedule



Study Tour in UK and Germany (19th-26th March)

London

Air Quality
Multi-level Governance
Public Participation

Marl Chemical Park

Sustainaible Chemicals Management
Information Disclosure
Plant Safety

Zeche Zollverein

Transition Policy
Coal Phase-out
EU Green Capital Award-Essen

UBA

Policy Recommendations Discussion
"Beautiful China Desmonstration Zones"
Scenario Development
Green Evaluation System
Green Consumption

Policy Recommendations

Beautiful China Demonstration Zone

- Consider regional differences – „common but differentiated solutions“
- Role model for other regions

Strengthen Local Governments

- Promote active compliance
- Permit better local coodination

Policy Recommendations

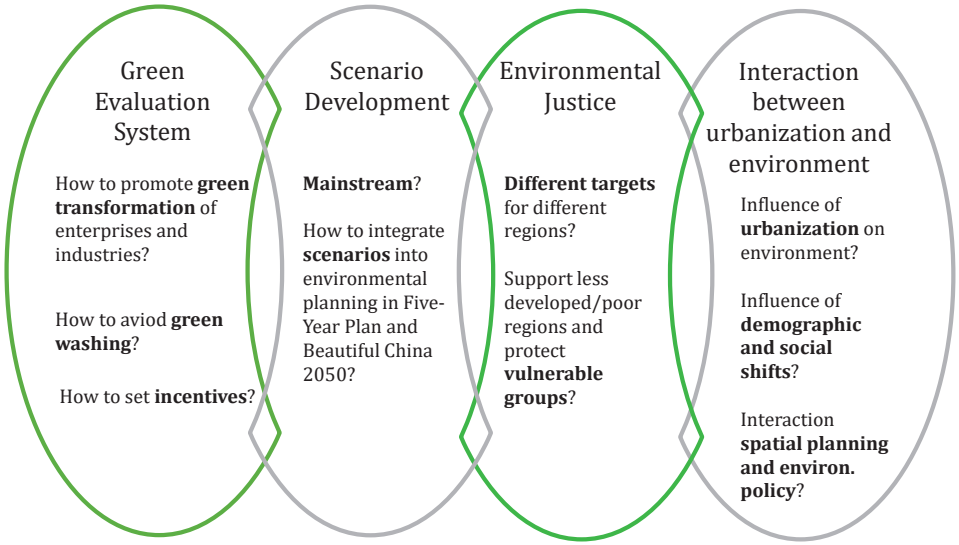
Link Health and Environment

- Raise public awareness on environmental protection
- Use in risk acessment and pollution exceedance management
- Encourage green consumption and change consumption patterns

Information Disclosure of Enterprises and Goverments

- Act as a part of monitering network
- Promote green transformation of economy
- Stimulate innovation for environmental technology

Policy Recommendations to be further discussed



Umwelt Bundesamt

Thank you for your attention!

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For any questions please contact wolfgang.seidel@uba.de

Yangtze

Eco-compensation and Green Development Institutional Reform in the Yangtze River Economic Belt (SPS 2-2)

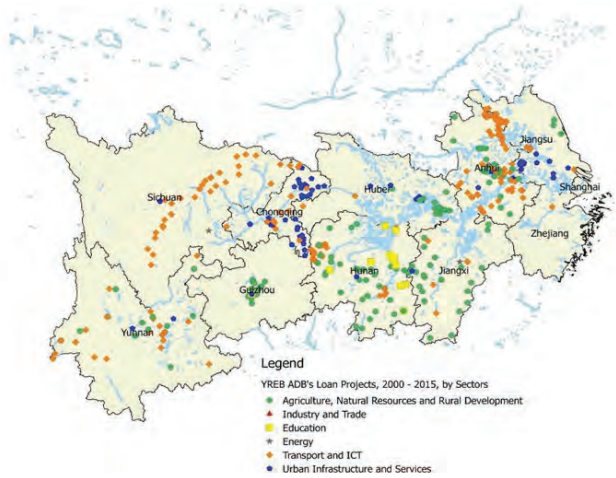
Photo by Andrew Hitchcock / CC BY 2.0

Content

- Background
- Main outputs
- Policy recommendations 2018

Background

- ADB formalized a partnership with CCICED in 2017, focused on **eco-compensation** and **institutional and legal reforms** to achieve environmental outcomes, anchored on ADB's $2b portfolio of projects under its YREB strategic framework approach.



Key facts

The Yangtze River, which is 6,380 km long, is the longest river in Asia and the third-longest in the world. The river is the longest in the world to flow entirely within one country. It drains one-fifth of the land area of the People's Republic of China(PRC) and its river basin is home to nearly one-third of the country's population. The Yangtze is the sixth-largest river by discharge volume in the world.

The Yangtze River Economic Belt (YREB) idea is distinctive and represents a significant new way of approaching river basin management for China and indeed possibly the rest of the world. The YREB is a prime candidate to become China's leading experiment for construction of an ecological civilization.

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SPS 2-2: 3 main outputs

- Eco-compensation
- Institutional arrangements
- Legal reform

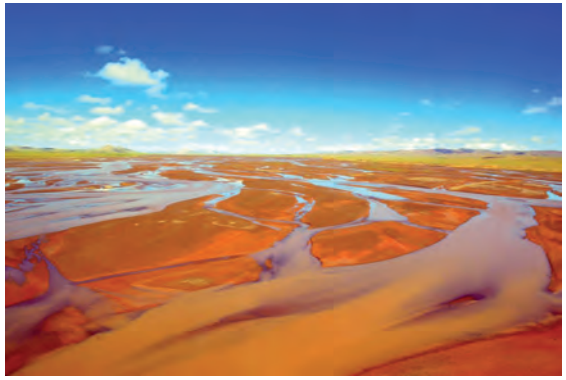


Photo by Luo Shaoyang from Beijing, China / CC BY 2.0

Output 1 – Eco-Compensation mechanism pathway for implementation

- Provide policy and research support for the implementation of the Eco-compensation national action plan and Ecological Recovery national action plan
- Identify current institutional gaps
- How to establish a proposed Eco-compensation Fund in the YREB provinces
- Local case studies in Chishui River watershed and Xin'an River watershed
- INBAR scoping study on role of bamboo for green development

Output 2 – Institutional and governance arrangements for achieving YREB development plan goals

- Institutional and governance reforms needed to support the effective implementation of the new MEE Water Bureaus
- Review how an Eco-compensation Fund (Output 1) can be introduced, including business sector engagement and contributions

Output 3 – Legal reform to support YREB development plan goals

- Identify and propose overall legislative framework for the Yangtze River Protection Law
- Support to the development of specific legislation components to facilitate effective institutional and governance reform

Policy recommendations presented at the 2018 AGM

Policy recommendation 1

Adopt a Whole-of-Ecosystem Approach (from 'Mountain to Ocean') in environmental protection planning across the Yangtze River Economic Belt. Strategically focus remediation and restoration efforts on problems that have disproportionately large impact on the overall river basin health. Two areas that require special attention are **solid waste management** in rural areas and **plastic pollution**.

Policy recommendation 2

Adopt a multiple stakeholder engagement approach to carefully identify and address any negative impacts on communities and livelihoods. Integrate gender via a multiple stakeholder engagement approach to good governance. Design institutional frameworks to incentivize long-term financial sustainability for ecological compensation and environmental protection programs**.** Development of both compulsory and voluntary instruments will best ensure robust business-sector participation in conservation finance.

Policy recommendation 3

Design institutional frameworks to incentivize long-term financial sustainability for ecological compensation and environmental protection programs in the YREB. Current transfer payment schemes are not financially sustainable in the long term. Development of both compulsory and voluntary instruments will best ensure robust business-sector participation in conservation finance

Policy recommendation 4

Establish appropriate legal and institutional mechanisms.

謝謝

雄安新区简介

Introducition of Xiong'an new area

李晓江

2019年4月3日

中国城市规划设计研究院
CHINA ACADEMY OF URBAN PLANNING & DESIGN

- Xiong'an new area will receive non-capital functions from beijing
- We try to find a new modle in the population & economics high density area;
- We try to creat a national innovative-driven new engine;
- We try to build a high quality urban agglomation area;

- 河北雄安新区重点打造北京非首都功能集中承载地
- 对于探索人口经济密集地区优化开发新模式，打造全国创新驱动发展新引擎，加快构建京津冀世界级城市群，具有重大现实意义和深远历史意义。

雄安新区空间规划的出发点

the origin of Xiong'an new area spatioal planning

1. 新区发展的持久动力是什么？

What's the sustainable engine of new area

2. 新区如何吸引人才？

How to attracitive talent people to new area

3. 新区需要什么样的空间？

What kind of space?

1. 基本情况 Basic information

区位 Location

To Bei Jing: 105km
To Tian Jin: 105km
To Shi Jiazhuang: 155km
To Bei Jing new airport: 55km

1. 基本情况 Basic information

Land:

Total 1769km²
Water 366km²
Builded area 329km²

People:

1.1 million
Urbanization rate 43%

2. 规划理念与国家要求 Planning Values

- 坚持**世界眼光**、**国际标准**、**中国特色**、**高点定位**

Global view, International stardard, Chinese character, High position

- 坚持**生态优先**、**绿色发展**

Eco priority, Green development

- 坚持**以人民为中心**、注重保障和改善民生

People centered, focus on social service

- 坚持保护弘扬**中华优秀传统文化**、延续历史文脉

Traditional culture development, heritage preservation

2. 规划理念与国家要求 Planning Values

Global view, International stardard

2. 规划理念与国家要求 Planning Values

Chinese character

Nature	强调自然与人文的相互融合， 体现自然的人文化、人文的自然化，向全世界展示中国的**自然观**。
City	新城是生态文明时代理想城市的中国城市建设范式， 建设以人民为中心、以创新为动力的学习型城市。
Rural	新区的设立是重塑中国生态文明时代新型城乡关系的重要示范， 城镇与乡村的共生共融和共同现代化是新区建设发展的基本出发点。
Culture	历史——传统文化 当下——本土文化 未来——创新文化
Space	宏观——重构城淀、镇村与新区、自然生态的天人关系 中观——传统营城模式现代化、设计城淀交融共生的环境 微观——设计新生活方式、营造公共中心轴带、特色街坊与场所

3. 目标与主要任务 Goals and main woks

目标定位 Goals

■ 绿色生态宜居新城区
Green and livable eco area

■ 创新驱动发展引领区
Innovative driven area

■ 协调发展示范区
Coodinative demonstration area

■ 开放发展先行区
Open priority area

3. 目标与主要任务 Goals and main woks

七项任务 Seven main works

- 建设绿色智慧新城 **Bulid a eco-smart city**
- 打造优美生态环境 **Build a beautiful eco enviromnet**
- 发展高端高新产业 **Develop high-level,high-tech industries**
- 提供优质公共服务 **Supply good public services**
- 构建快捷高效交通网 **Creat high effiecent transportation net**
- 推进体制机制改革 **Develop instituion reforamtion**
- 扩大全方位对外开放 **Imporve level of openess fully**

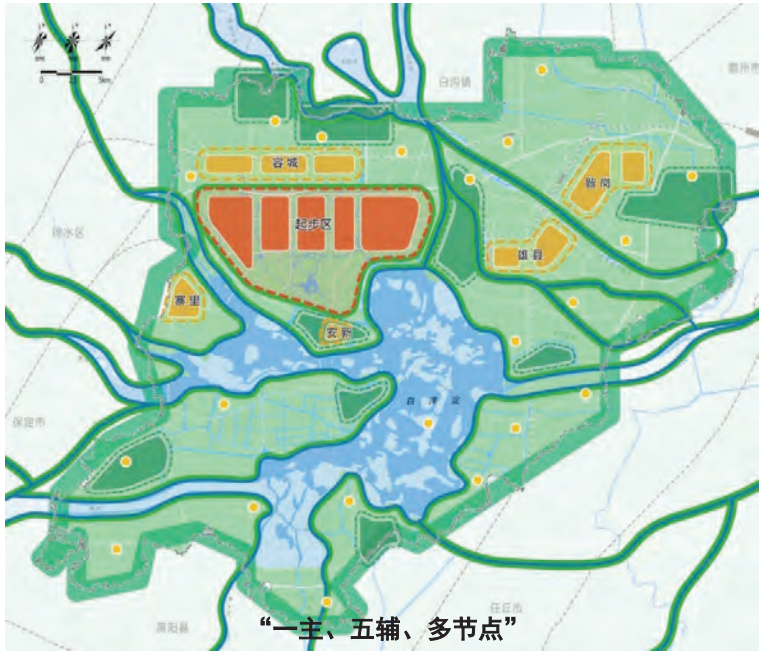
4. 空间布局 Plans

白洋淀生态治理
Eco restoreation of Bai Yangdian Lake

恢复白洋淀“华北之肾”功能。

4. 空间布局 Plans

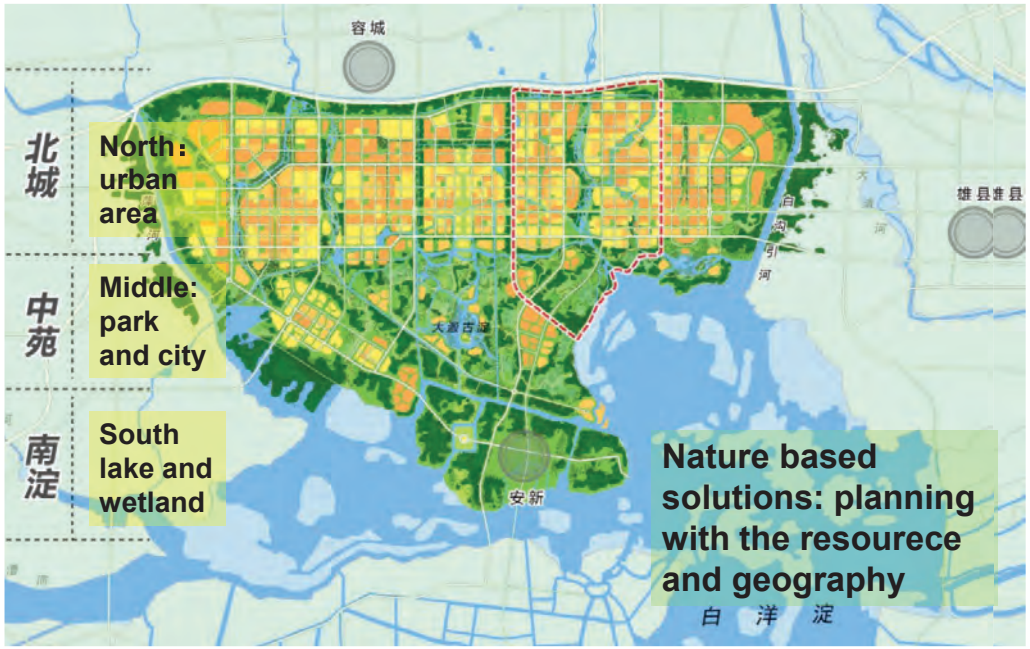
总体空间格局
Space Structure



坚持顺应自然、尊重自然，尊重自然的场地利用方式。
Nature based solutions

4. 空间布局 Plans

起步区空间格局
Start-up area planning



4. 空间布局 Plans

提供优质共享公共服务
Public service supply

- **布局优质公共服务设施**
  - ✓ 构建城市基本公共服务设施网络。
  - ✓ 构建社区、邻里、街坊三级生活圈。
  - ✓ 构建城乡一体化公共服务设施。
- **•提升公共服务水平**
  - ✓ 优先发展现代化教育。
  - ✓ 高标准配置医疗卫生资源。
  - ✓ 建立完备的公共文化服务体系。
  - ✓ 构建完善的全民健身体系。
  - ✓ 提升社会保障基本服务水平。
- **•建立新型住房保障体系**
  - ✓ 优化居住空间布局。
  - ✓ 改革创新住房制度。

- **Public service facility**
  - ✓ Public service network
  - ✓ Commuinnty-Neighborhood-District
  - ✓ Urban-rural together
- **Social service quality**
  - ✓ Education。
  - ✓ Health
  - ✓ Culture
  - ✓ Sports
  - ✓ 提升社会保障基本服务水平。
- **Affordable housing**
  - ✓ Residential area planninng
  - ✓ Housing institution reformation

5. 国际竞赛 International competetion

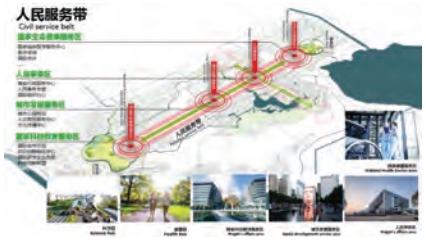
第一轮：2017年，雄安新区起步区城市设计国际咨询

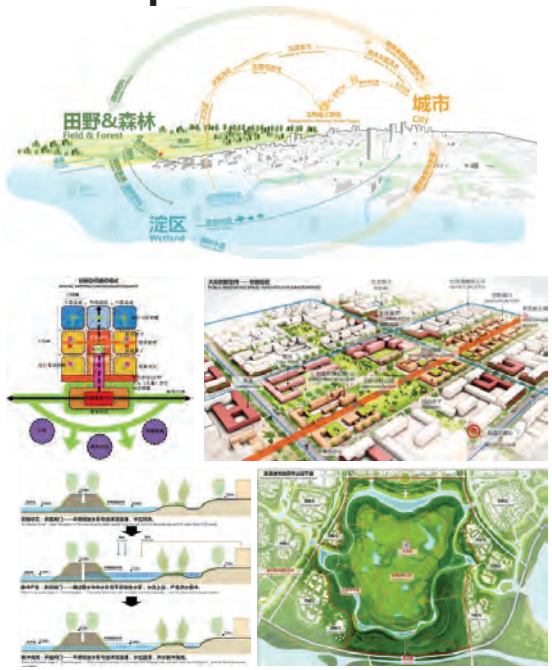
First round: 2017, start-up area urban design biding

01 ITA 意大利阿克雅建筑师事务所
02 USA 北京清华通亨规划设计研究院有限公司 艾奕康环境规划设计有限公司
03 迈克尔·索金事务所有限责任公司 西安建大城市规划设计研究院
04 AUS 深圳市城市规划设计研究院有限公司 澳大利亚怡境师有限公司
05 GER 上海同济城市规划设计研究院 德国ISA意厦国际设计集团
同济大学建筑设计研究院（集团）有限公司
06 GER 德国SBA公司
07 USA 华南理工大学建筑设计研究院 美国JCFO公司
08 CHN 南京东南大学城市规划设计研究院有限公司
09 JPN JPM株式会社都市环境研究所 高野Landscape Planning株式会社
10 FRA 欧博迈亚工程咨询（北京）有限公司
11 中国建设设计院有限公司 天津华汇工程建筑设计有限公司
戴水道景观设计咨询（北京）有限公司
12 SPA 西班牙OSA公司

5. 国际竞赛 International competetion

主要创新理念
Innovative concept



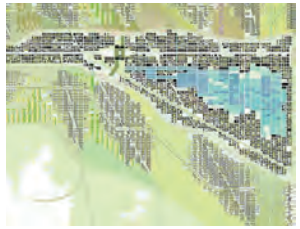


- “轻型建设”
- “健康城市”
- “创新城”
- “水系治理”
- “暖城”

5. 国际竞赛 International competetion

主要创新理念
Innovative concept

“淀水方城”

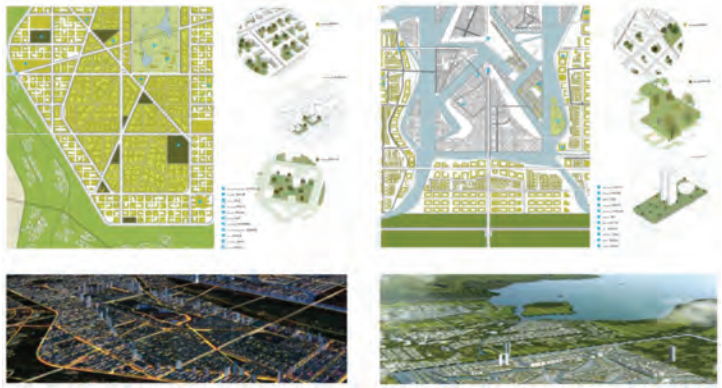


“有感知力的城市”

5. 国际竞赛 International competetion

整体布局理念
Planning option

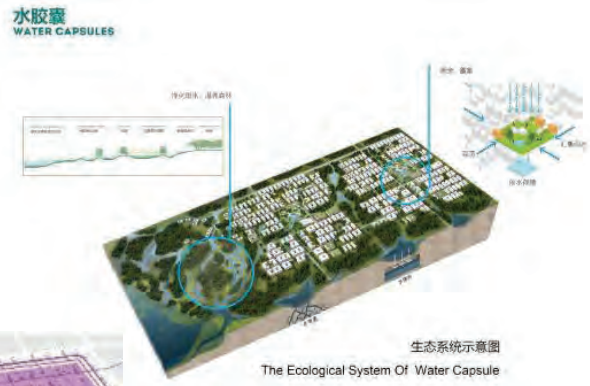
空间找形



商务组团和文化组团

5. 国际竞赛 International competetion

城市设计手法创新
Good urban design thinkings

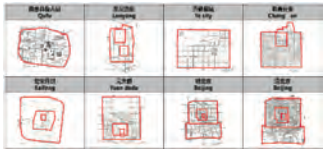


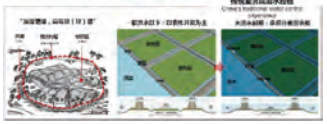
- “创新之芯”
- “水胶囊”
- 全生命周期的创新空间

5. 国际竞赛 International competetion

城市设计手法创新
Good urban design thinkings

- 文化自信传承
- 古洼地公园
- 高铁枢纽周边地区城市设计、南部城市近郊地区城市设计。





5. 国际竞赛 International competetion

第二轮：2018年，雄安新区启动区城市设计国际方案征集

Second round: 2018, exceuting area urban design biding

1号方案. GER 德国佩西
2号方案. USA SOM&TLS
3号方案. 华南理工&FO
4号方案. CHN 中建北林
5号方案. AUS 澳洲COX
6号方案. USA&FRA AECOM, 岱禾&贝氏
7号方案. USA 清华+SWA+启迪+HellerManus
8号方案. UK 奥雅纳
9号方案. ITA 意大利Gregotti
10号方案. JPN 日本日建设计
11号方案. USA 英国Foster
12号方案. SPA 西班牙Bofill

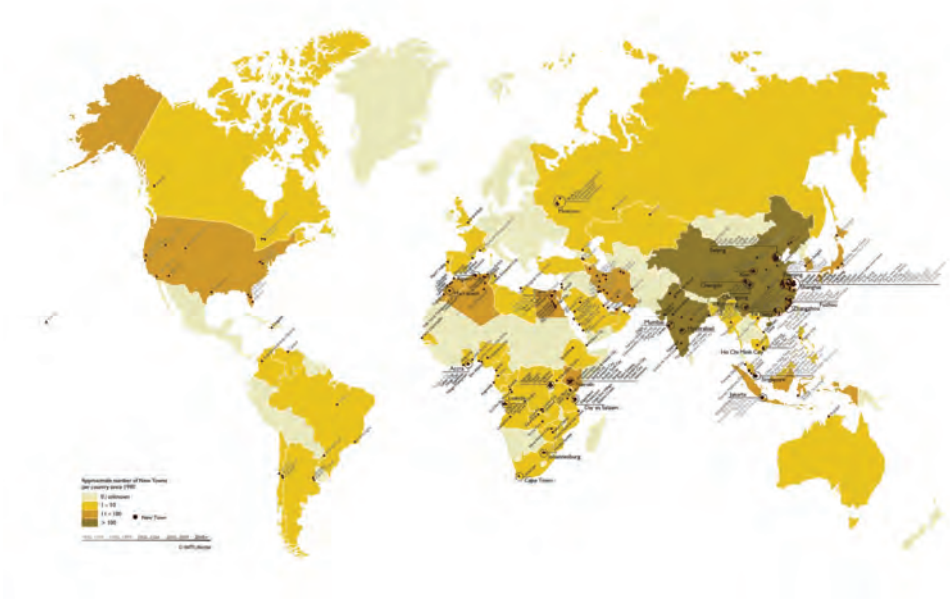
Thanks!

INTER-
NATIONAL
NEW TOWN
INSTITUTE

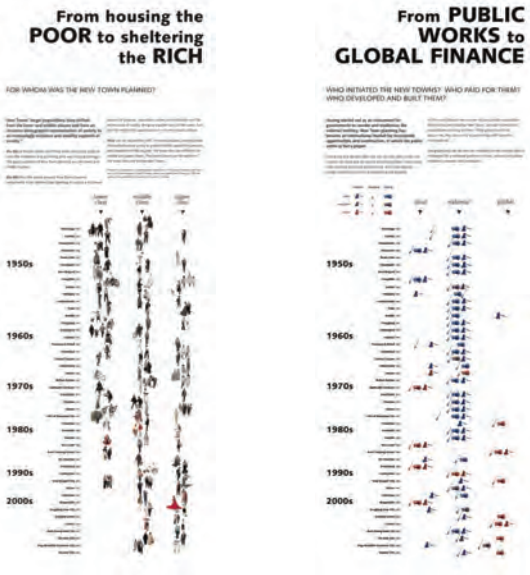
SUSTAINABILITY OF INTERNATIONAL NEW TOWNS
LINDA VLASSENROOD

WHAT IS A NEW TOWN?

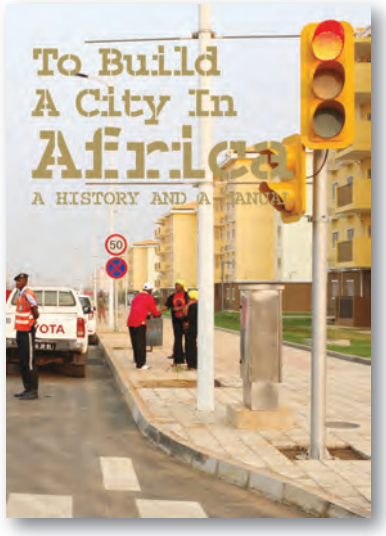
- New Towns are cities or towns that are designed from scratch and built in a short period of time.
- New Towns are designed by professionals according to a master plan on a site where there was no city before.
- New Towns are comprehensively planned, mixed-use urban developments intended for more than 30,000 residents, and displaying some degree of political autonomy.
- New Towns are not urban extensions, or redevelopments of existing urban areas.

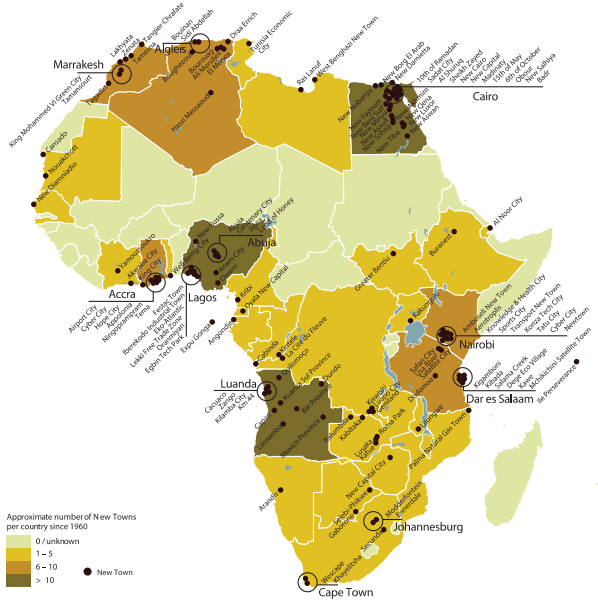


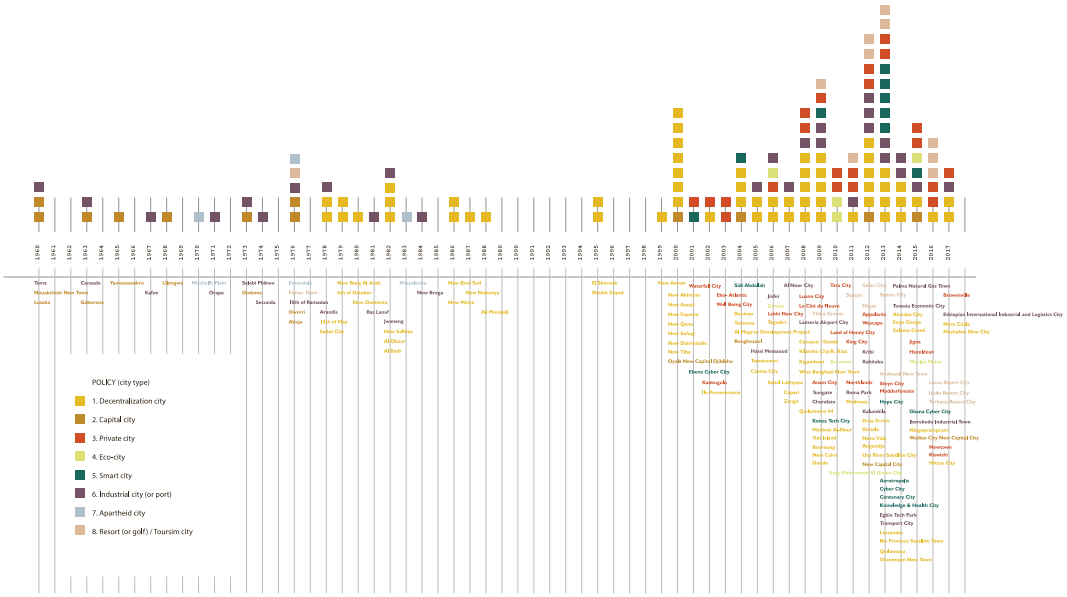
2017



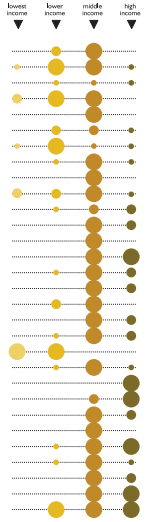
Authors: Rachel Keeton and Michelle Provoost





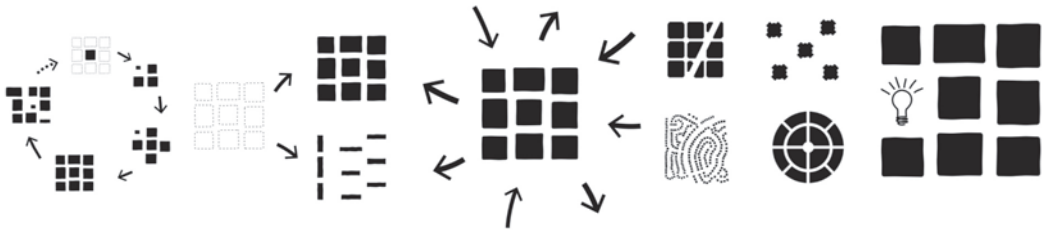


FOR WHOM WAS THE NEW TOWN BUILT:



WHO INITIATED, BUILT AND FINANCED THE NEW TOWN:

A MANUAL: 10 PRINCIPLES



1. Planning is an ongoing process
2. Plan for adaptivity
3. No New Town is an island
4. No cut-and-paste models
5. Embrace new ideas

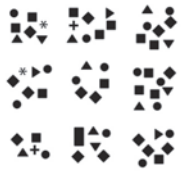
A MANUAL: 10 PRINCIPLES

6. Infrastructure for all, from the start

7. Blue-green network as central framework

8. Incorporate local cultural heritages

9. Top-down + bottom-up



10. New Towns need diversity

1

1. Planning is an ongoing process

No city is permanent or static, and everything that was once modern eventually becomes outdated. The cities that are most effective are those that reflect and adapt to changes over time. New Towns should be conceptualized as a very long-term process, rather than a short-term product. They need time to develop into complete and vital urban environments. All cities continuously evolve over time, and this evolution should be clearly addressed in terms of phasing, sequencing, maintenance, and financing.

To do so, the (master) planning documents must be re-evaluated at key stages, and especially when growth-related, large infrastructural or programmatic choices are being considered. Monitoring and evaluation should be ongoing throughout the New Town's life cycle, so that current conditions are understood, changes are documented and their consequences can be processed in consecutive planning phases. It usually takes New Towns at least 50 years after initiation and sometimes longer to reach maturity. Private developers should therefore work with local governments to achieve long term results. No city is ever finished.

Cergy Pontoise, France, one of the Villes Nouvelles around Paris, is based on a Master plan designed in 1970, allowing for continuous growth of the city (presently 200.000 inhabitants), within the infrastructural framework of the plan. The program, density, design and architecture of the individual districts is adjusted according to the demand, economy and financial possibilities of the moment. Therefore, the identity of each district differs greatly, reflecting the needs and Zeitgeist of each decade. Fifty years after the initial master plan, the framework is still being used to expand the city, while the urban design of the new districts is completely contemporary.

2

2. Plan for adaptivity

When a city is conceived according to a master plan aimed at a single, final result, it limits the New Town's capacity for change. For this reason, New Towns have historically struggled with the need to adapt to dynamic economic or social conditions. Their master plan was conceived at a single moment in time, and because planning inevitably reflects the conditions at that one moment, a master plan is frequently obsolete before it is even realized.

Demographic projections indicate continued urban growth over the next century throughout the African continent. The master plan for Abuja, Nigeria (1979), for example, was planned for a projected population of three million after 25 years, but its metropolitan area currently has six million residents. Others, like Dodoma, Tanzania, have never reached the population size they expected to achieve. To adapt successfully, New Towns must be able to absorb influxes (of varying sizes) through increased density and/or extension, becoming increasingly compact over time without degrading public and green spaces.

Demography is just one of many factors that may not crystallize as expected. New Towns will also have to address future issues that we simply cannot anticipate. The organizing urban form should therefore create spatial conditions that enable adaptation to a number of variables, including: demographic, economic, and environmental. Urban planning should leave space for reinterpretation over the course of years. A master plan should not create a final image, or a blueprint that needs to be realized, but rather a spatial vision for the future and a solid framework to reach this goal while leaving space for new insights and infill. Planning for adaptivity requires the capacity to accept uncertainty.

Ningo-Pram Pram, Ghana is a plan for a new city of 1.500.000 inhabitants in the fast urbanizing coastal area east of Accra, co-designed by UN-Habitat. Rather than a master plan, this is a strong framework for the development of a naturally growing city. Based on an infrastructural grid system coupled with ribbons of green and water, this design addresses the need for inclusive housing areas, the need to accommodate excess flooding during peak rain season and the explosive urban sprawl in the Accra region.

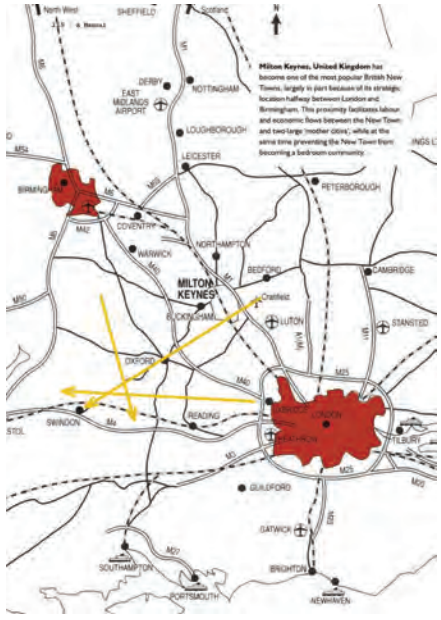
3

3. No New Town is an island

Many New Towns in Africa are developed on sites that are chosen for their low price, the transparency of ownership, or relationship to a person with political influence. This can cause problems related to access as New Town residents find themselves with long commutes to and from a 'mother city'. A location that is not connected by existing infrastructure can also seriously limit the New Town's growth: residents or businesses are less likely to move to a New Town that is difficult to access.

The site selection phase is therefore critical to the future success of the New Town. Potential locations must be considered within their regional and national contexts. The sites should be selected based on accessibility (efficient infrastructural connections to surrounding urban areas), local needs, geographic conditions, potential for growth, and position in existing social, financial and production networks.

Planning New Towns requires a thorough evaluation of the position of the city with respect to regional, national, and global flows. To ensure their success, future New Towns should be based on a comprehensive national spatial policy and not planned as isolated projects.



Milton Keynes, United Kingdom has become one of the most popular British New Towns, largely in part because of its strategic location halfway between London and Birmingham. This proximity facilitates labour and economic flows between the New Town and two large 'mother cities', while at the same time preventing the New Town from becoming a bedroom community.

4

4. Use no cut-and-paste universal model

There is no one-size-fits-all model for New Towns: models from one part of the world don't guarantee success when exported to another part. The economic acceleration o a city like Dubai doesn't mean that a simi r model can be equally success ul or appropriate in African countrie , with completely different economic and d mographic compositions. How ver, we are witnessing a growing number of planned cities in Afric hat take models from the Middle East and Asia as a chetypes to emul .
The reason for this is that inter ional companies have pinpointed urbanization in Afr a as th next global opportunity for profit. Not only private companies, b also state-owned companies in China, Korea, and Sin aim to pro ong their success in other parts of the world by exporting andard ur anization models ntries.
As a result, the influx foreign parties also results in the import of foreign urban concepts, often uncritically adopted by local governments. This shows how global capitalism has become perhaps the most powerful force for homogenization of the contemporary urban environments. It also helps explain the uniformity of the African New Towns presented in this book, and their strong similarities with New Towns in parts of the world such as Asia, Latin America or the Middle East.
Instead of accommodating this imported uniformity, every country should be capable of developing its own urban models based on local culture, climate, politics, social needs and financial possibilities. To support this contextualization, local capacity-building within the planning discipline, planning and design education, and training are necessary and should be stimulated at national, regional, and local levels. Next to that, there is a need for a mentality change to inform future urban design, including an awareness of the incredibly diverse African urban traditions and the unique characters of present day urbanization processes in Africa.

5

5. Embrace new ideas

The culture of New Towns is forward looking, with an emphasis on innovation and experimentation. This ambition is optimistic and should be fostered. Every New Town in history has attempted to surpass cities of the past and showcase state-of-the-art urban design, technology, finance, or architectural techniques. Recent innovations have included experiments in the fields of sustainability, climate change response, and energy, as well as social changes such as participatory design, resident engagement, and revisions of the relationships between government and residents.
For future New Towns this means the development of new solutions (not only in technology but also social, cultural, political and financial innovation), should be supported in order to improve the fairness and competitiveness of the city. New Towns can be excellent laboratories for experimentation, as well as implementation of the sustainable urbanism goals outlined in the New Urban Agenda.

One of the first 'eco-cities' to be constructed, **Masdar City, United Arab Emirates** was envisioned as an environmentally sustainable New Town, using state-of-the-art technologies to aim for carbon neutrality in a country powered by petroleum profits. Masdar planners Foster and Partners designed both passive and active energy solutions for the New Town, including building-mounted solar panels, shaded pedestrian walkways, narrow spaces to capture prevailing winds, an electric 'pod' transport system, and water conservation techniques. These innovations were ambitious and ground-breaking, and while Masdar has not grown to be the carbon-neutral city that was promised, it remains an inspirational example of how a New Town can function as a laboratory for experiments aiming for new standards, rather than repeating what has been done before.

5

The future city of **Vinge** is currently **Denmark**'s largest urban development project, combining nature and technology. Smart Grids and Smart Technology come into play when monitoring energy consumption, rainfall, humidity and so forth, enabling the community to strive for a sustainable lifestyle. In addition, technology serves as a tool to use decentralized renewable energy, to develop low carbon mobility, to optimize the operation of infrastructure and services, to create distributed places of work and learning and to organize participatory governance and planning. Citizens can communicate with each other and share ideas and visions with the planners through various digital platforms, thus becoming active participants in the creation of their future city.

Curitiba, Brazil, has become well-known as an innovative and sustainable city. Without a budget for standard waste recycling plants, the city started the 'Lixo que nao é Lixo, (garbage that is not garbage) and 'Cambio Verde' (green exchange) programs, both dealing with waste management. With 'Lixo que nao e Lixo' the city established complementary currencies to reward people for separating their organic and non-organic recyclable wastes and bringing them to waste stations, where they can be exchanged for public transport tickets, food, and school-books. 'Cambio Verde' is the program where citizens receive locally grown, organic, healthy foods in exchange for their recyclable waste or can buy them at 30% cheaper prices than in regular stores. This way, the city combines waste management and promotes healthy food consumption at the same time.

6

6. Infrastructure and mobility for all, from the start

New Towns are usually located at a short distance from their 'mother city' but still programmatically conn ted when it comes to work and services. Strong and diverse tr portation connections are therefore essential. Many New Town egin phased development with housing construction, leaving ublic transport for a later moment, and usually this has to be m stake. The provision of public transport within the city and to urroundin cities from the development is a main factor in the ccess or failure of New Towns. Without good and efficient mobility options the image and attraction of the New Town will suffer in a way that is hard to overcome at a later stage. To combat this, services, amenities, road infrastructure, and public transport must be provided and should be initiated before housing becomes available. Various constructions have been developed to support this approach, such as temporarily reduced rents for early service providers.
Transport and mobility plans should be an integral part of the urban design and overall territorial plans, connecting the density and program to the availability of transit options (commonly called transit-oriented development, or TOD). The urban plan should promote a wide range of mobility options and not prioritize cars over other transit types. It should include mass transit options such as trains, trams, or buses, and encourage slow traffic by providing distinct routing for carts, bicycles and pedestrians. Increasing the diversity of transport options makes mobility safe, efficient and accessible for a wider range of users.

The functioning of **Curitiba, Brazil** depends heavily on its Bus Rapid Transit system which has become a textbook example of the introduction of public transport in a developing country. It was introduced in 1974 as part of a comprehensive masterplan for the city and consists of 81 km of dedicated bus lanes on major streets, serving more than 2 million daily commuters. Not only is it efficient, frequent (up to every 90 seconds) and reliable, but the attractive design of the tubular stations also adds to its good reputation. With growing congestion in Curitiba, the city is now looking to develop a bicycle path network as an addition to car and bus traffic.

7

7. Use a blue-green infrastructure as the central framework

New Towns often treat their underlying landscape as a tabula rasa. This omission can contribute to (unintentional) environmental destruction. It can also make New Towns more vulnerable to the effects of climate change, which are becoming increasingly visible in the form of droughts, floods, and natural disasters. It is critical to consider the specific opportunities and limitations offered by individual sites, especially in areas facing rapid urbanization or located near water systems. A solid backbone of (green) open spaces and a (blue) water network can provide a robust and distinctive organizational framework for a New Town.

According to UN Habitat's urban design principles, green spaces should account for 30% of total area and offer safe, quality public spaces that are open and accessible to all. Green spaces should be multifunctional areas for social interaction and cultural exchange. This network should underpin every New Town design by combining ecology, flood prevention, and water retention with public space and leisure.

Spatial planning (where to build) and urban design (how to build) are powerful instruments to increase a New Town's resilience. Any urbanization puts a burden on local resources and environmental conditions, and increases the demand for water. This can result in competition (with industry and agriculture) for limited natural resources, and it may also increase waste, pollution, the risk of flooding, and depletion of non-renewable groundwater. The scarcity of drinking water, wastewater treatment, and the ecological quality of aquatic ecosystems in any New Town and its immediate surroundings are therefore important considerations for the design of an urban plan.

The backbone of **Vinge, Denmark**, a new development of 370 ha that is expected to have 20,000 inhabitants and 4000 jobs when fully built, consists of green and blue landscape. This elongated ecological zone connects all the different housing neighbourhoods. While providing structure and handling rainwater, it also offers spaces for leisure and roads for slow traffic, combined with collective services, shops, and schools. Even the train station is connected to this central green zone.

7

The capital city of Punjab, **Chandigarh, India**, was designed in the 1950s by Le Corbusier as a rectangular and rational grid structure of blocks. This efficient masterplan however was enlivened by irregular natural strips woven through the urban fabric. On the valley of a former small river, a 'Leisure Valley' was designed as the green backbone of the city. Together with the semi-public green areas inside the building blocks, and the water retention areas just outside of the grid, these elements together formed the 'lungs' of the city.

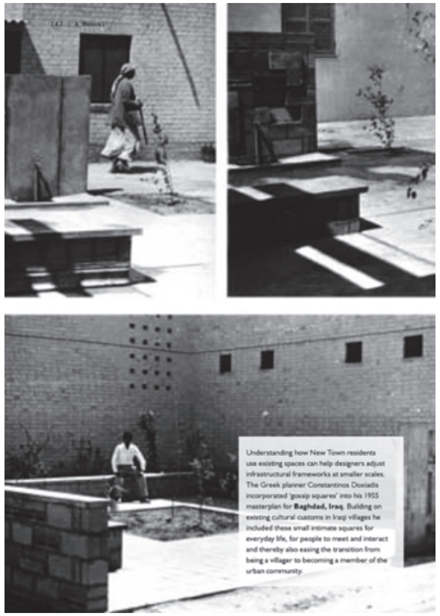
Surrounding foodsheds should be protected and growth should be structured so that it does not threaten productive agricultural land. **Nakuru, Kenya** is an example of a city successfully combining urban and rural fabrics. Nakuru is organized like an African version of Frank Lloyd Wright's Broadacre City, a grid structure with houses on large plots of land. The town provides urban amenities but also protects and preserves adjacent agricultural fields, ensuring the town's continued food security as it grows.

8

8. Incorporate local cultural heritage(s)

Many contemporary New Towns are developed by international companies with limited knowledge of the local context. This can result in New Towns that use generic urban models and architecture and miss opportunities to provide more varied and authentic urban environments. Alternatively, embracing local heritage has the power to stimulate the inclusion of more groups of people, and increase the connection between people and place. Heritage can be architectural monuments or natural landmarks; it can also be local habits and histories or local building techniques and traditions.

Cultural heritage, whether tangible or intangible, is an enrichment in the development of any New Town. Incorporating heritage can help create unique and authentic environments that people can identify with, and that are instantly recognizable. Cultural assets of local populations should also be integrated in plans and researched throughout the planning process. This supports the development of both identity and community. Spiritual connections to sacred spaces (waterways, trees, etc.) should be well-understood, respected, and celebrated. No-go sacred spaces should be zoned appropriately. Customary laws, social norms, and taboos should be researched and accommodated through design.



Understanding how New Town residents use existing spaces can help designers adjust infrastructural frameworks at smaller scales. The Greek planner Constantinos Doxiadis incorporated 'gossip squares' into his 1955 masterplan for **Baghdad, Iraq**. Building on existing cultural customs in Iraqi villages he included these small intimate squares for everyday life, for people to meet and interact and thereby also easing the transition from being a villager to becoming a member of the urban community.

9

9. Combine top-down and bottom-up

New Towns by definition share a largely top-down approach, with a fixed hierarchical relationship between the government or private party developing the city and the residents who live there. These cities are based on masterplans that often regard the site as a clean slate, depicting surrounding areas as a white void. In reality, a tabula rasa simply does not exist: there is always an underlying landscape, and farmers, nomads, or other residents can usually be found on or near the site. To become more resilient and fair, and to unleash the vital dynamics that can season a new urban area, New Towns should provide for a more inclusive and participatory approach. To that end, existing villages or (temporary) communities using the development site should be respected as pre-existing elements of the plan. The plan should actively prevent illegal and unfair displacement of people.

The first phases of a New Town are often managed by large organizations. This is generally a heavily top-down period. To encourage more democratic opportunities for public participation, New Towns should move towards municipal governance as soon as possible. This allows for more representative governance, and a greater diversity of feedback loops for urban managers and planners. Early on, there should be room for many voices: residents' committees should be representative and engagement should be encouraged.

European and American New Towns have shown that after a few decades they can become too vulnerable when dependent on just one institutional owner or developer. During the course of the city's development it will benefit from residents' involvement and private building, economic, and cultural initiatives. The planning process should take this into account and provide the opportunity for more stakeholders to become part of the process of making a new city.

Almere, NL, is experimenting with a complete reversal of roles in which the city is expanded not by top-down plans but by the actions of its citizens. The development of a greenfield neighbourhood in the polder, called Oosterwold is part of a city-wide program to become greener and more participatory. Contrary to almost all other New Towns, there is no masterplan underlying this development, only a set of rules, developed by the Dutch architecture firm MVRDV. Safeguarding the green and ecological character of the area, the rules provide for an organic development of the area in which residents not only build their own housing, but also cooperatively construct roads and other shared infrastructures.

10

Urban Forms for Energy & Resource Efficiency

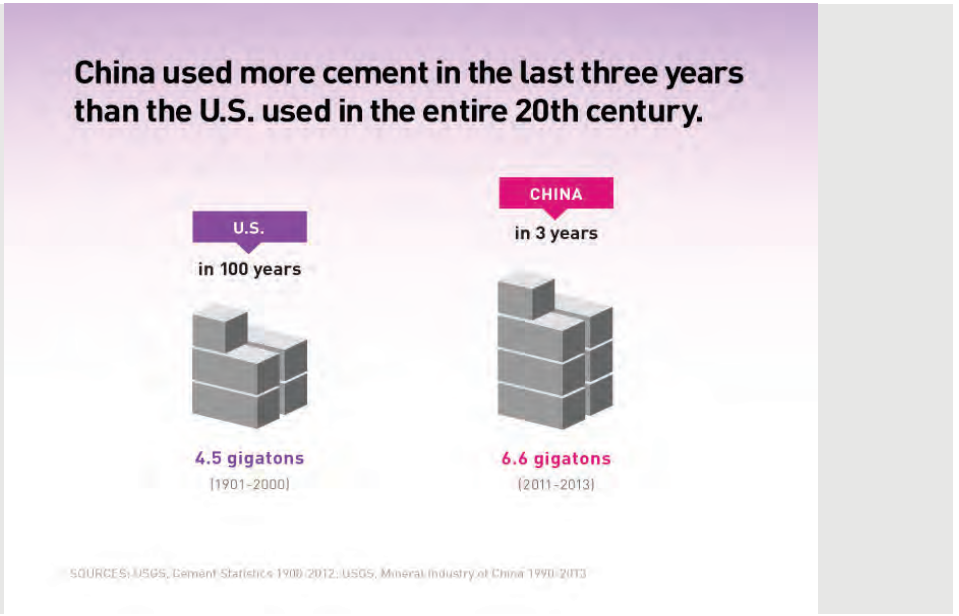
Lessons from IRP Weight of Cities Report

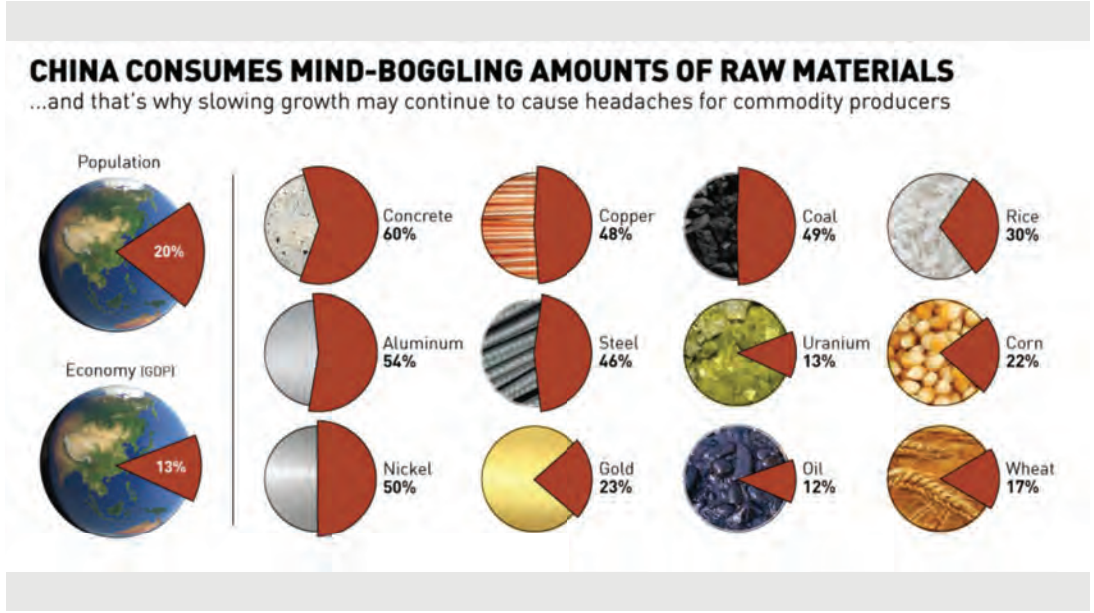
Serge Salat
International Resource Panel Member – UNEP Cities Unit Special Advisor
Urban Morphology and Complex Systems Institute President

Round Table on Green Urbanization and Environmental Improvement
Task Force of China Council for International Cooperation on Environment and Development
Den Haag April 8, 2019

- Urban areas account for between 71 % and 76 % of CO_2 emissions from global final energy use and between 67–76 % of global energy use.
- Urban travel currently accounts for more than 60 % of all kilometers traveled in the world. Urban transport is currently the main source of global carbon emissions and largest local source of urban air pollution.

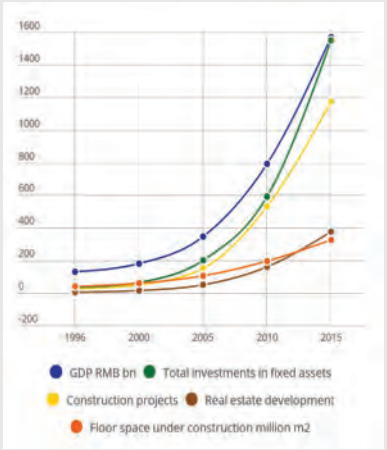
- The latest scientific consensus is clear: **a shift to a circular economy is needed to mitigate the increasingly tangible effects of climate change.**
- Cities, which are hubs of resource consumption, absorb more than **70%** of global resources and emit **60%** of all waste and emissions.
- Research and piloting done under the UNEP-led Global Initiative for Resource Efficient Cities (GI-REC) suggests that part of the solution to our climate dilemma might be to focus on consumption in urban areas (and with it the underlying value chain productions of goods, materials, services, and investment decisions).

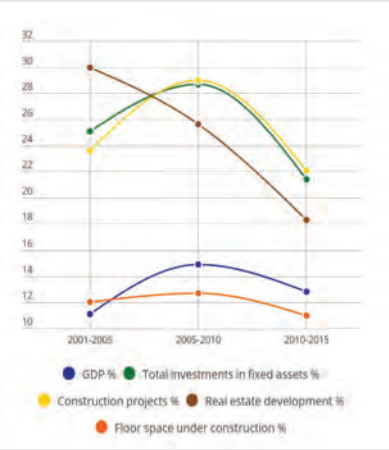




GDP growth in Chinese cities has been driven by investment in fixed assets and by construction projects

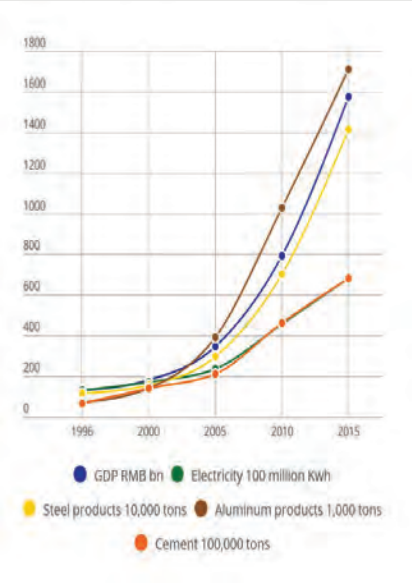
The case of Chongqing





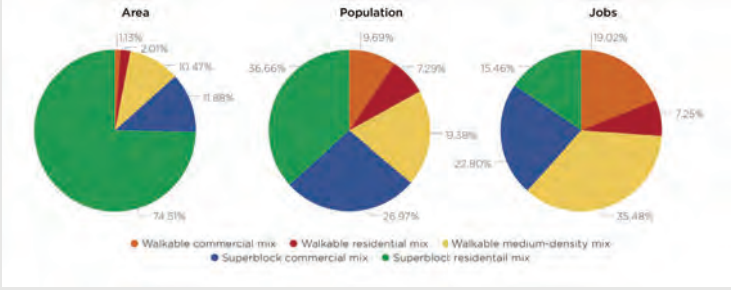
Left: GDP and investments in fixed assets.
Right: average annual growth rate of GDP and investments in fixed assets.
Source: Urban Morphology Institute. Data from Chongqing Statistical Yearbook.

Left: Electricity and raw material production in Chongqing economy. Source: Urban Morphology Institute. Data from Chongqing Statistical Yearbook.



As one of the main drivers of Chongqing economy is investment in fixed assets, growth has been fueled by production of cement, steel and aluminum products at almost the same pace as GDP.

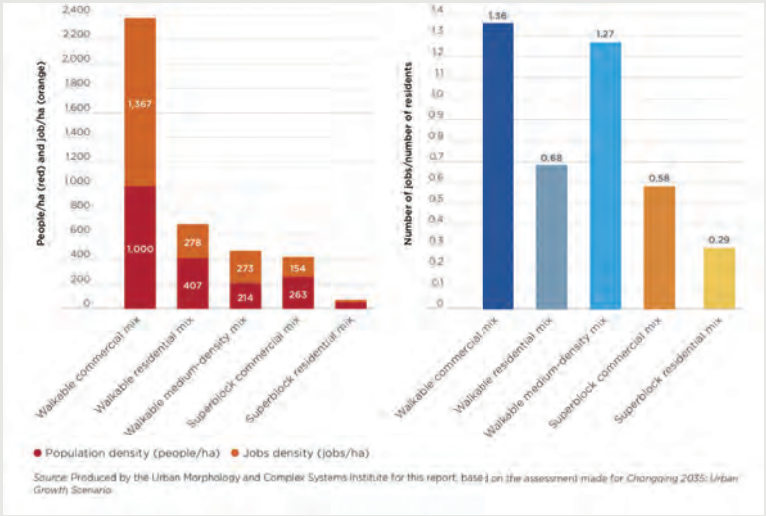
Illustrative Diagrams Depicting the Urban Form of Superblocks (Left) and Walkable Development (Right)



Share of Chongqing's Urban Built-Up Area, Population, and Jobs in Different Urban Types

High Rise is the opposite of High Density

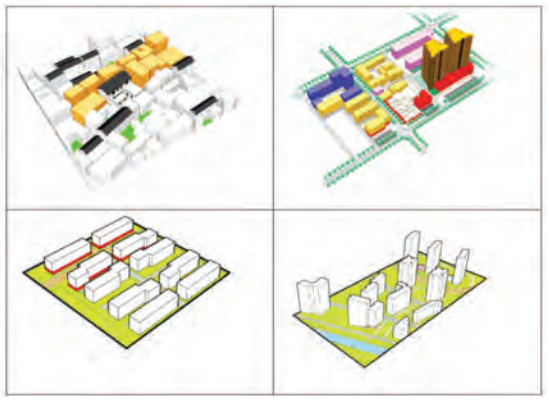
It is 4 times less dense than a continuous urban fabric 7 floor-high

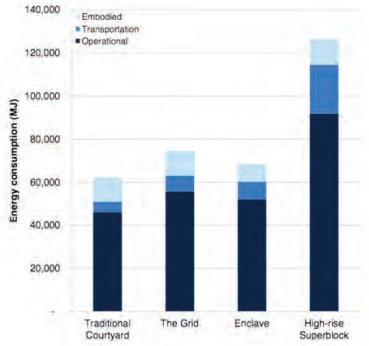


People and Job Densities in Chongqing by Urban Form Type

Job/Resident Ratio in Chongqing by Urban Form Type

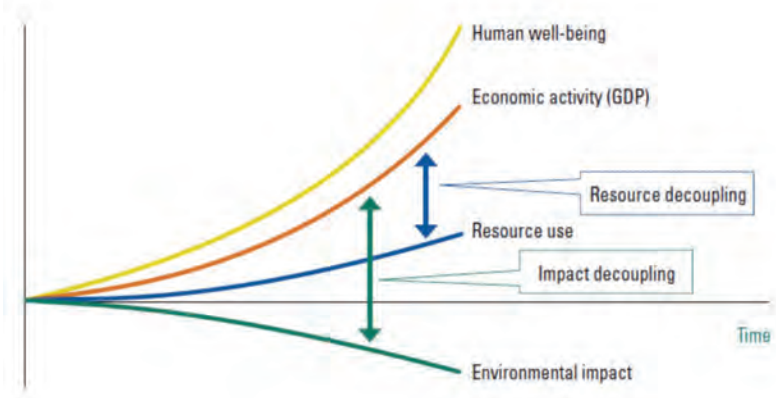
High Rise multiplies by 2 energy needs compared to any other kind of urban fabric for all types of energy consumptions





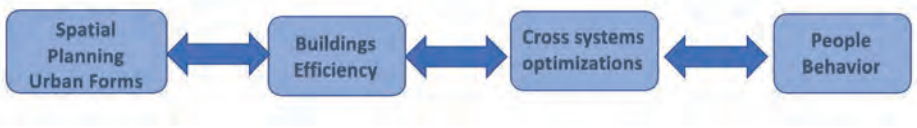
Energy consumption by prototypes. Source: Energy Foundation, MIT, Tsinghua University.

There is an urgent need of decoupling economic growth from resource use and GHG emissions



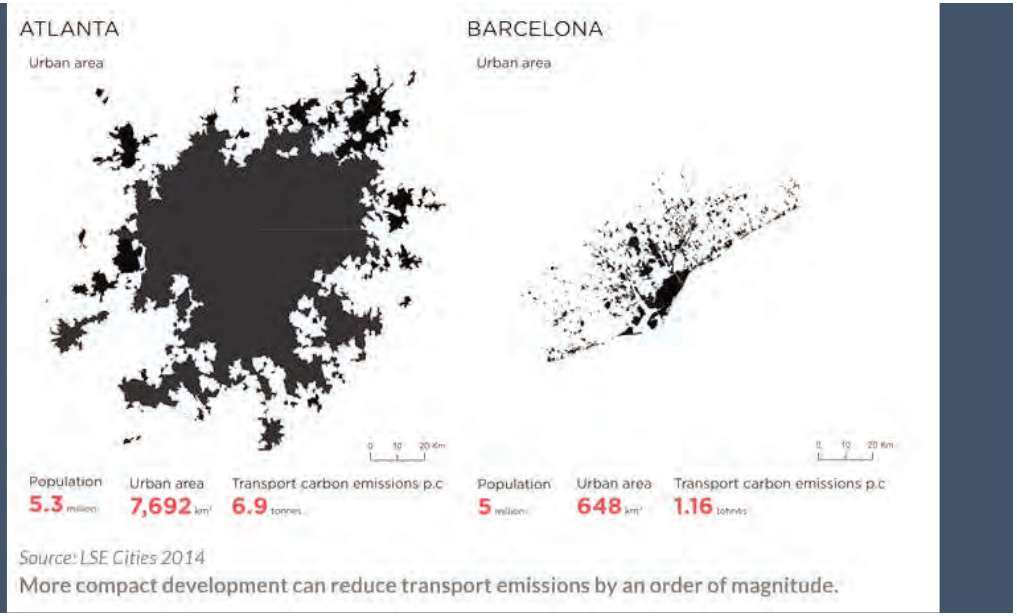
- UN International Resource Panel Report, *The Weight of Cities,* suggests a new approach to focus on low-carbon, resource-efficient, inclusive cities.
- This report calls for a new strategy and presents the parallel actions on urban planning, sustainable design, resource-efficient components, and infrastructure for cross-sector efficiency that are required for a transition towards low-carbon, resource-efficient and socially just cities.
- The report suggests a **4-stepped cascading approach** leading potentially to a **90 percent reduction** in urban energy and resource use and in associated CO_2 emissions. When observing actual cities, differences between neighborhoods can be even higher and reach up to 20-fold differences.

The 4 stepped approach can be summarized in the following chart:



- International research suggests that each of these levers has the potential to divide by at least 2 the h urban energy loads and associated GHG emissions.
- The four levers have a multiplicative impact on energy and resource efficiency with cascading effects. The actual improvements in energy and resource productivity of each of these interventions are not simply the sum of each intervention, but are multiplicative if they are implemented in mutually reinforcing ways.

LEVER 1 : SPATIAL PLANNING & Urban Design



- *Atlanta emits 10.7 times more CO_2/people/year than Barcelona*

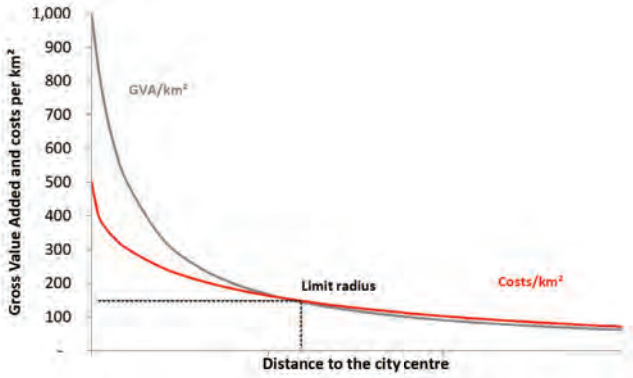
- *Only 4 % of Atlanta population lives within 600 m of an urban rail station while it is 60 % in Barcelona*
- *Road length per capita is 40 times higher and water network cost /capita is 13.5 times higher in Atlanta than in Barcelona*
- *The average GVA per km² of built up area is 15 times higher in Barcelona than in Atlanta*

$$Urban\ productivity/km^2 = GVA/km^2 - CapEx/km^2 - OpEx/km^2$$

This equation shows that urban productivity is much lower in Atlanta than in Barcelona: GVA/km² is 15 times lower; components of capital expenditure such as road networks costs / km² are 50 per cent higher; operational costs components such as transportation energy consumption are 10 times higher.

The Break-even point

GDP/km² decreases with spatial expansion with an inverse power law exponent - 1. Infrastructure costs decrease with space at the power – ½. Beyond a break-even point, marginal costs are higher than marginal GDP created.



Urban Morphology and Complex Systems Institute based on international benchmarks of infrastructure costs per km² linking urban density and pavement costs, water network costs, wastewater network costs. Data have been normalized on base 1000 for GVA/km² and on base 100 for GVA/capita.

Successful low carbon and low energy urban developments are compact, connected, accessible, mixed use and adaptive

Articulated density

- Residential density matches with job density
- Human density matches with transit infrastructure capacity
- High gross built density
- High density of amenities

Accessibility and proximity

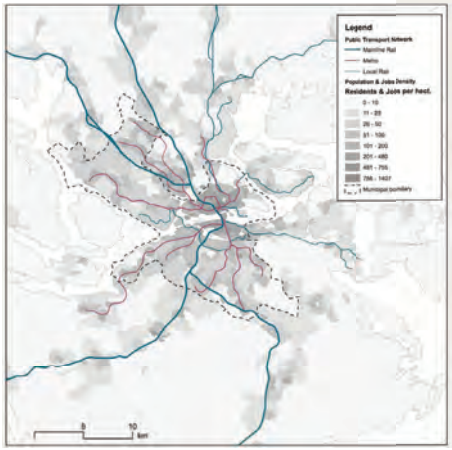
- Each part of the city is easily accessible
- Easy access to public transit infrastructures
- Seamlessly interconnected transit infrastructures
- Daily amenities accessible by foot (shops, health, education, culture, sport)
- Intense street network (high number of intersections per km²)

Mixed use and adaptive

- Jobs, housing and retail are mixed on the city, district, community and building scale
- Land use is highly flexible

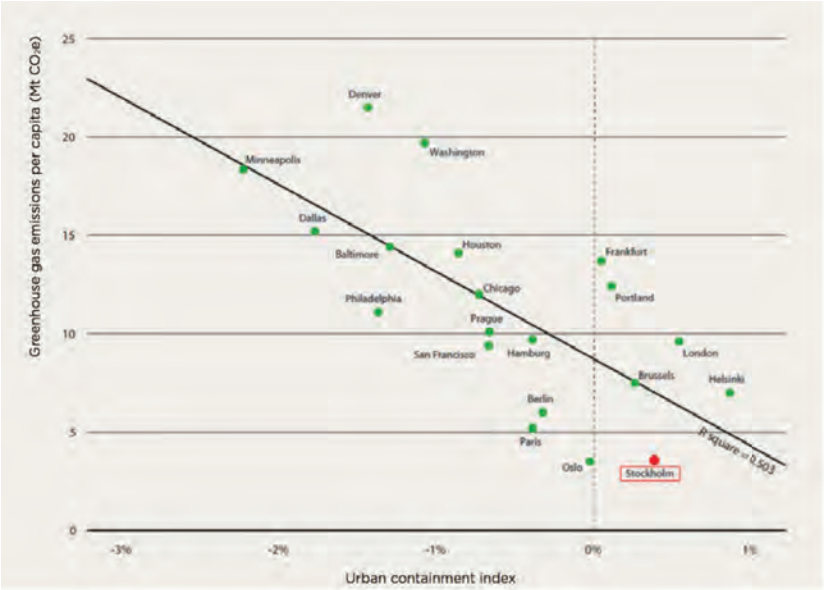
Compactness, Containment, and Higher Densities

Stockholm has a relatively compact urban form, with development concentrated along the city's main public transport corridors. Today's urban form is a result of early strategic planning beginning in the 1950s.



Source: LSE Cities

Greenhouse gas emissions and containment index for selected metropolitan regions



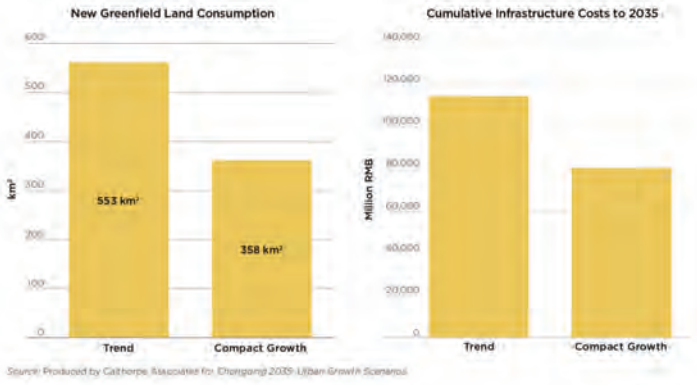
Source: LSE Cities

Land use, urban livability, household expenditure, infrastructure costs, and environmental sustainability could be greatly improved with compact growth. In the Compact Growth scenario for central Chongqing:

Land consumption reduction and economic benefits of compactness

■ **About 200 km2 of land is saved,** preserving a valuable asset for future expansion beyond 2035, and increasing economic density, agglomeration, and productivity

■ **Cumulated expenditure in infrastructure22 to 2035 is reduced by 30 percent,** achieving RMB 34 billion in savings, and allowing the redeployment of public expenditure to R&D to improve competitiveness and to the extension of social services, such as education and health.



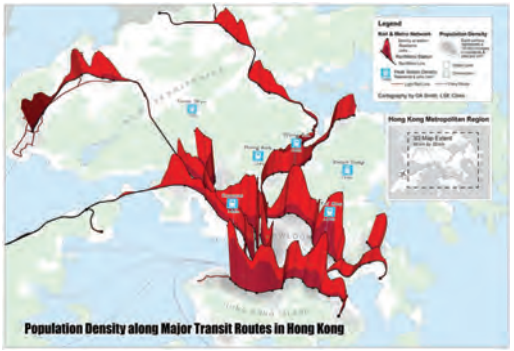
Source: Produced by Calthorpe Associates for Chongqing 2035 Urban Growth Scenarios

Matching Densities with Transit Centralities

Copenhagen and Hong Kong

Source: LSE Cities

In Hong Kong 75% of people and 84 % of jobs are located less than 1 km from a mass transit station (50% and 66% in London and NYC)



As a result of Hong Kong's approach to integrating transport and land-use planning:

Environmental impacts: A very low transport-related energy use and carbon emissions.

- 43% of the population (3 million people) live within 500m of an MTR station and 75% live within 1 km of a station.
- Public transport is used for 90% of all motorized journeys
- The car ownership rate (56 per 1000 people) is lower than any other city of similar wealth (as a comparison, the average rate in OECD countries is 404 per 1000 people
- 45% of trips are undertaken by foot.
- Annual carbon emissions from passenger transport are 378 kg per person, compared with around 1000 kg in European cities and over 5,000 kg in Houston, USA.

Economic impacts: Agglomeration, competitiveness, and cost-saving benefits.

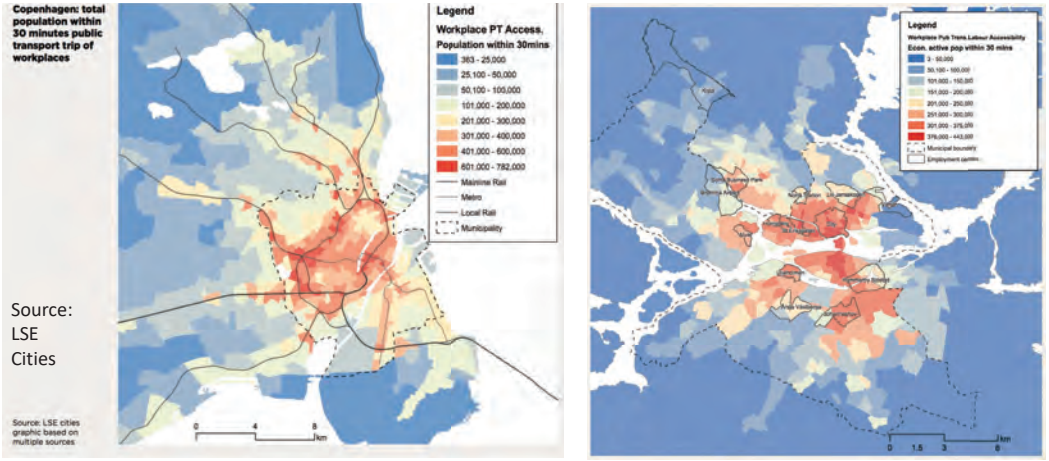
- Around 5% of GDP are spent on motorized travel, compared with 12-14% in motorized cities such as Melbourne and Houston.
- The city's dense urban form and efficient transport system supports agglomeration economies including access for firms to a large pool of skilled labor within easy commuting distance, and a high density of firms in the inner-city which improves networking opportunities

Financial impacts: Land value capture infrastructure financing.

- Direct financial benefits to the Hong Kong government resulting from the 'Rail plus Property' have totaled HK$210bn (US$27bn) since the establishment of the company in the 1970s.

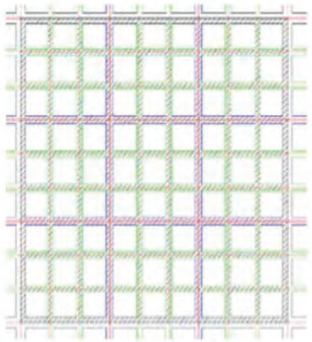
Large Labour Markets Accessible by Transit in 30 minutes with Good Jobs/Residents Balance

Economically active population accessible in 30 minutes from Jobs centres in Copenhagen and Stockholm



Source: LSE Cities

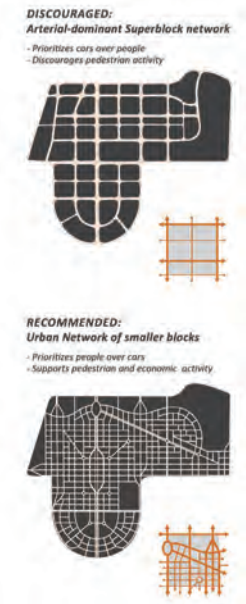
Dense Networks of Connected Streets



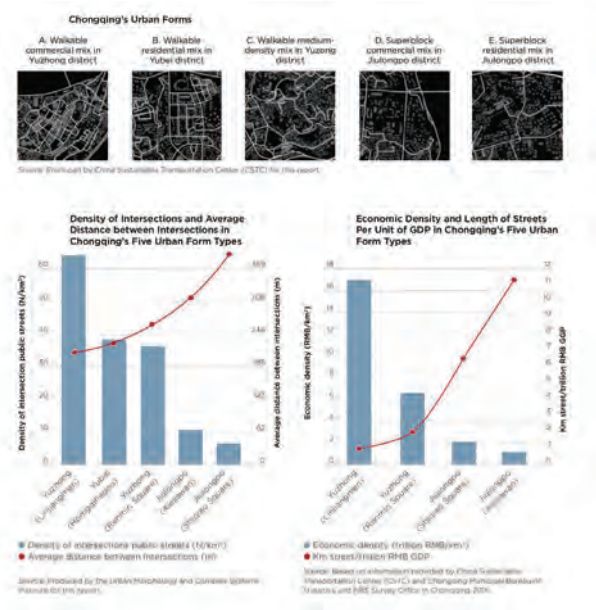
- The **street network should occupy at least 30 % of the land**
- Provide for **18 km street length per km²**
- The street network should comprise a variety of street widths, be highly interconnected with **between 80 and 120 street intersections/km²**

Source: UN Habitat

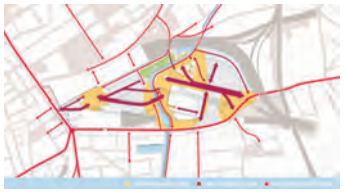
Source: Peter Calthorpe and Energy Foundatio



Superblocks are much less connected and less walkable than other urban forms in Chongqing, inefficient in terms of economic density and have higher infrastructure costs



International best practice of small blocks and increasing connectivity of the street network
King's Cross Central



20 new streets have been created

In a square 1 km side around King's Cross Central

Total number of intersections: **79**

Total length of streets: **13,34 km**

Contemporary linkages :
King's Cross in London

1830
Construction of Regent's Canal

1904
Railroad transforms King's Cross into an industrial centre

2007
Introduction of St Pancras International

2017

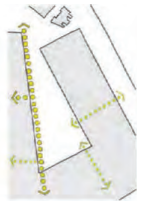
King's Cross
Public pathways

Nouveaux espaces publics
Principales nouvelles rues publiques
Autres liens et connections

King's Cross
Public spaces

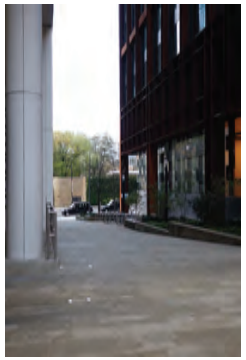
Kiosks et gazomètre
Espace public
Emplacements pour ventes temporaires

Saint Pancras square in King's Cross



Walking paths

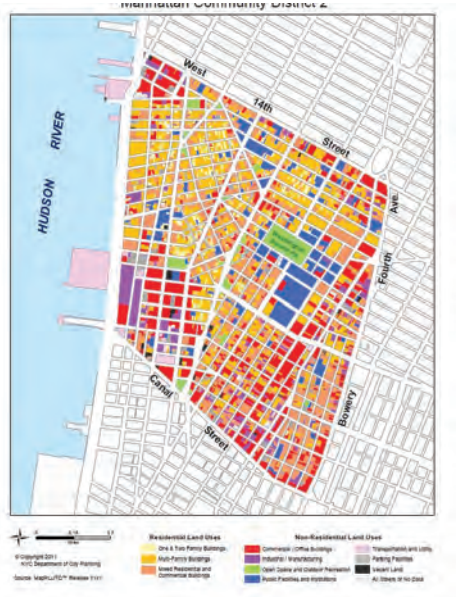
Service pathways for cars



King's Boulevard

Fine Grain Mixed-Use Neighbourhoods Blocks, and Buildings

Mixed use should be achieved at neighbourhood, block and building scales



Bioclimatic Urban Fabric

GEF-Chinese MoHURD Low Carbon Urban Forms demo project: Xi Xian China's Western Innovation Harbor

Source: FaroStyle and MoHURD

Green wedges cool naturally the neighborhood

Varied small block compositions:

1. Provide for inner squares
2. Provide for inner landscaping of the blocks
3. Allow natural ventilation of the blocks

Bioclimatic Mixed Use Urban Blocks

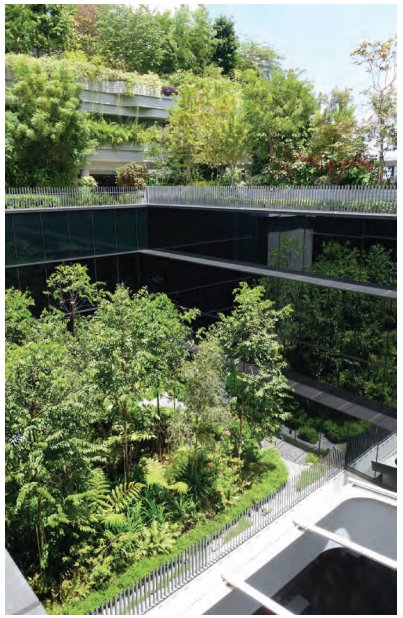
Rethinking urban blocks with porosity for wind flows and vertical landscaping has led innovative architects in the tropics to conceive urban blocks for hot and humid climates as microcities multiplying linkages and community spaces at many levels (WOHA 2016).

This approach aims at designing a three-dimensional green integrated city that will replace the two-dimensional segregated city.

These high-density/high-amenity garden cities minimize – if not eradicate – the need for artificial cooling and recreate street life and community space with large gardens and various parks in the sky, that are allowed by the layering and hollowing of the urban blocks.

Designed by WOHA, Kampung Admiralty is Singapore's first integrated public development that brings together a mix of housing, public facilities and services under one roof.

- **By re-greening the plot at multiple levels, these developments achieve a Green Plot Ratio of 100 percent** – which might be regarded as essential for the processes of passive cooling in the tropics and for the restoration of biodiversity.
- **Apartments are envisaged as houses in an aerial neighborhood.** The continuous integration of public and private activities, throughout a block conceived as a mini-city, restores a sense of community, with a commensurate decrease in the requirements for energy and transportation (WOHA 2016).



- **The open-air community precincts become new street levels – as part of a three-dimensional matrix.** The succession of open-air spaces acts as thermal naturally ventilated buffers while creating clusters for community activities.

LEVER 2 : BUILDING AND APPLIANCCES EFFICIENCY
Bioclimatic Design at Building Scale

Second step: Maximizing the use of passive techniques in building design (thermal buffers, cross ventilation, shading devices, greening, green roofs, etc.)

Key findings:

1. **Passive and hybrid strategies at building scale have a significant potential for reducing by 60 % cooling loads in hot and humid climates**
2. **Integration of several passive techniques such as thermal buffers, green roofs, shaft and cross ventilation, natural lighting, and shading devices adapted to seasonal change have a stronger effect than separate measures**
3. **Integrated passive techniques at building scale have co-benefits for multiple energy loads with the potential to reduce by 60% heating / cooling loads and by 50 % lighting loads**

Examples of passive techniques to reduce cooling loads in a GEF-Chinese MoHURD Low Carbon building demo project in a hot humid climate

Greening and shading of Roof and facades

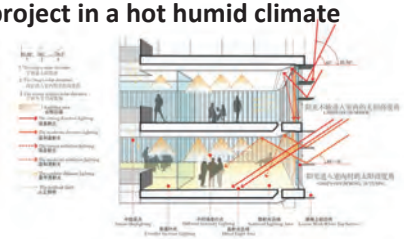
Natural ventilation atrium

Source: Architecture Studio and Energy Design Shanghai

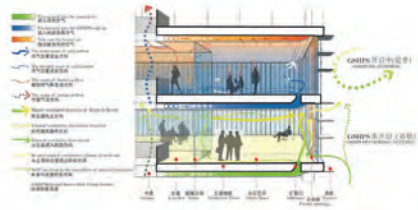
The combined passive and active design strategies result in a 47% reduction in energy costs

With

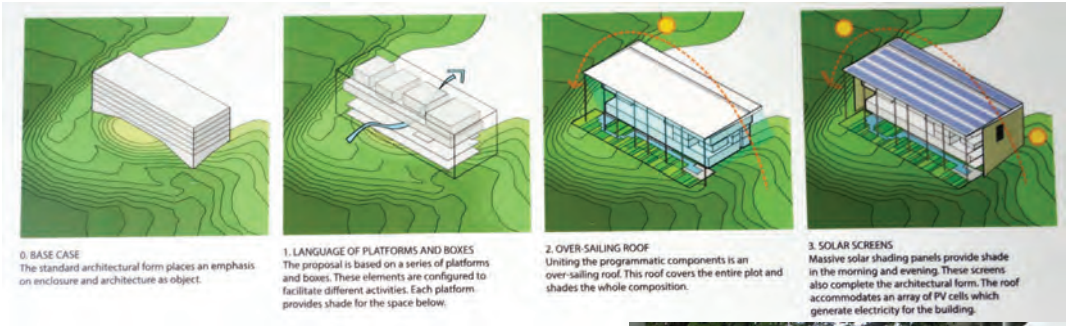
- **a 60 % reduction in heating energy loads**
- **a 17 % reduction in cooling energy loads**
- **a 48% reduction in lighting energy loads**



Natural lighting and shading devices



Natural ventilation adapted to seasonal change based on shaft ventilation (Atrium) and on cross ventilation



Hot and humid climates present some of the most complex challenges for sustainable building designs. High temperatures coupled with high humidity create extreme comfort problems.

In specific integrated design concepts, active and passive energy systems are interwoven into the building itself, and several building elements also serve as energy systems.

The integrated approach usually moves through the following sequence to optimize building energy performance:

(1) Minimize building loads through passive strategies;
(2) Design energy efficient building systems;
(3) Optimize controls of energy efficient building systems.

This optimization sequence can reduce cooling loads up to 60 percent as in the Net-Zero energy building, in the School of Design and Environment, National University of Singapore.

NZEB@SDB deploys a slew of climatic strategies.

- The large overhanging roof or the double facades on East and West elevations, trim the incident solar load that might otherwise warm its interior, contributing to cooling load.
- Envelope glazing is amply shaded with glare reducing and light redirecting lamellas that reflect daylight deeper into teaching spaces.
- **Air conditioning is used only where it is needed. Rooms can be opened to prevailing breezes, weather permitting. The spaces between these cooled rooms are naturally ventilated, acting as thermal buffers and social spaces, much like the traditional verandah.**
- In addition, integrated passive techniques at building scale have the potential to reduce lighting loads by 50 percent.

Critical to the optimization of building systems is a rethink of air conditioning– typically the biggest consumer in Singapore buildings – which resulted in the design of an innovative hybrid cooling system. This system supplies rooms with cool air – albeit at higher temperatures and humidity levels than a conventional system – and augments this with elevated air speeds from ceiling fans. The cool, moving air creates a comfort mode that is significantly better than the over-cooled rooms currently experienced in Singapore.

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LEVER 3 : CROSS SECTORAL OPTIMISATION AND CIRCULAR ECONOMY

Reducing energy demand greatly facilitates reaching a high percentage of energy supply from renewable energies on site. This is an effective whole-systems strategy of getting close to zero-carbon without having to rely on the building scale alone.

The neighborhood scale allows developing integrated hybrid combinations of renewable energy systems (including waste-to-energy) that maximize efficiency.

Adding local cogeneration plants - powered by renewable sources from the waste streams and / or coupled with a renewable supply such as wind or solar power- can diversify the grid.

Transitioning to a more diversified and distributed power grid using cogeneration makes the power system more resilient.

Kronsberg and Vauban

The most energy efficient case studies are passive houses (Kronsberg, 15 kWh/m²/y), passive apartment buildings (zero energy in Vauban) and the plus-energy development (Vauban).

Their performance demonstrates that heating energy targets of 15-25 kWh/m²/y in a cold climate (6,000 heating degree days) are feasible. When this is combined with a more efficient electric demand target of 20-25 kWh/m²/y, total consumption in the range of 40-50 kWh/m²/y (including cooking and hot water) is reasonable and cost-effective. This level of energy performance makes it much more feasible to supply most, if not all, energy from local renewables.
As demonstrated by Vauban, which has a very low energy demand, the combination of solar photovoltaics and a waste-to-energy cogeneration plant comes to 85 percent renewable. In Vauban, the goal for total energy consumption was 105 kWh/m²/y, and the reported consumption

Kronsberg

Vauban

The energy sources were 85 percent renewable (4 percent solar and 81 percent waste).

The Hammarby Model

Hammarby Sjöstad has its own eco-cycle, the Hammarby model, which describes the environmental solutions used for energy, waste, and water & sewage.

The Hammarby model

Energy

1. Combustible waste is used to generate district heating and electricity.
2. Biofuels are used to generate district heating and electricity.
3. District heating and cooling are both produced using the purified wastewater.
4. Solar energy is converted into electrical power or used to heat water. Electricity should bear the Good Environmental Choice label, or equivalent.
5. Biogas is extracted from sewage sludge and food waste.

Waste

1. Combustible waste is converted into district heating and electricity.
2. Food waste is biodegraded to produce biogas that fuels vehicles, whilst the mulch becomes nutrient-rich fertilizer.
3. All material that can be recycled is sent for recycling: newspapers, cardboard, glass, metal, etc.
4. Hazardous waste and electrical waste is recycled or sent to landfill

Water & Sewage

1. Rainwater from the streets is treated locally and hence does not burden the wastewater treatment plant.
2. Rainwater from courtyards and roofs is led off into Hammarby Sjö.
3. Wastewater is treated and then helps in the production of district heating and cooling.
4. Biogas is extracted from biodegraded sewage sludge.
5. The biodegraded sewage sludge is used as fertilizer.

LEVER 4 : PEOPLE BEHAVIOR

Green living is a lifestyle that attempts to reduce an individual's or society's use of the earth's natural resources

- Transform consumption behaviours
- Develop clean environment and healthy lifestyles
- Advocate green mobility
- Plan and develop cultural and sports infrastructure
- Provide strong food security through local food supply and stable prices
- Reduce CO_2 per capita emissions rate

Bike to School campaign – National biking promotion campaign in Denmark

Case Study

Making Cycling a Lifestyle in Copenhagen

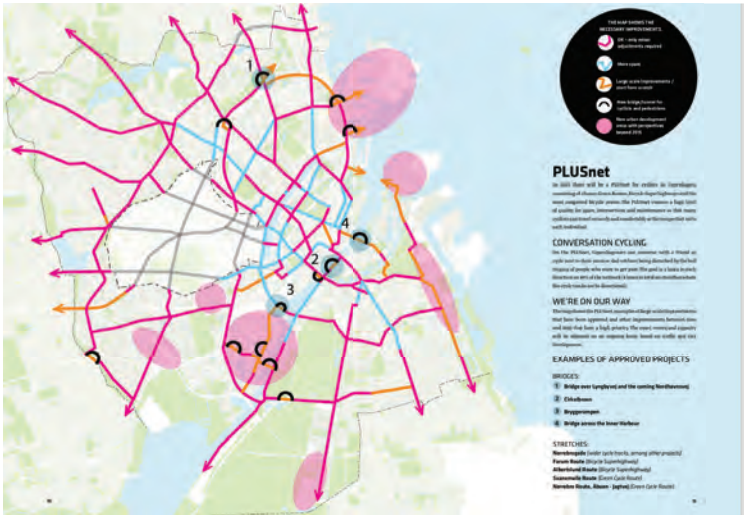
Targeting 50% of trips made by bike to reach Carbon Neutrality by 2025

PLUSNET

In 2025 there will be a PLUSnet for cyclists in Copenhagen, consisting of chosen Green Routes, Bicycle Superhighways and the most congested bicycle routes. The PLUSnet ensures a high level of quality for space, intersections and maintenance so that many cyclists can travel securely and comfortably at the tempo that suits each individual.

CONVERSATION CYCLING

On the PLUSnet, Copenhageners can converse with a friend or cycle next to their mum or dad without being disturbed by the bell ringing of people who want to get past. The goal is 3 lanes in each direction on 80% of the network (4 lanes in total on stretches where the cycle tracks are bi-directional).



Thanks for your attention

serge.salat@gmail.com

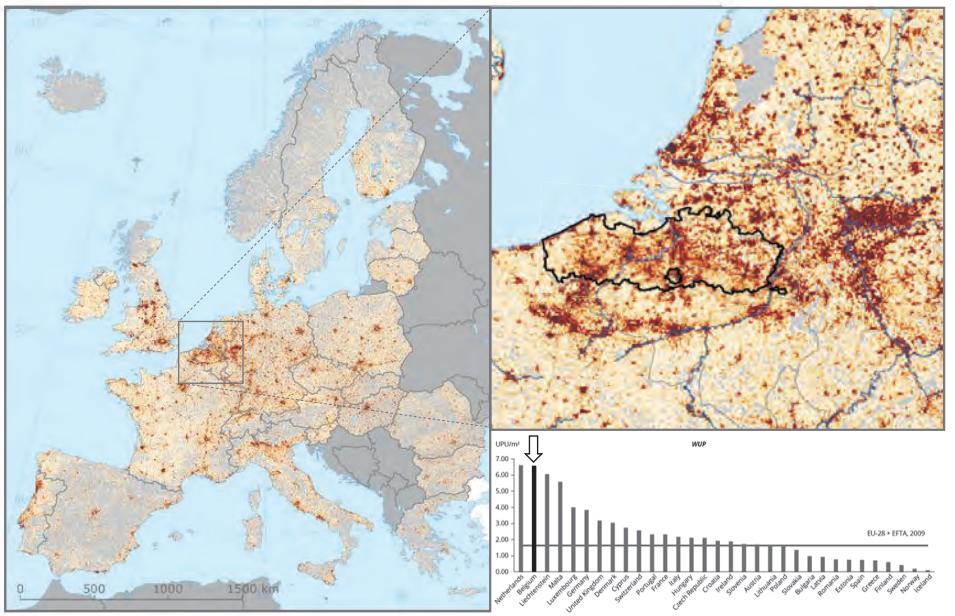
http://www.urbanmorphologyinstitute.org

Flanders
State of the Art

Financial consequences of (future) urbanisation patterns in Flanders

Peter Vervoort, researcher

DEPARTMENT OF
ENVIRONMENT
& SPATIAL
DEVELOPMENT



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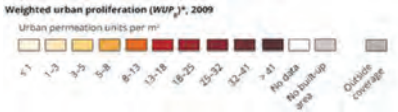


European Environmental Agency 2016

Outline

- Urban Sprawl in Flanders
  - → Urbanisation pattern typologies
    - × Effects of urbanisation patterns
    - × Financial consequences
- Future Urbanisation Scenarios
  - × Future financial consequences
- Instruments

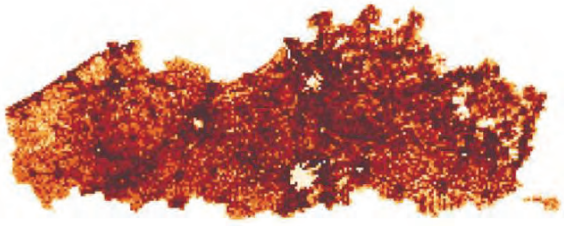
Flanders State of the Art vito COMMON GROUND vrp

Urban Sprawl in Flanders

Flanders State of the Art

Urban Sprawl in Flanders

- WUP based on
  - → Settlement Area
  - → Demography and Employment



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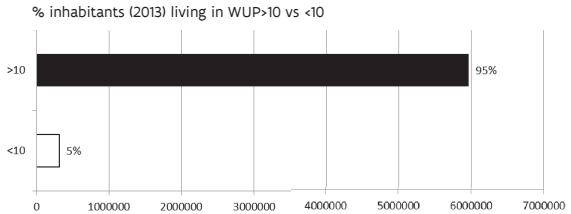
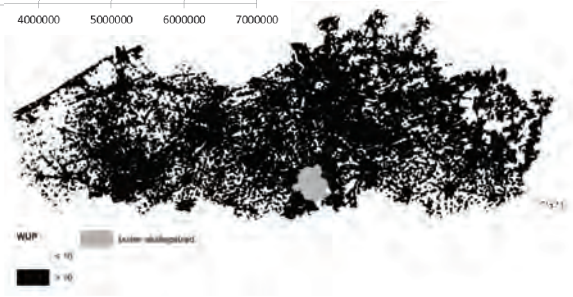
Urban Sprawl in Flanders





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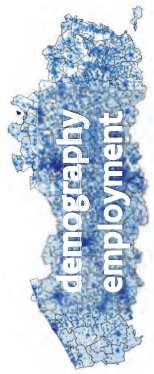

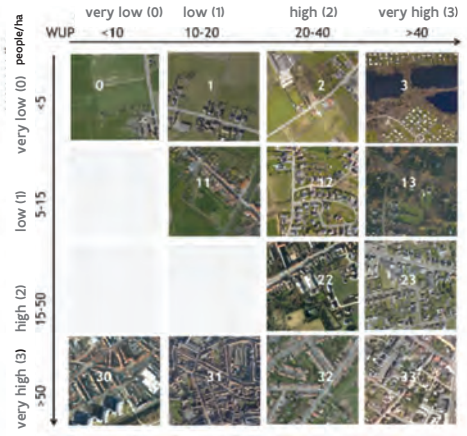

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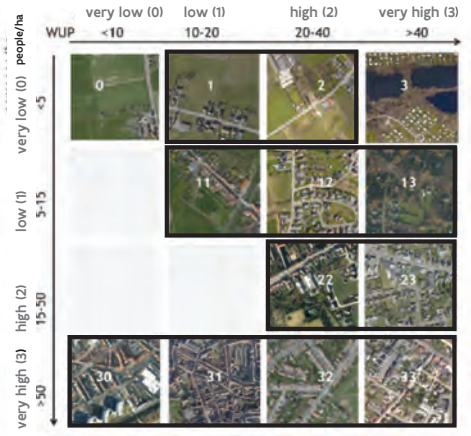
Urbanisation pattern typologies



dispersed settlements

suburban development

villages and cityfringes

city centres

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Effects of urbanisation patterns

- Infrastructure
- Transport
- Ecosystemservices

- Municipal expenses
- Cost and maintainance of dwellings
- Social effects and health
- Economic Development (benefits of agglomeration)

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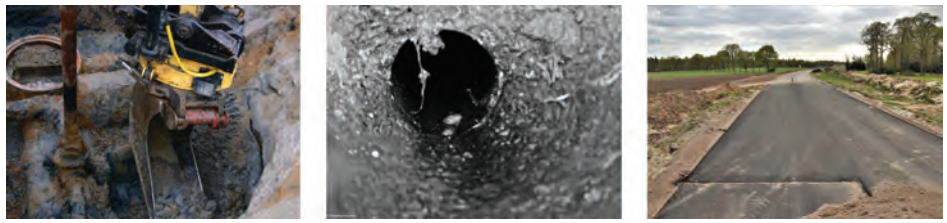
Infrastructure



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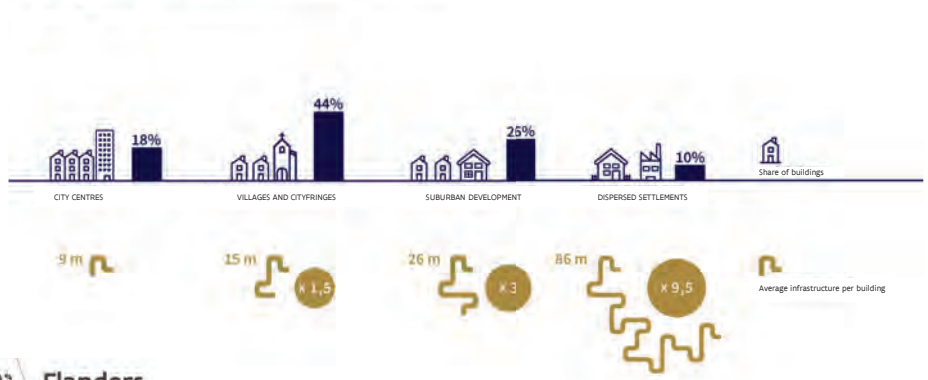
infrastructure

Dispersed settlements consume **almost 10 times more infrastructure per building** than city centres



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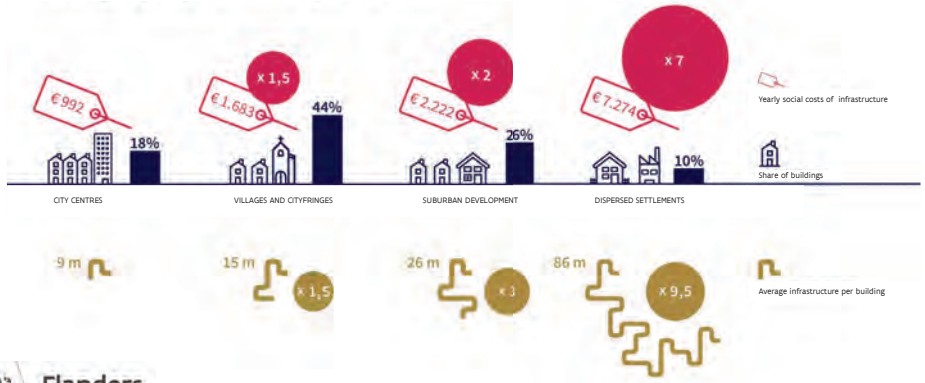
infrastructure

Social Costs of infrastructure per building
is **7 times higher for dispersed settlements** than city centres



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Mobility

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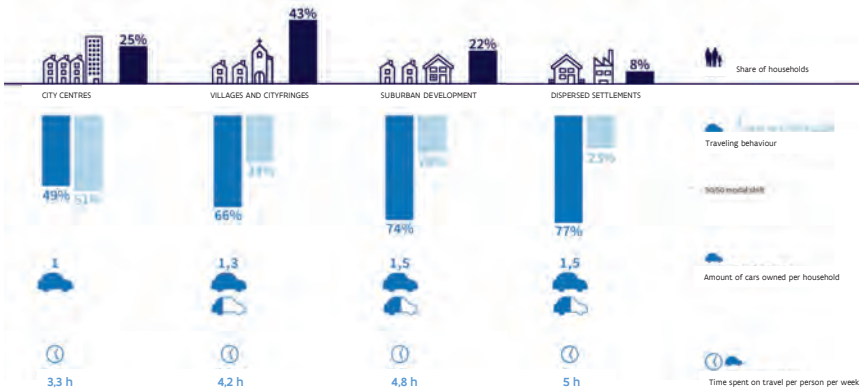
Mobility

People living outside city centres
travel more by car



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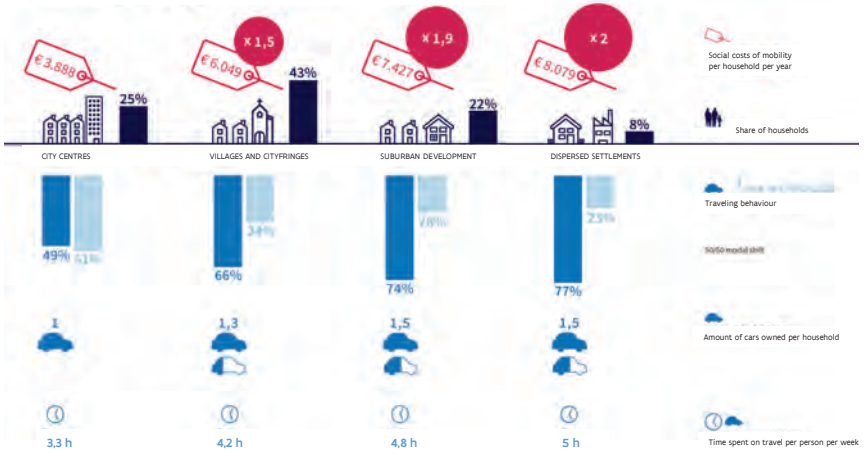
Mobility

Costs of mobility for households outside city centres is
up to twice as high



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Loss of ecosystemservices

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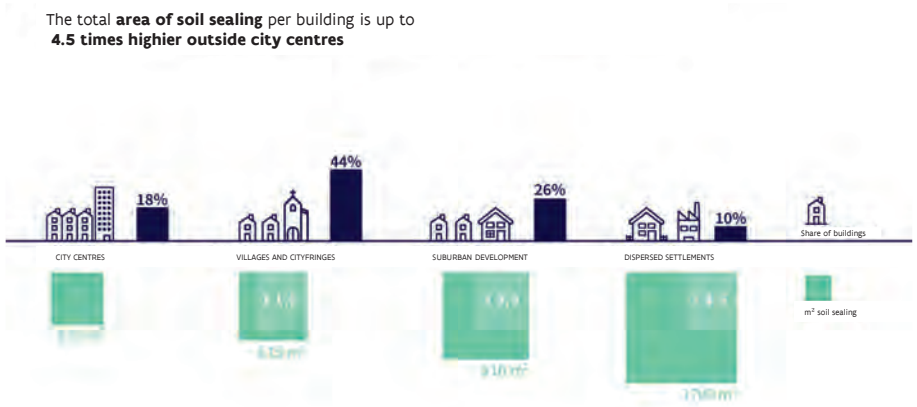
Loss of ecosystemservices

The total **area of soil sealing** per building is up to
4.5 times highier outside city centres



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Loss of ecosystemservices

Social costs of the loss of ecosystemservices due to fragmentation of open space is up to
4.5 times highier outside city centres

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Future urbanisation scenarios

Flanders
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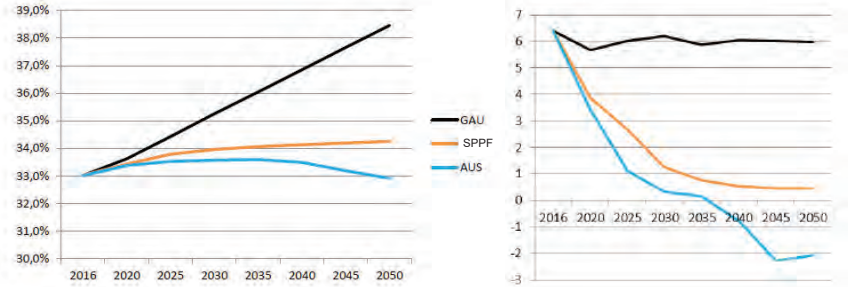
Future urbanisation scenarios

GAU Growth As Usual
SPPF Spatial Policy Plan Flanders
AUS Anti Urban Sprawl



Total settlement area (% of total area)

Daily change in settlement area (ha/day)

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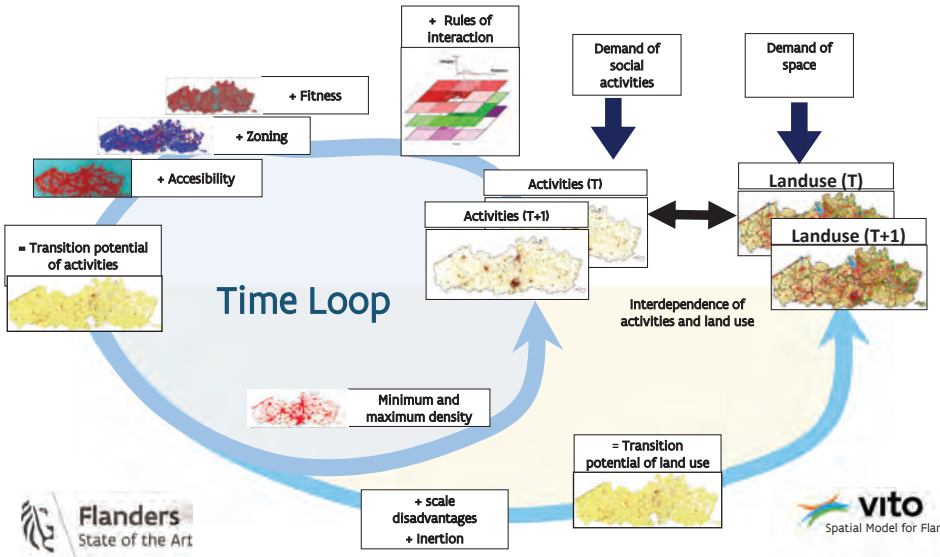
Future urbanisation scenarios



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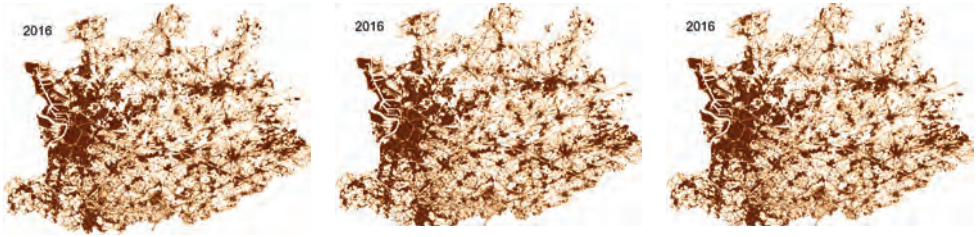
vito
Spatial Model for Flanders

Future urbanisation scenarios

visualisation at NUTS 2 - level



GAU
Growth As Usual

SPPF
Spatial Policy Plan Flanders

AUS
Anti Urban Sprawl

Flanders
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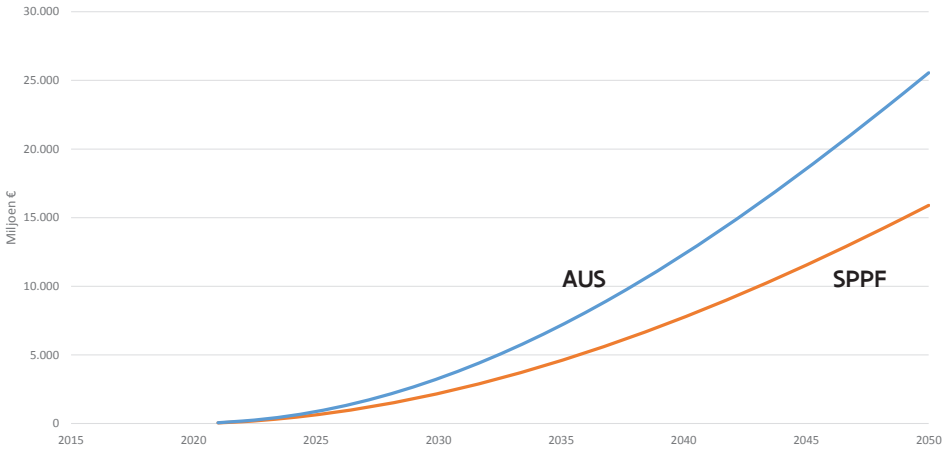
vito
Spatial Model for Flanders

Cumulative Benefits



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Benefits in 2050 (in millions)

Growth as usual

Spatial Policy Plan Flanders

Anti Urban Sprawl

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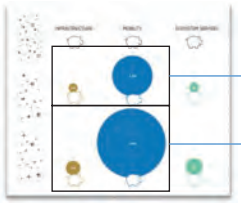
Budget Flanders 2018

€ 3,67 Billion

Mobility and infrastructure

Benefits 2050



Mobility and infrastructure

SPPF — - € 1,40 Billion/y

AUS — - € 2,35 Billion/y

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Instruments

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Instruments

- Spatial Policy Plan Flanders
  → Legal framework not yet adopted!
- Quick wins
  → Legislation to increase density in outdated zoning plans
  → Decision flow-chart for local goverments to cancel zoning plans for residential development
- Exploration
  → Transferable Development Rights
  → Convenants or contracts in addition to building permits
- Future research
  → Costs of strategies and instruments

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PBL Netherlands Environmental Assessment Agency

Urban Regions as engines of economic growth

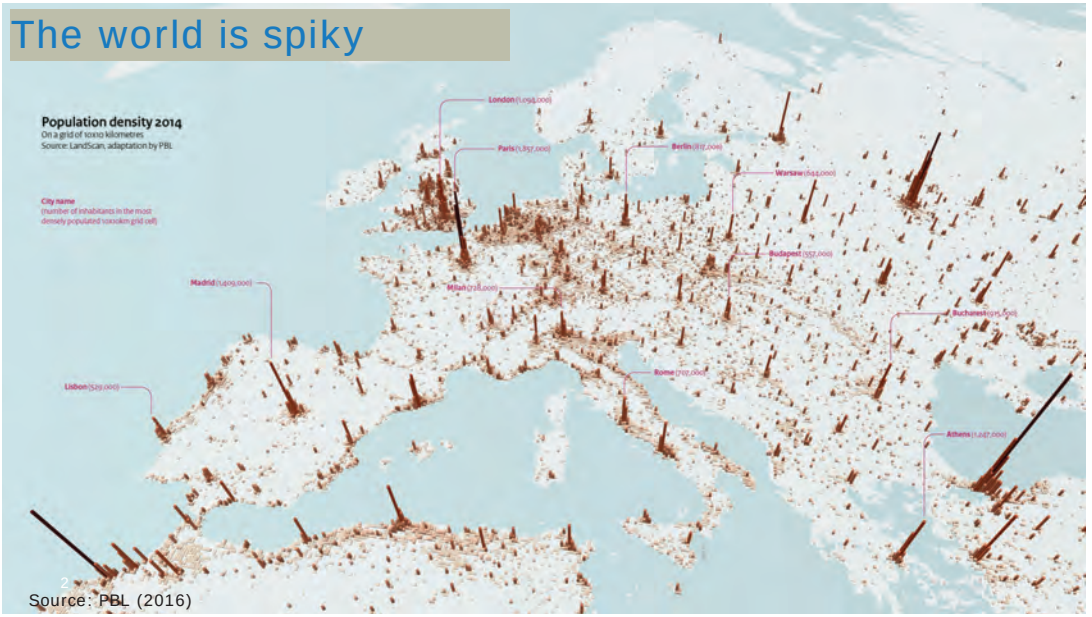
Round table on *Green Urbanization and Environmental Improvement*

8 April 2019, The Hague, The Netherlands

Dr. Otto Raspe

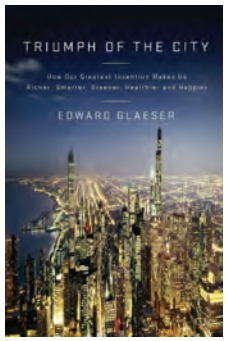
@ottoraspe
@leefomgeving

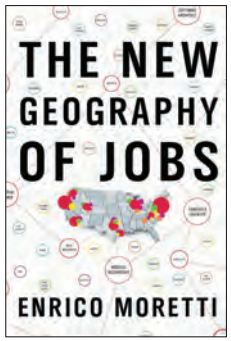
The world is spiky

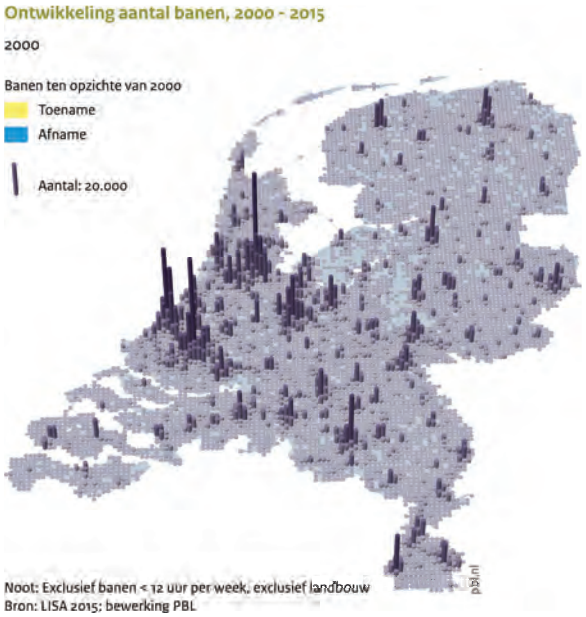


Source: PBL (2016)

New Geography of jobs







What can policy makers do to facilitate and stimulate economic growth in (city) regions?

What works?

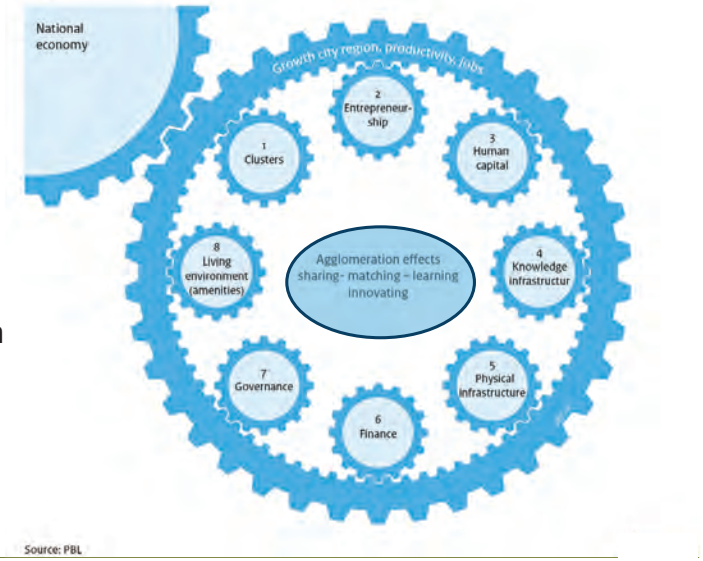
Why do regions / cities grow? (literature)

What factors are robust related to growth? (empirical quantitative)

What are the mechanisms behind growth and what is the role of policy? (empirical qualitative)

Why do cities grow?

8 wheels of the growth engine



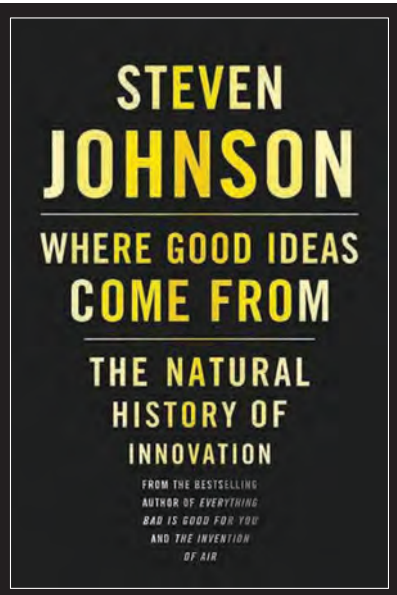
Agglomeration economies: Mechanisms

Sharing

Matching

Learning

Firms and people are more productive in cities: 3-8% (agglomeration economies)

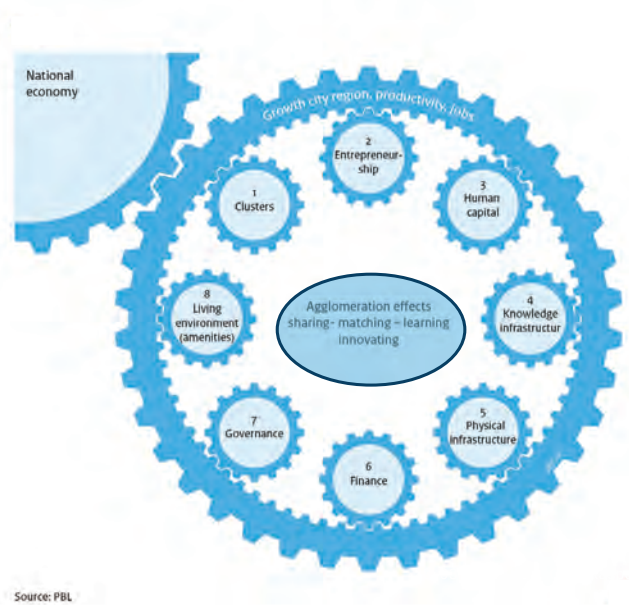


"The trick to having good ideas is not to sit around in glorious isolation and try to think big thoughts. The trick is to get more parts on the table."

"When one looks at innovation in nature and in culture, environments that build walls around good ideas tend to be less innovative in the long run than more open-ended environments"

Why do cities grow?

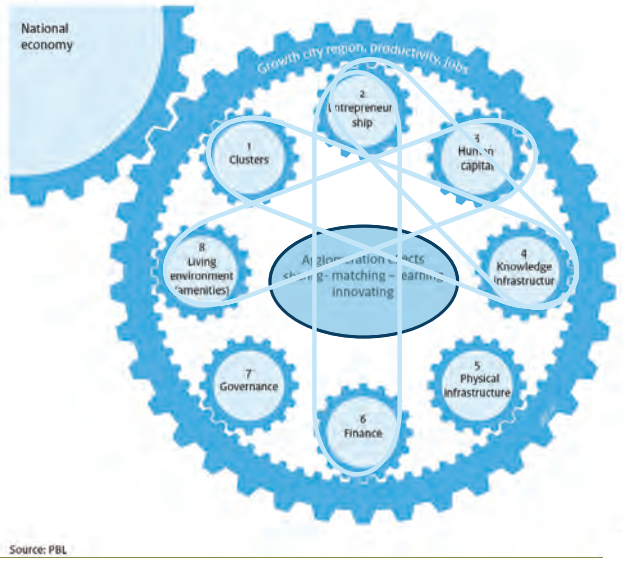
8 wheels of the growth engine



Source: PBL

Why do cities grow?

8 wheels of the growth engine



Source: PBL

Engines of economic growth (total growth)

Robust factors

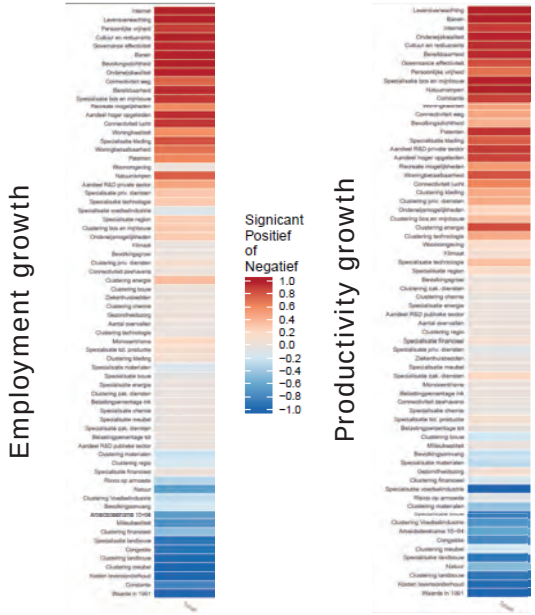
$$\frac{\ln\left(\frac{y_t}{y_{t-n}}\right)}{n} = \beta_0 + \beta_1 \ln(y_{t-n}) + \beta_2 g_p + d_l + \boldsymbol{X}\gamma,$$

$$\frac{63!}{4!\,(63-4)!} = 595.665$$

Engines of economic growth (total growth)

Robust factors

- Density
  - Agglomeration economies
- Human capital
  - Education, health
- Quality of living
  - culture & restaurants, educational quality
- Accessibility
  - (inter)national + internet
- And -/- Congestion and Environmental quality



PBL Netherlands Environmental Assessment Agency

Engines of growth

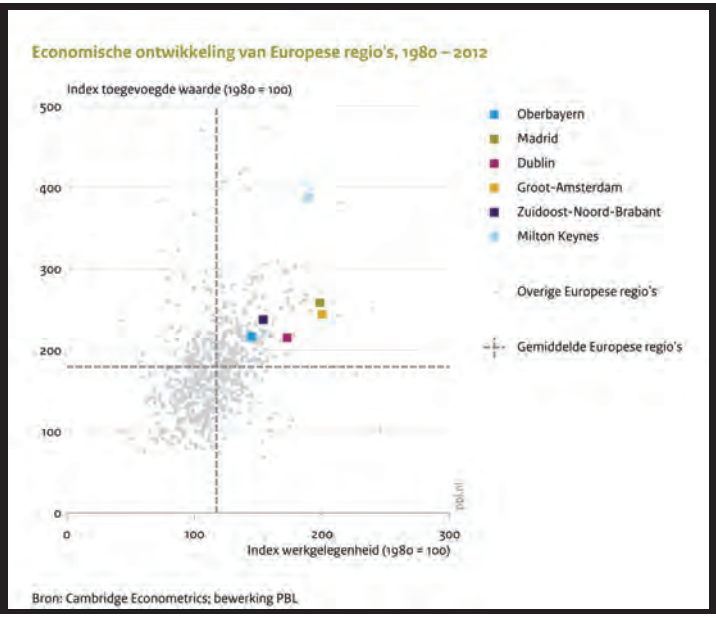
Robust factors

- Sector specific
  - *Clustering* and *specialisation* in technology and materials relates to growth of industrial firms;
  - While knowledge intensive services strongly relates to quality of *human capital*.
- Context specific
  - Effect *knowledge* and *culture* turbo effect by *density;*
  - Density has a bigger effect in agglomerations with high international connectivity.

Local buzz & global pipelines
in
High quality environments

PBL Netherlands Environmental Assessment Agency

What has policy done in growth regions?



München

Munich Mix

BayerKapital

Innovation

Quality of Living

Institutional thickness

Siemens '50

Multilevel governance

Future Bavaria Initiative

Airport

Eindhoven

From company town to Brainport

TUE

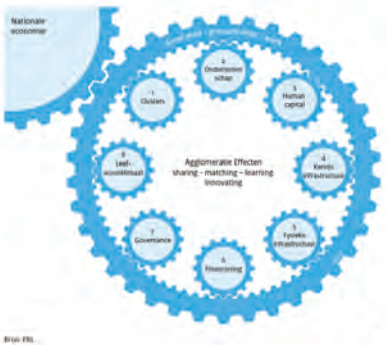
High Tech Campus

Triple Helix

Open innovatie

Philips and DAF

What has policy done in growth regions?



Tabel 1
Beleidsaccenten in de zes economisch succesvolle regio's

Beleid gericht op:	München	Eindhoven	Milton Keynes	Dublin	Madrid	Amsterdam
1. Clusters						
2. Ondernemerschap						
3. Human capital						
4. Kennisinfrastructuur						
5. Fysieke infrastructuur						
6. Financiering						
7. Leef- en woonklimaat						
8. Governance						

Topprioriteit in beleid
Heel belangrijk in beleid
Belangrijk in beleid
Minder belangrijk in beleid

In economic succesful cities:

- Policy aims at a **total** (**innovation) system;**
  - Entrepreneurship, cluster, knowledge and innovation policies: policy mix
  - Economic renewal forehanded and bottom-up
  - No 'picking winners' policies, but 'backing challengers': 'transformative activities' and diversification
- **Policy makes choices.** Policy domains streamlined to economic goals or targets;
- **Strong and adaptive institutions** are important;
- **Accidental, unplanned** events play a role.

There is a need for 'new regional economic policy'

- Where national and regional agenda's strengthen each other, based on a common strategy
- Policy mix: policies aiming at strengthening economic structures also contain policies aiming at human capital, work- and living environment and physical policies;
- **National and region:** region deals, what works centre's.

Thanks for your attention!

http://www.pbl.nl/publicaties/stedelijke-regios-als-motoren-van-economische-groei

@leefomgeving
@ottoraspe

otto.raspe@pbl.nl

PBL Netherlands Environmental Assessment Agency

Milton Keynes

New Town '67

Governance
Public-private
less *fixed end-state master planning*

Growth Area

Quality of Living

Human Capital

Location near London, Oxford en Cambridge

'Suburban urbanity'

'housing of the right type and quality, in the right place, can attract and retain residents, supporting jobs and the city economy'.

Madrid

Rural exodus
Fordistic period

The Spanisch Miracle ‘60

Catching-up

Population growth
Agglomeration
Public functions

Finance and telecom

Amenities

Franco

Big Push

South American hub

Dublin

Catching-up

Celtic Tiger
Boom in VS + EU single market

Education

Clusters
projectbased
Hub and spoke

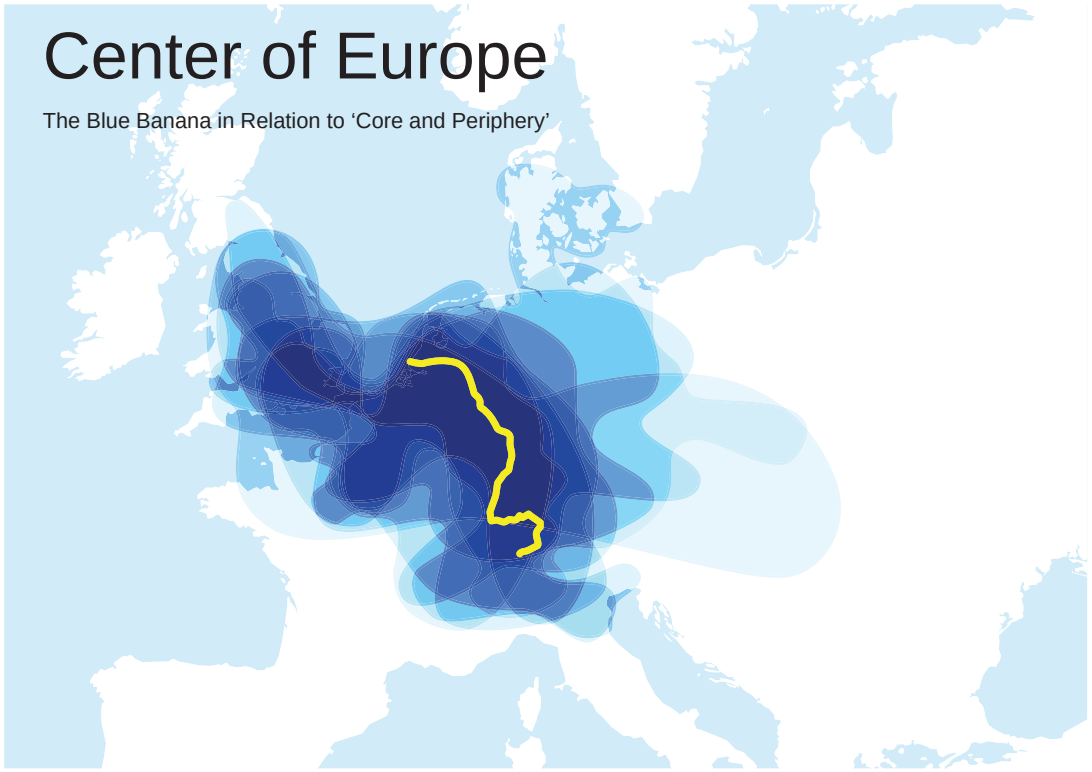
Linkages program

FDI
Zero tax

Hardware -> software

Center of Europe

The Blue Banana in Relation to ‘Core and Periphery’

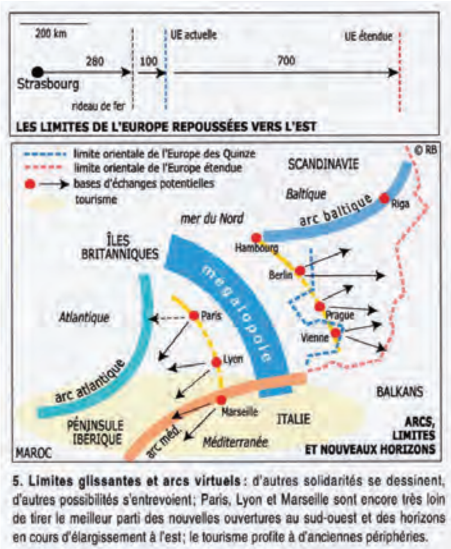


Eutopia

A city so vast and beautiful.

While in 1950 10 of the world’s 30 largest cities were European, by 2015 only one – Paris – will remain. The metropolises of the earth’s most densely populated continent will soon cease to be of central importance to the global discourse on the city. In Asia, Africa, and South America where some cities continue to experience double-digit annual population growth, the definition of the metropolis is now being re-written.

Perhaps the continued relevance of the European city is dependent on the same sort of alliances that have allowed the once fractured continent to become a political and economic unit.... With an urbanisation rate of over 90% at its core, with an already existing network of infrastructure that provides easy access to its multiple centers, with its well-defined peripheries, Europe has the potential to re-establish itself as a single, interconnected urban core – city on a continental scale.



the 'Blue Banana' by R. Brunet

source: www.mgm.fr/PUB/Mappemonde/M202/Brunet.pdf

Geographer & Inventor of the 'Blue Banana' - R. Brunet

source: http://age.ieg.csic.es/hispengeo/fotos_escfranc.htm

Fall of the Berlin Wall, 9 November 1989

source: http://blogs.bu.edu/guidedhistory/files/2013/02/berlin_wall.jpg

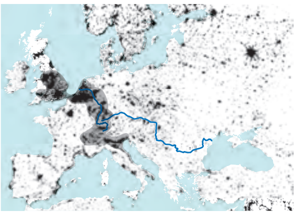
In the year 1989 the French geographer Roger Brunet wished to identify "active" and "passive" parts of Europe. He discovered an urban corridor of industries and infrastructures from northern England to northern Italy, the Blue Banana*. France, in his view, lost its links to the corridor as a result of its persecution of minorities and excessive centralisation in Paris.

In his analysis, Brunet artificially disregarded the French conurbations, which are particularly narrowly concentrated around Paris, in order to persuade French authorities of the necessity of greater integration of business into the centre of Europe.

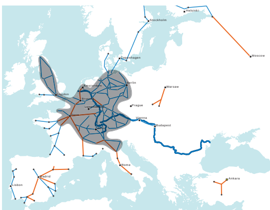
*According to Roger Brunet, the name "Blue banana" is a media addition. The banana shape was introduced by Jacques Chérèque, Minister of Planning, at a press conference. The designer of the Nouvel Observateur gave it the blue colour and Josette Alia baptised it in an article as the "blue banana"

The idea of the Blue Banana was developed during the 1980's and presented in the spring of 1989; several months before the fall of the Berlin Wall.

Since then, the area of the Blue Banana and its surrounding was exposed to major events: the massive expansion of EU, the development of new high speed railways and cheap airlines, the introduction of the Euro, the Schengen Agreement etc. Thus it is time to look at the Blue Banana anew in order to redefine its shape, its fringes and its mode of operation.

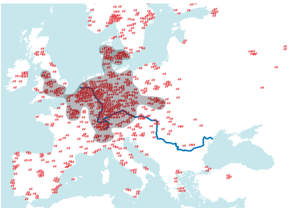


population

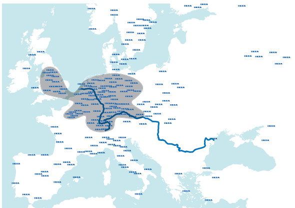


high speed rail network

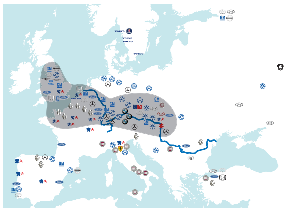
top 30 airports



H&M

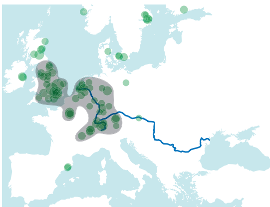


IKEA



car facturies

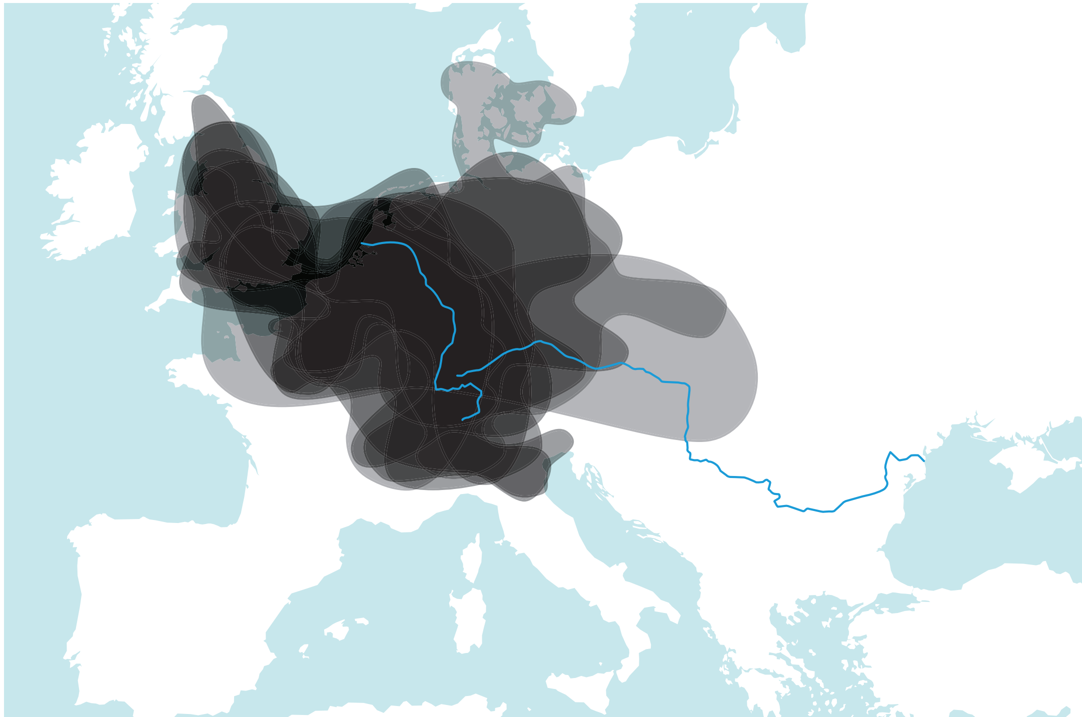
top 25 banks



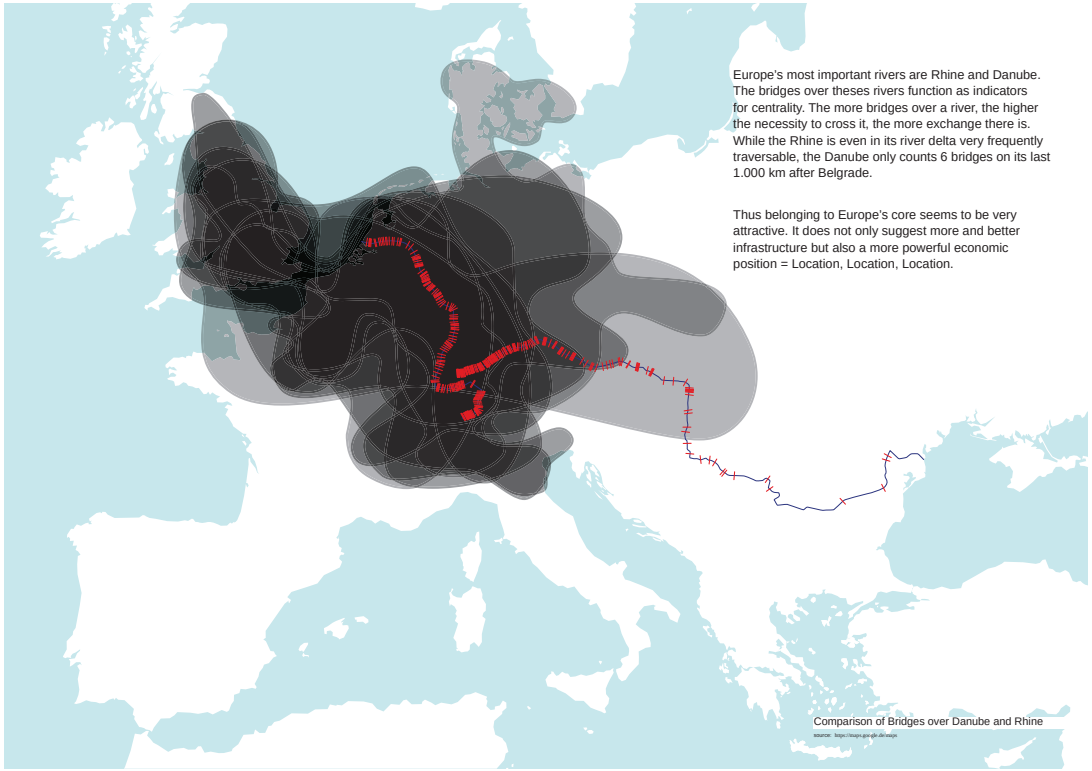
major universities

By overlapping the core regions defined by a high concentration of population, infrastructure and businesses, a contemporary European Core Zone can be defined. This area represents the current (but ever changing) shape and condition of what once was called "Blue Banana".

The river Rhine can be found at the core of every layer.



Superposition of All Core Zones

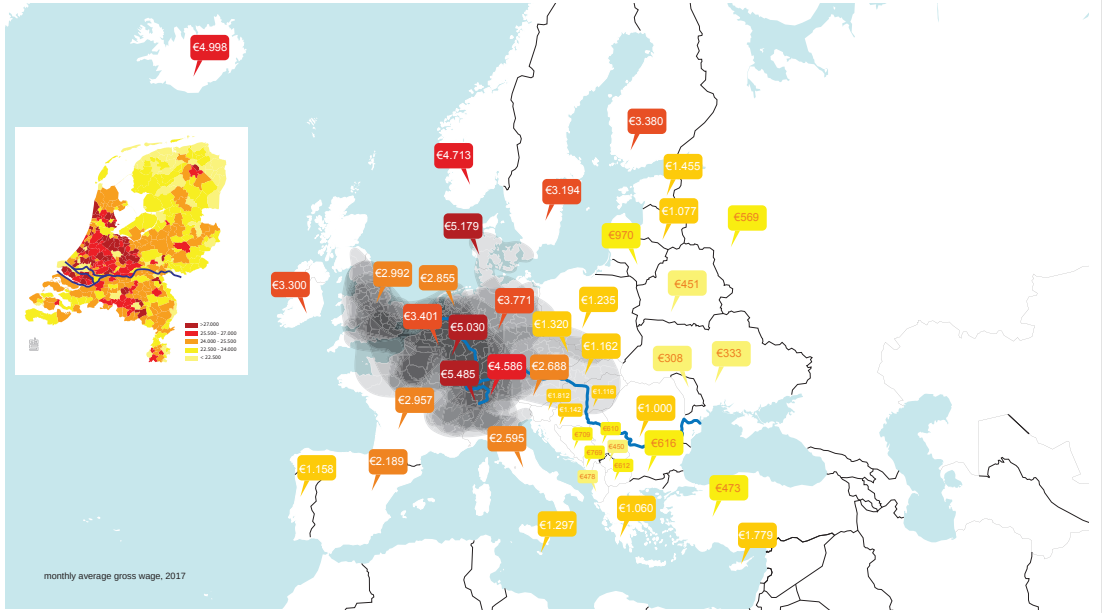


Europe's most important rivers are Rhine and Danube. The bridges over theses rivers function as indicators for centrality. The more bridges over a river, the higher the necessity to cross it, the more exchange there is. While the Rhine is even in its river delta very frequently traversable, the Danube only counts 6 bridges on its last 1.000 km after Belgrade.

Thus belonging to Europe's core seems to be very attractive. It does not only suggest more and better infrastructure but also a more powerful economic position = Location, Location, Location.

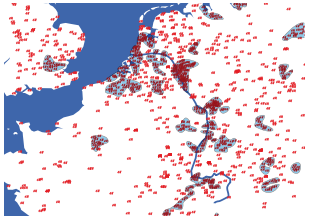
Comparison of Bridges over Danube and Rhine

source: https://maps.google.de/maps



The power of Europes core can be found in many dimensions, as for example, by looking at wages. the further away from the center, the less money will be paid on average.

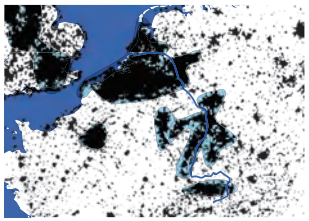
zoom-in



H&M

IKEA

Top 25 Banks

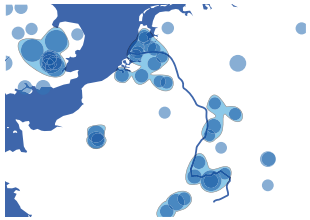


Population

Top 100 automotive suppliers

Top 100 chemical industry

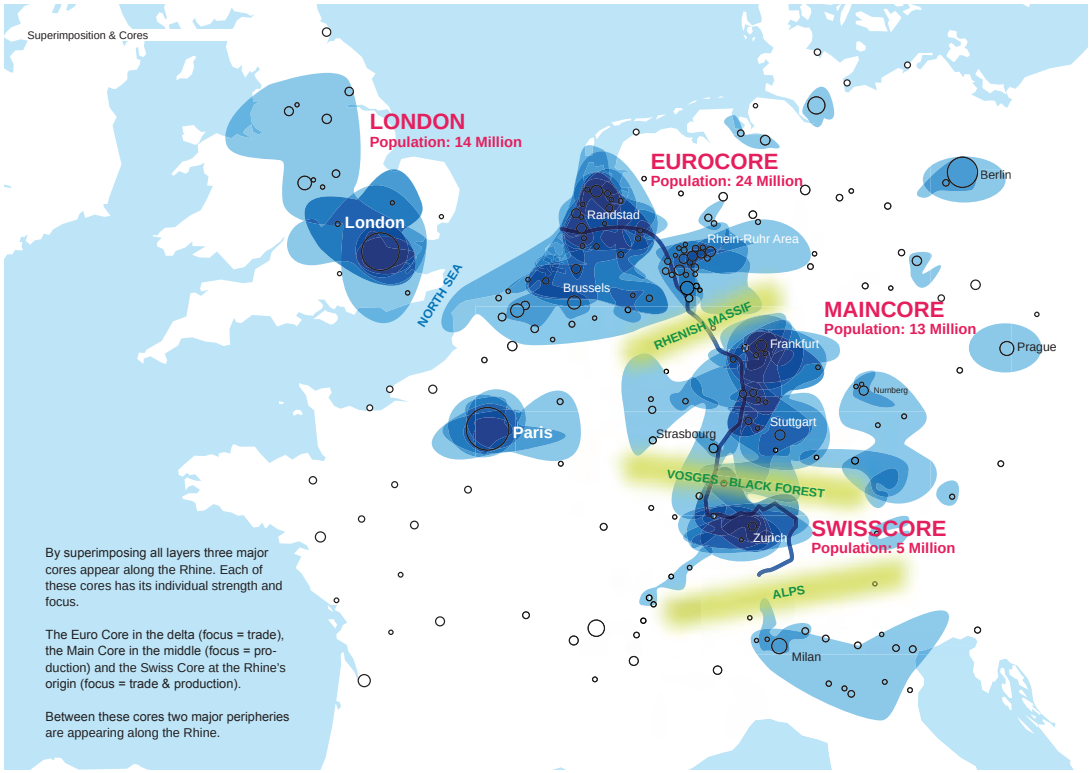
"Big Four" Headquarters

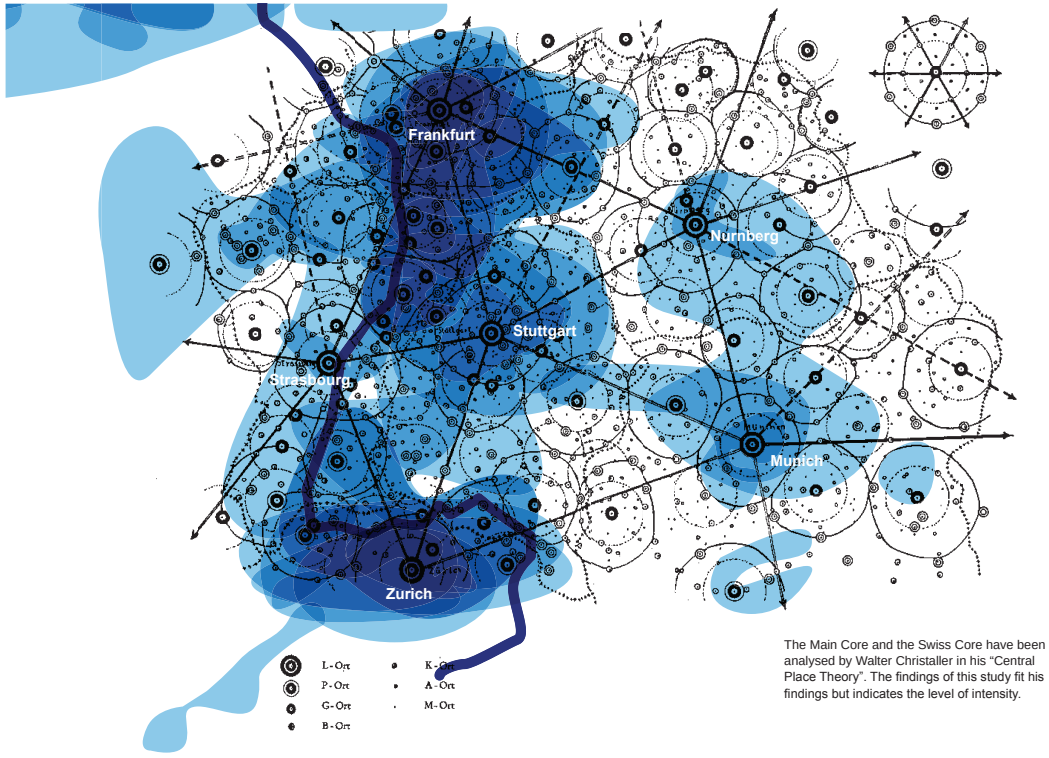


Major Universities

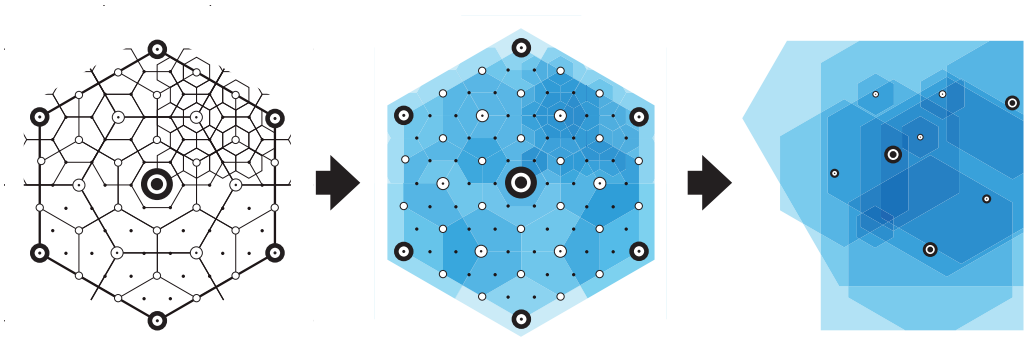
Finding cores within the Core of Europe needs a more thorough investigation.

By repeating the exercise of the European scale and analysing educational, economic and cultural parameters.





The Main Core and the Swiss Core have been analysed by Walter Christaller in his "Central Place Theory". The findings of this study fit his findings but indicates the level of intensity.



Central Place Theory
(by Walter Christaller 1930s)

Urban Field Theory
(idealised model)

Urban Field Theory
(real model)

Urban Field Theory:

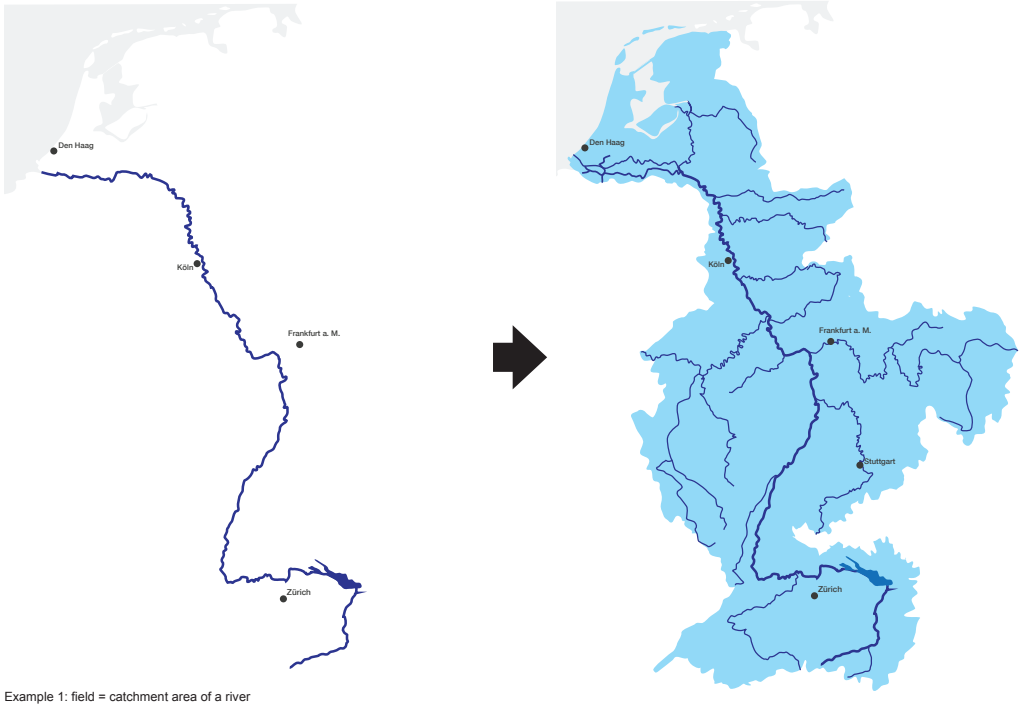
This theory is not primarly based on a network of cities anymore but a field (cloud) the cities are based in. This sphere of influence is defined by cultural, politcal and economical entities within the specific area.

key findings:

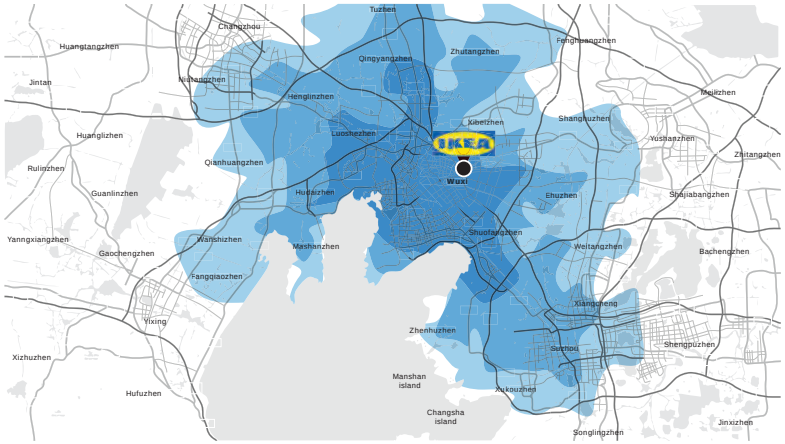
- the field contributes to the strength of the core> strong field = strong core (strong periphery = strong center)

- strong connections between field and core result in a resilient region

- field and core have to be seen as scaleless, exchangeable and dynamic



Example 1: field = catchment area of a river



1 PRIMARY CATCHMENT AREA
20 minutes away
by car approx.
2,420,000 inhabitants

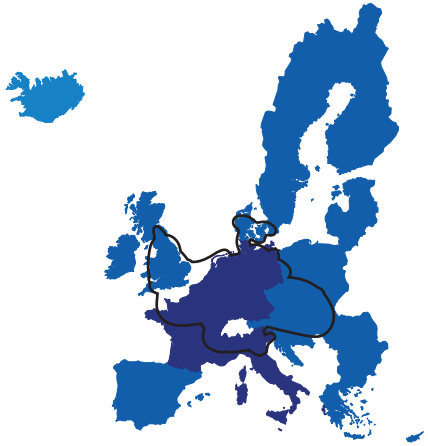
2 SECONDARY CATCHMENT AREA
40 minutes away
by car approx.
7,120,000 inhabitants

3 TERTIARY CATCHMENT AREA
60 minutes away
by car approx.
8,120,000 inhabitants

Example 2: field = catchment area of a shop

politics

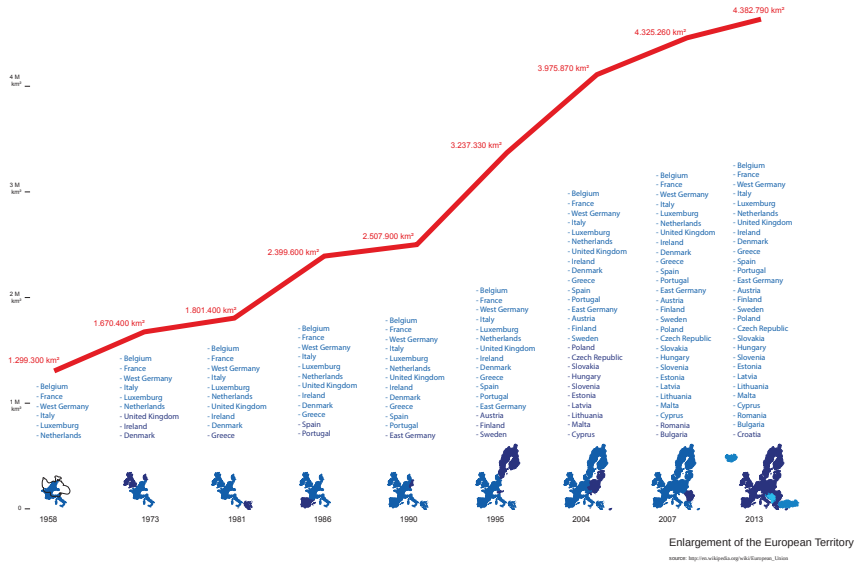
1958



2019

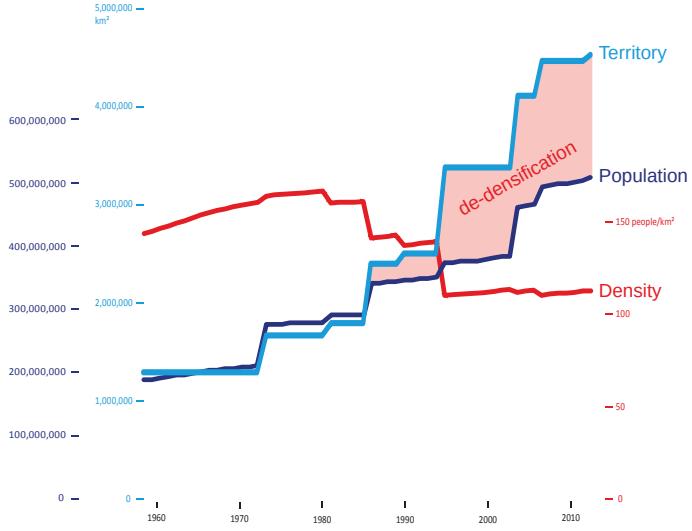
Comparison of Europe's Territory 1958-2019
source: http://en.wikipedia.org/wiki/European_Union

The European Union grew from the center towards its periphery. One could say that the Union is an urban idea or more precise an idea that origins can be found close to its economic heart, the Rhine Valley.



Enlargement of the European Territory
source: http://en.wikipedia.org/wiki/European_Union

The territory of the European Union dribbled from 1.299.300 km² to 4.382.790 km² throughout the past 55 years. The membership of the United Kingdom in 1973 and the expansion to the east in 2004, were for sure the Union's most important increase.

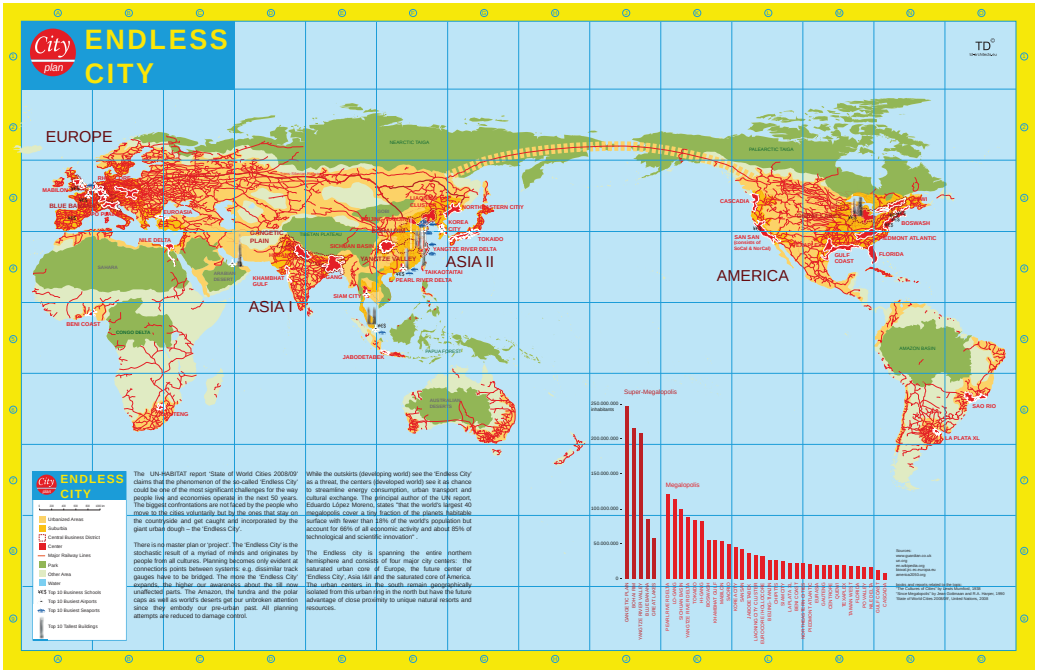


Enlargement of the European Periphery

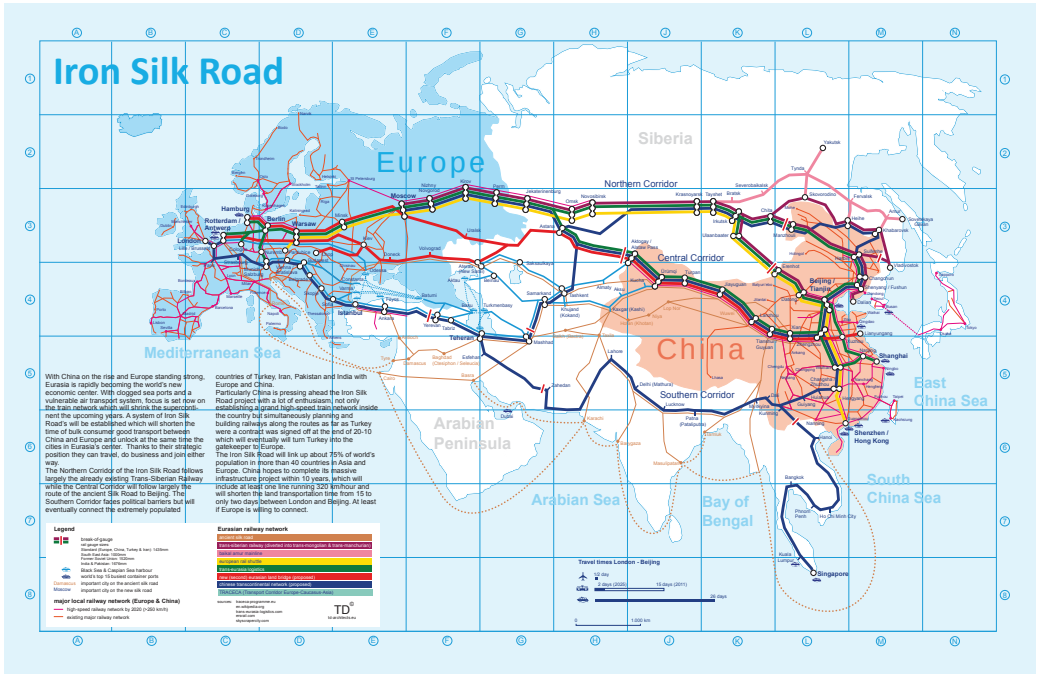
http://data.worldbank.org/indicator/SP.POP.TOTL?page=6

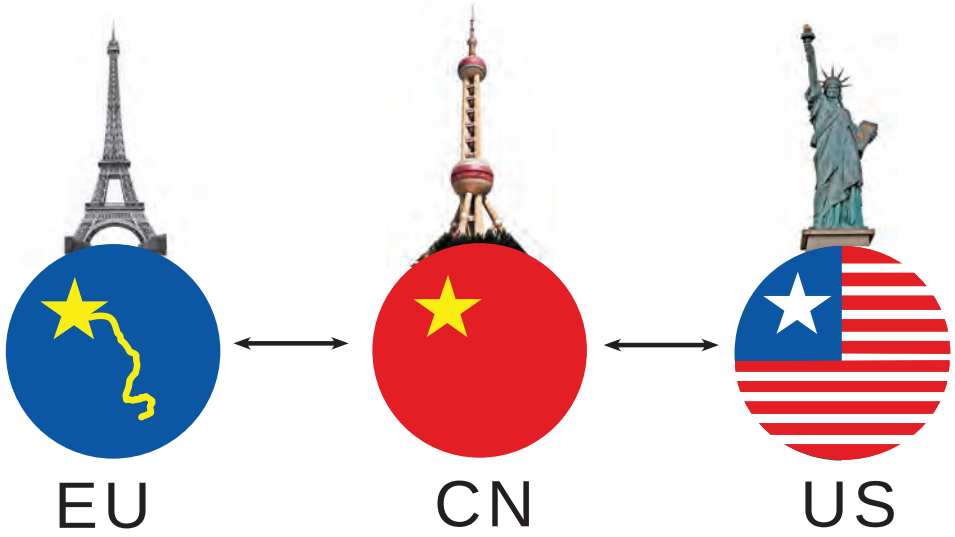
On top of this, led every territorial enlargement of the European Union to a further de-densification, in the past 30 years. This means that the periphery is growing faster than the core, thus expenses for a cohesive Union increase at an ever higher speed.

zoom-out



top 30 megalopoli





In an international context the power of the European Union with at its core the Rhine valley is undeniable. How coherent is this core and how does it interact with other cores and its peripheries?

three main cores with China at its center

P1

长江经济带概况
Overview of the Yangtze River Economic Belt

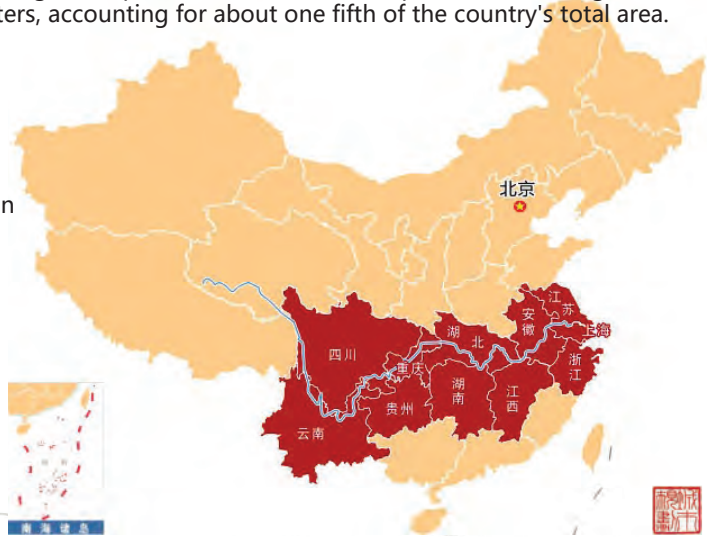
P1

1. 基本情况
Basic information

长江：中国第一大河，世界第三长河，干流全长6300km，横贯东西，流经九省二市，流域面积180万平方公里，约占全国总面积的1/5。
Yangtze River: China's largest river and the world's third longest river. Its main stream is 6300km long and runs through nine provinces and two municipalities. Its drainage area is 1.8 million square kilometers, accounting for about one fifth of the country's total area.

长江经济带：205万平方公里，占全国的21.3%

The Yangtze River Economic Belt: 2.05 million square kilometers, accounting for 21.3% of the country



2. 地形复杂、生态地位重要
Complex terrain and important ecological status

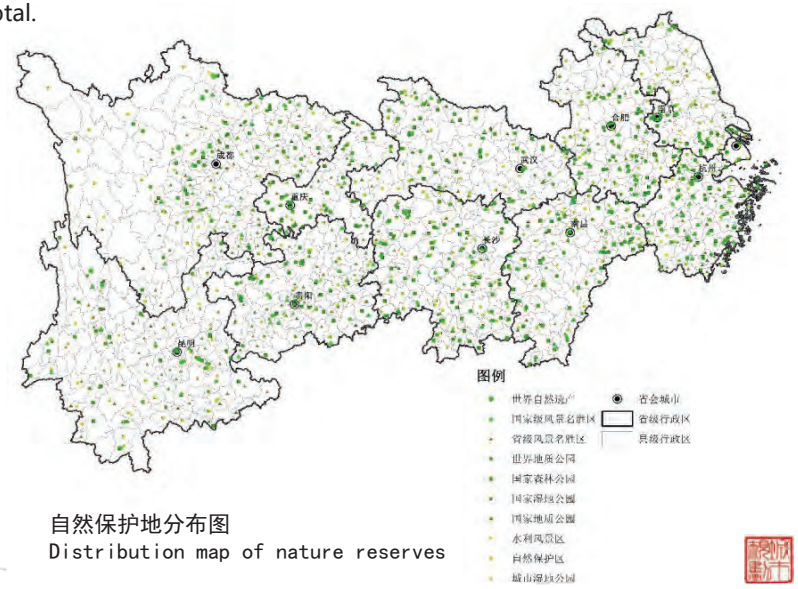
包括：青藏高原、横断山脉、云贵高原、四川盆地、江南丘陵、长江中下游平原。

Qinghai-Tibet Plateau, Hengduan Mountains, Yunnan-Guizhou Plateau, Sichuan Basin, Jiangnan Hills, and the middle and lower reaches of the Yangtze River.

P1

2. 地形复杂、生态地位重要
Complex terrain and important ecological status

森林覆盖率达41.3%，珍稀濒危植物占全国总数的39.7%。
The forest coverage rate is 41.3%, and the rare and endangered plants account for 39.7% of the national total.



自然保护地分布图
Distribution map of nature reserves

P1

3. 经济、人口、城镇密集
Dense economy, population and towns

经济GDP占全国43.1%，**人口**占全国的43%，**城镇**数量众多。

Economic GDP accounts for 43.1% of the country, **population** accounts for 43% of the country, and the number of **towns** is large.

图例
Legend
设市城市城镇人口规模
Population size of cities and towns (at setting-up cities)
县级单元城镇人口规模
Population size of cities and towns (at county level)

P1

3. 经济、人口、城镇密集
Dense economy, population and towns

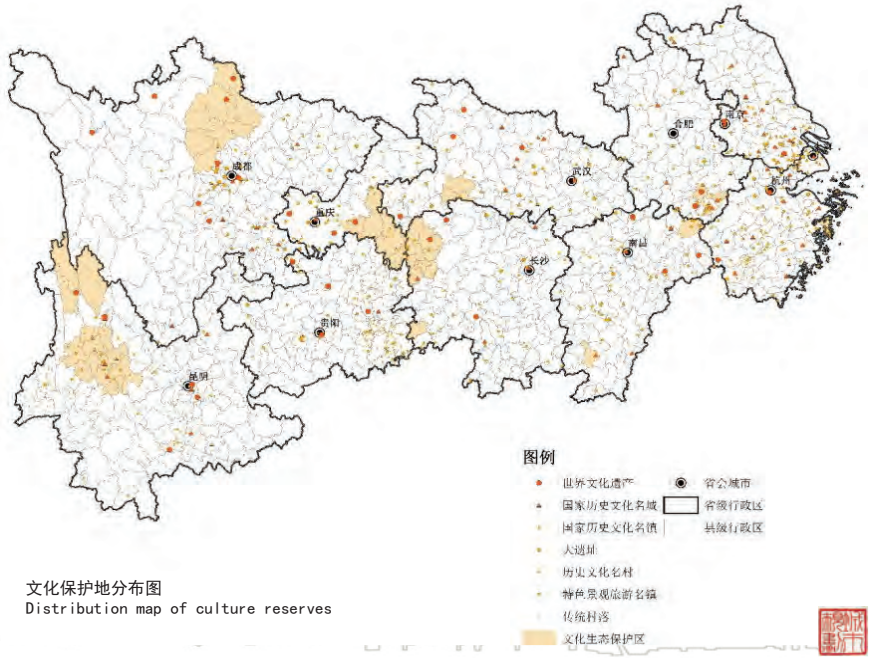
城市规模 City scale		长江带个数 Numbers in Yangtze River Belt	占比 Proportion
超大城市 Supercity	＞1000万 >10 million	2	33.3%
特大城市 Megacity	500-1000万 5-10 million	4	44.4%
大城市 Big city	300-500万 3-5 million	3	27.3%
	100-300万 1-3 million	23	36.5%
中等城市 Medium city	50-100万 0.5-1 million	65	48.1%
小城市 Small city	20-50万 0.2-0.5 million	111	28.7%
	＜20万 <0.2 million	35	24.3%
县城 County town		584	37.2%

P1 4. 人文荟萃
Gathering of talents

与黄河并称中华母亲河：属于多元交融的中国南方文化体系。
It is also called the "mother river of China" with the Yellow River: it belongs to the cultural system of southern China which is diversified and mingled.

长江文化：以巴蜀文化、楚文化、吴越文化为主体，包含滇、黔、赣、闽、淮南等亚文化层次。
Yangtze River Culture: Ba Shu culture, Chu Culture and Wuyue culture are as the main body, including Yunnan, Guizhou, Jiangxi, Fujian, Huainan subcultures.

P1 4. 人文荟萃
Gathering of talents



文化保护地分布图
Distribution map of culture reserves

P2

长江经济带发展面临的挑战
Challenges to the Development of the Yangtze River Economic Belt

P2 1. 水生态和水环境问题严峻
Severe problems of water ecology and water environment

水质恶化： Ⅰ + Ⅱ类水质断面不到一半
Water quality deterioration: less than half of the water quality sections of Class I+II

“长江双肾”频繁干旱见底，接近30%的重要湖库处于富营养
The "Yangtze River Double-Kidney" frequently dries to the bottom, and nearly 30% of the important lakes and reservoirs are eutrophic.

P2 1. 水生态和水环境问题严峻

Severe problems of water ecology and water environment

长江生物完整性到了很差的等级：列入《濒危野生动植物国际贸易公约》附录的物种已经接近300种。

The biological integrity of the Yangtze River has reached a very poor level: nearly 300 species have been listed in the appendix of "Convention on International Trade in Endangered Species of Wild Fauna and Flora".

P2 2.各类安全风险问题值得警惕

All kinds of security risks deserve vigilance

化工围江问题突出；

The problem of chemical engineering surrounding the river is prominent.

工业和码头岸线占比高，利用粗放；

Industry and wharf coastline account for a high proportion and are extensively utilized.

30%的环境风险企业位于饮用水源地周边5公里范围内、危险品运输量大

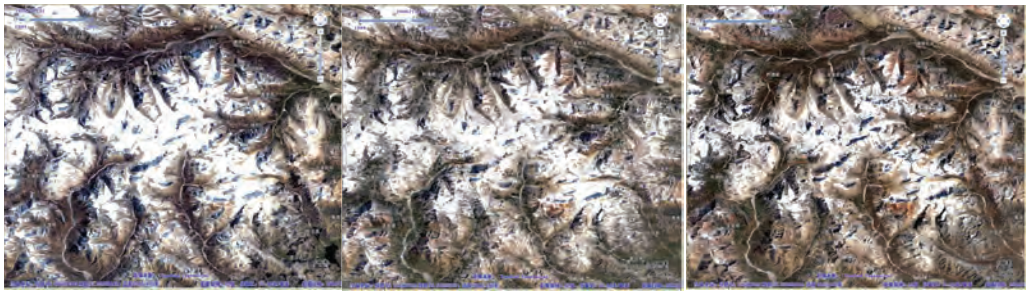
30% of the environmental risk enterprises are located within 5 kilometers of the drinking water source area, with large transportation volume of dangerous goods.

P2 3.气候变化导致风险加剧

Increased risks due to climate change

青藏高原暖湿化导致长江源头冰川退缩。

Warming and wetting of Qinghai-Tibet Plateau led to glacier retreat at the source of Yangtze River.



1986 2006 2016

长江源头地区冰川退缩图

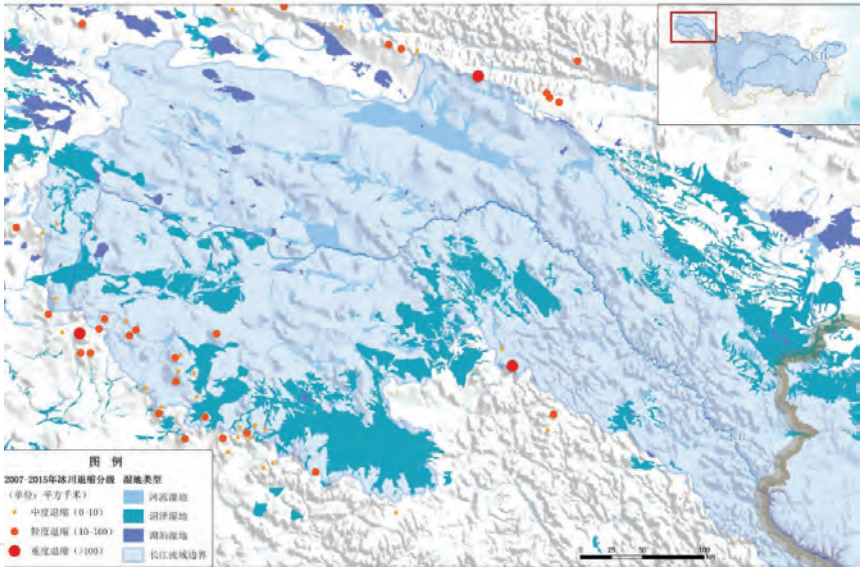
Glacier Retreat and Wetland Distribution Map in Source Area of Yangtze River

P2 3.气候变化导致风险加剧

Increased risks due to climate change

可可西里盆地内陆区湖泊扩张明显，湿地、沼泽显著增多，冰崩和湖泊溃决风险增大

In the inland area of Hoh Xil Basin, lakes are expanding obviously, wetlands and swamps are increasing obviously, and the risk of Ice Quake and lake outburst is increasing.

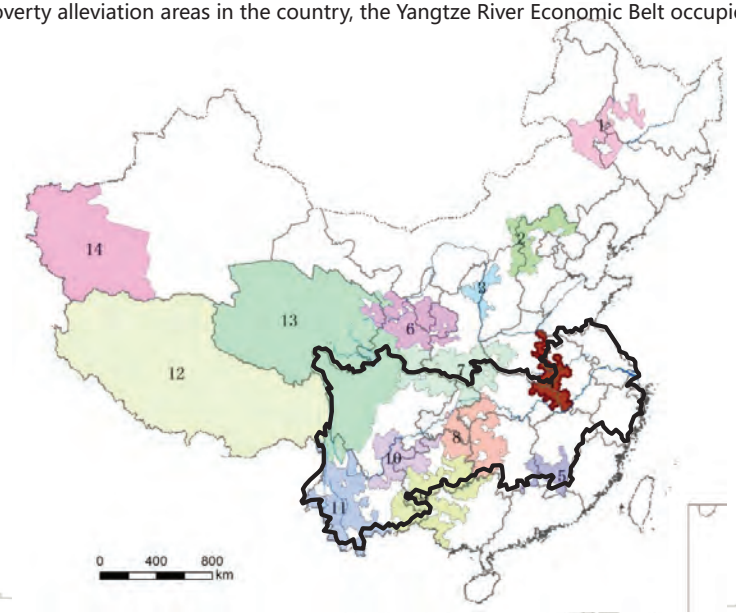


P2 4.不平衡不充分问题突出

The prominent problem of imbalance and insufficiency

全国14个重点扶贫地区，长江经济带占据8个。

Of the 14 key poverty alleviation areas in the country, the Yangtze River Economic Belt occupies 8.



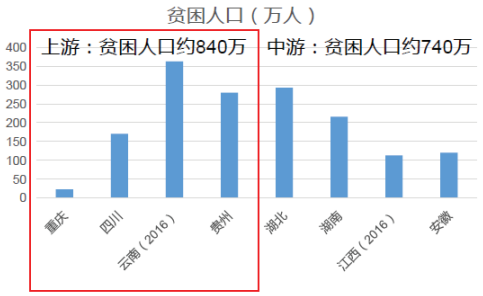
P2 4.不平衡不充分问题突出

The prominent problem of imbalance and insufficiency

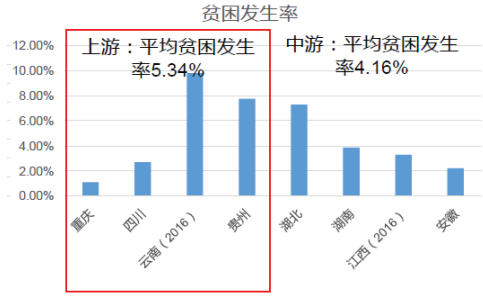
上游地区的贫困人口、贫困发生率是最高。

The poverty population and poverty incidence rate in the upper reaches are the highest.

贫困人口（万人）
Poor population (10,000 people)
上游：贫困人口约840万
upstream: about 8.4 million poor people
中游：贫困人口约740万
million poor peopleMiddlestream: about 7.4



贫困发生率
Incidence of poverty
上游：平均贫困发生率5.34%
upstream: average poverty rate 5.34%
中游：平均贫困发生率4.16%
Middlestream: average poverty rate 4.16%



P3

长江经济带绿色发展初步思路

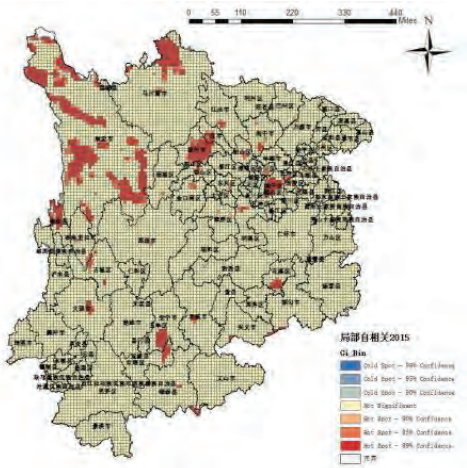
Preliminary Thoughts on Green Development of the Yangtze River Economic Belt

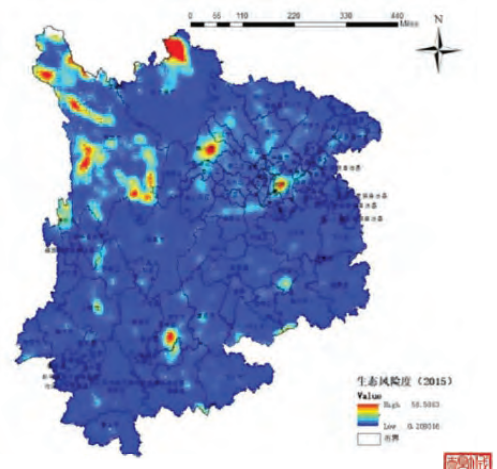
P3 1. 以资源环境保护作为发展前提

Take the protection of resources and environment as the premise of development

在制定地区发展规划之前，必须做“资源环境承载力评价”和“国土开发适宜性评价”

"Resource Environmental Bear Capacity Evaluation" and "Territorial Development Suitability Evaluation" must be done before making regional development plans.





P3 2. 提供区域协同发展的基础设施

Provide infrastructure for coordinated regional development

努力构建促进沿江11个省市均衡发展的“水运+公路+铁路+航空”综合交通运输体系。

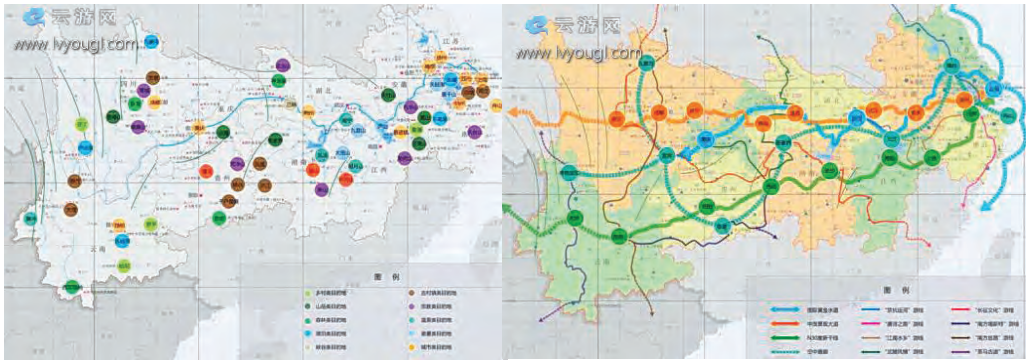
Efforts will be made to build a comprehensive transportation system of "water transportation + highway + railway + air" to promote the balanced development of 11 provinces and municipalities along the Yangtze River.

P3 3. 打造“魅力长江”激活新经济动力

Creating "Charming Yangtze River" to activate new economic motivation

依托文化景观资源建设国家风景和文化遗产走廊，激活休闲消费经济，推动区域、城乡均衡发展。

Relying on landscape resources to build the national scenic and cultural heritage corridor, activate the leisure consumption economy, and promote the balanced development of the region, urban and rural areas.



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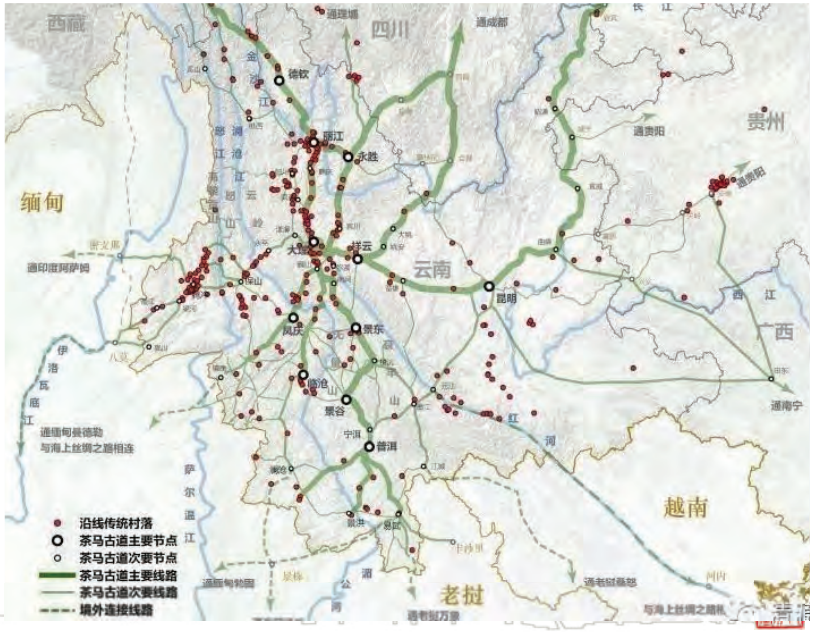
云南“茶马古道”网络

Yunnan "Tea and Horse Ancient Road" Network



P3 4. 创新体制机制，推动区域协同发展

4. Innovating system mechanism to promote regional coordinated development

成立长江经济带发展领导小组

Establishing the Yangtze River Economic Zone Development Leading Group

协调跨地区跨部门重大事项：水资源、水环境、岸线、航运等。

Coordinating the major cross-regional and cross-sectoral issues: water resources, water environment, coastline, shipping, etc.

推动《长江保护法》立法工作

Promoting the Legislation of "Yangtze River Protection Law"

建立健全长江经济带生态环境保护法律体系，规范和约束各类利用自然资源的行为。

Establishing and improving the legal system for the protection of the ecological environment in the Yangtze River Economic Belt, and standardizing and restricting all kinds of actions to utilize natural resources.

The 'Ongoing Renewal" Of Urban Regeneration In China

Lyu Xiaobei
CAUPD
ww_ss@126.com

Picture: the rebirth of No. 42 on 'dirty street' / Li Han, Hu Yan
The changes on a residential building at Sanlitun , Beijing over the last decade

Large-scale urban regeneration of Shanghai in 1998

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Coexisting of urban regeneration and expansion (2000-2015)

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Evolution and Trends of Urban Regeneration in China

- **Drive the urban's industries to upgrade**
- **Change the way of consumption, leisure and communication**
- **Promote historical inheritance and diversitify city's culture**
- **Promote multi-stakeholders to engage into urban planning**
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- Old industrial quarters at city centres are retrofitted into low-cost, convenient, open, and fully-serviced spaces for new industries, bringing along many creativity offices and co-work spaces.

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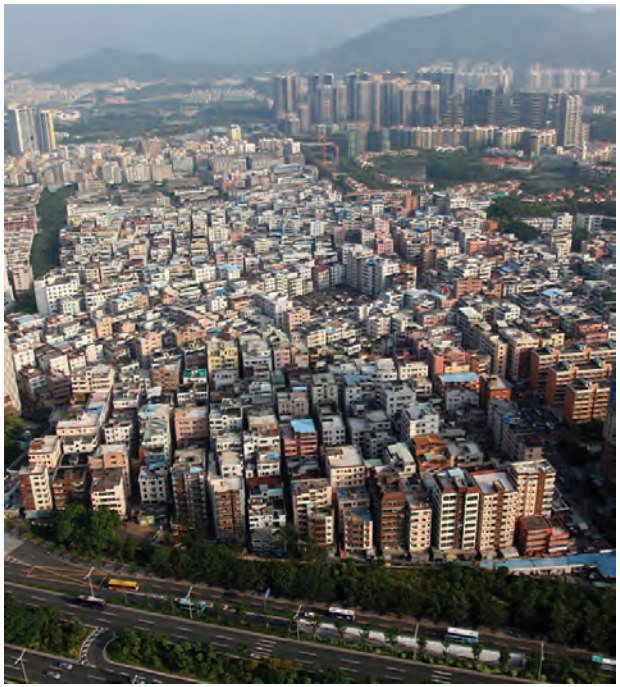

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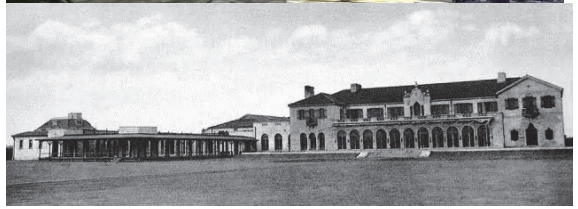

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udr 488 研究小组

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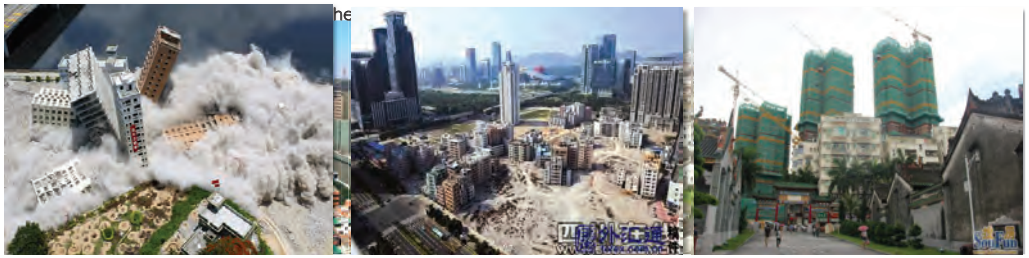

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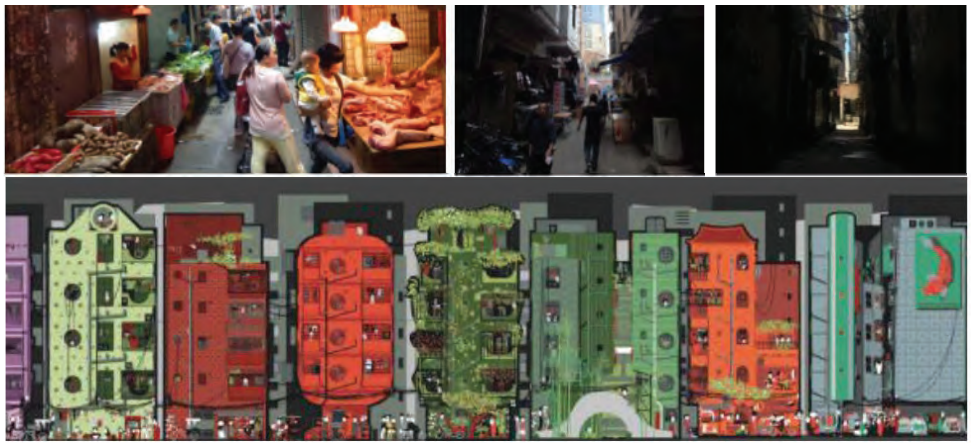

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中国国土空间规划改革简介

Introduction of Chinese Spatial Planninng Reformation

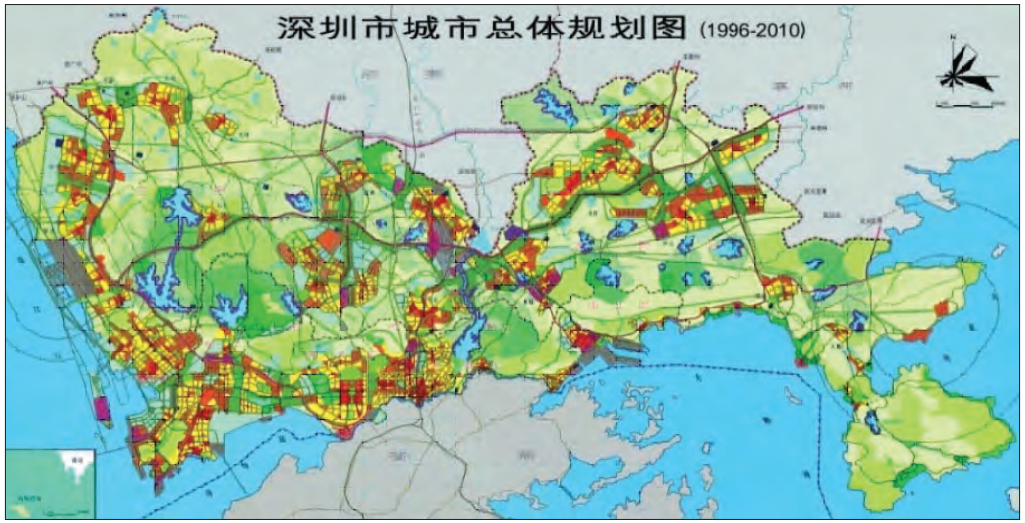
Hu Jingjing

2019.4

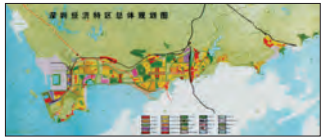
中国城市规划设计研究院

CHINA ACADEMY OF URBAN PLANNING & DESIGN

Urbanization under Urban Planning



Shenzhen Comprehensive Plan 1996



Shenzhen Comprehensive Plan 1982

■ 为什么要改革
Why reform on Planning?

■ 当前的实践—广州
Currnet practice—Guang Zhou

■ 主要改什么
The main characters

■ Why reform on Planning?

Chinese socio-economic context is changing

“Ecological Civializtaion” be the focused demand

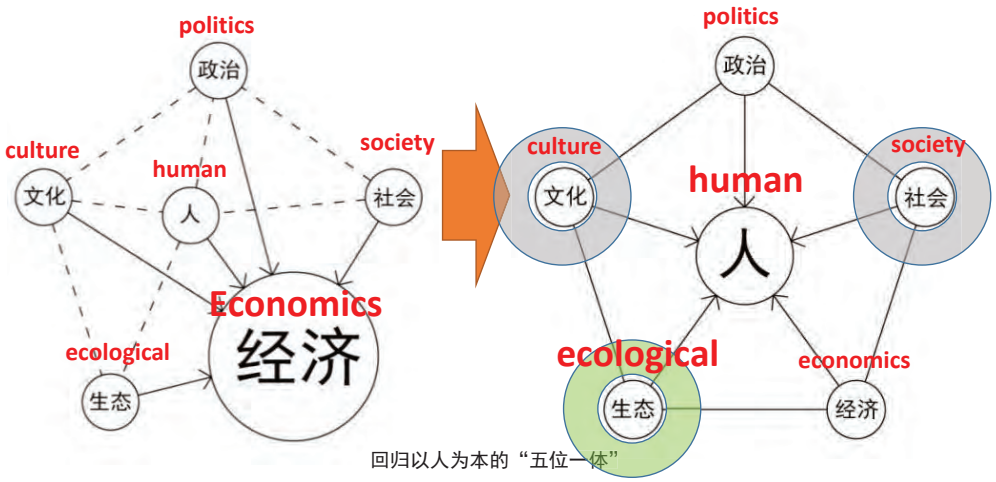
Bicycle+Watch+Sewing machine

Refrigure+TV+Washing machine

Computer+Air condition+Motor

人民日益增长的美好生活需要
What is a better life?

■ Why reform on Planning?



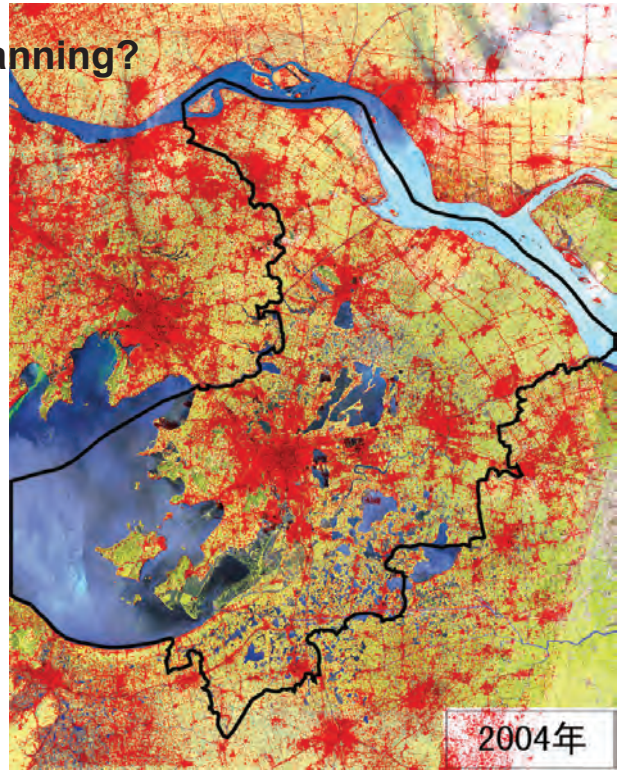
回归以人为本的“五位一体”

“Ecological Civializtaion” has been the centeral work in central government based on Chinese people’s demands

■ Why reform on Planning?

Planning:
From exciting
to conscious

Reformation:
From
develpoment
to balance



Urban Sprawl in Suzhou

■ Why reform on Planning?

“三规”编制、审批、监督、实施差异

Challenge 1：Multi-govement departments Multi-Plannings

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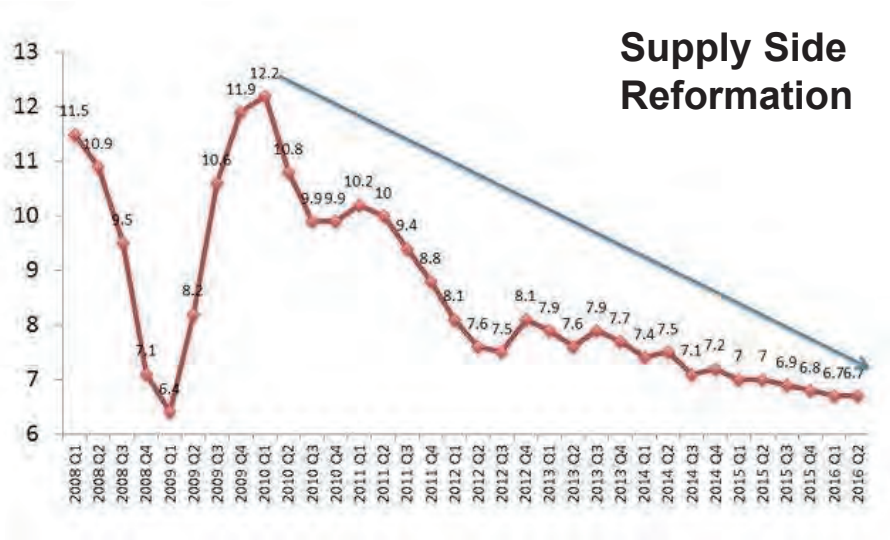
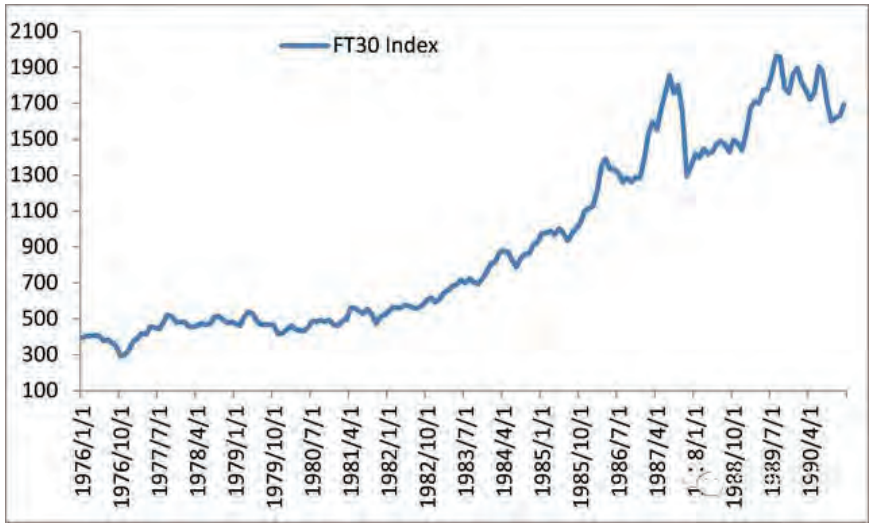
Supply Side Reformation



Challenge 2：development & regulation

“Thatcherism”: planning or not?



What’s the Chinese way?
Don’t go gentle into that good night

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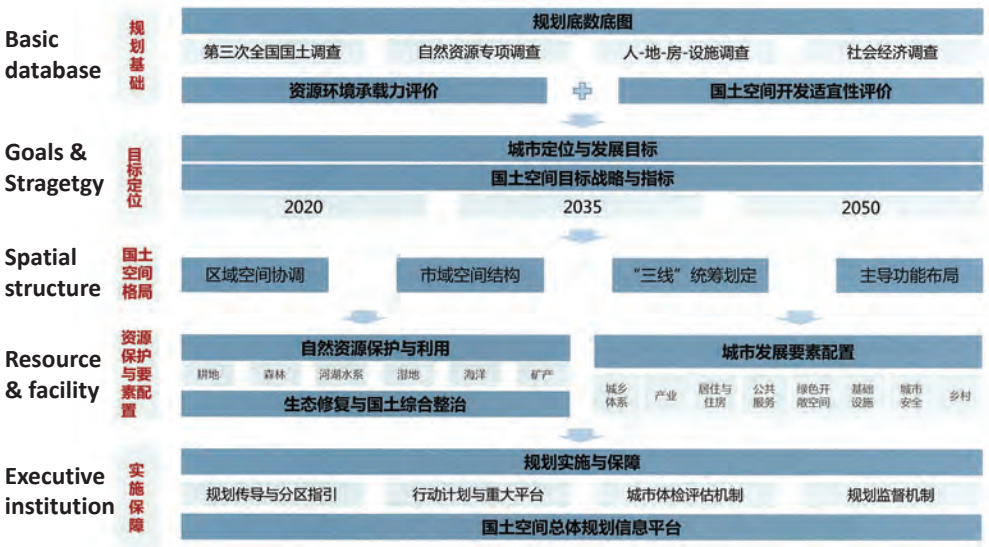
The main characters

Current Practice on Guangzhou



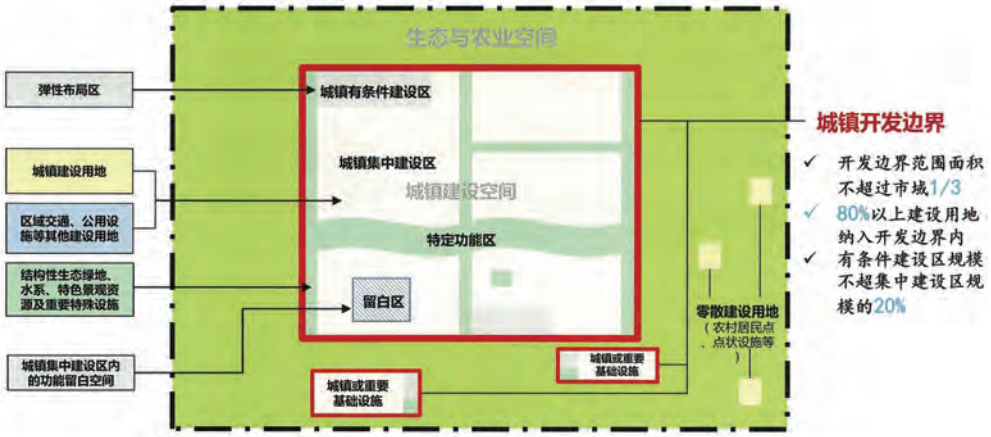
■ Current Practice on Guangzhou

耕地 Plowland
森林 Forest
湿地 Wetland
河湖 Water
海洋 Ocean
矿产 Minerals

人 People
地 Land
房 Building
设施 Facility

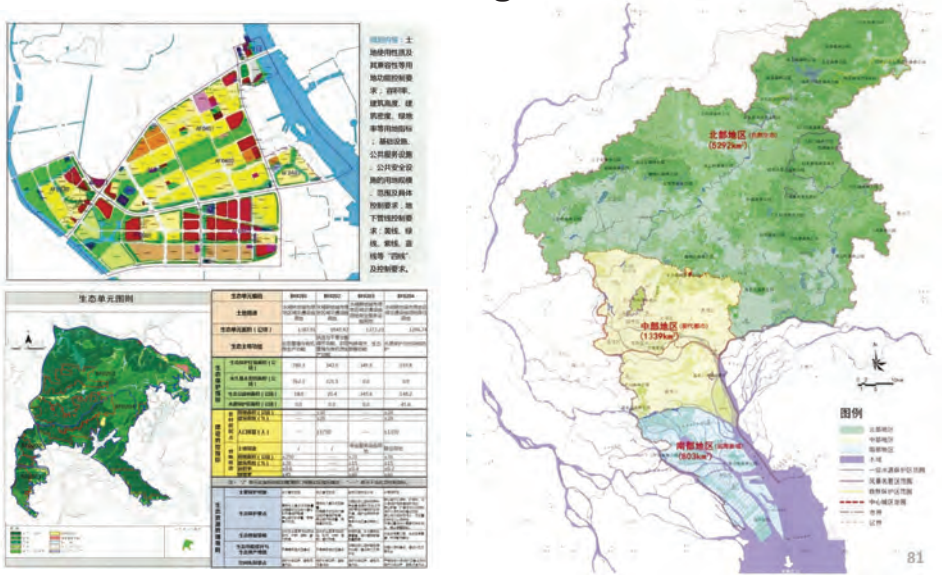
两个评价
Two Assesments

■ Current Practice on Guangzhou



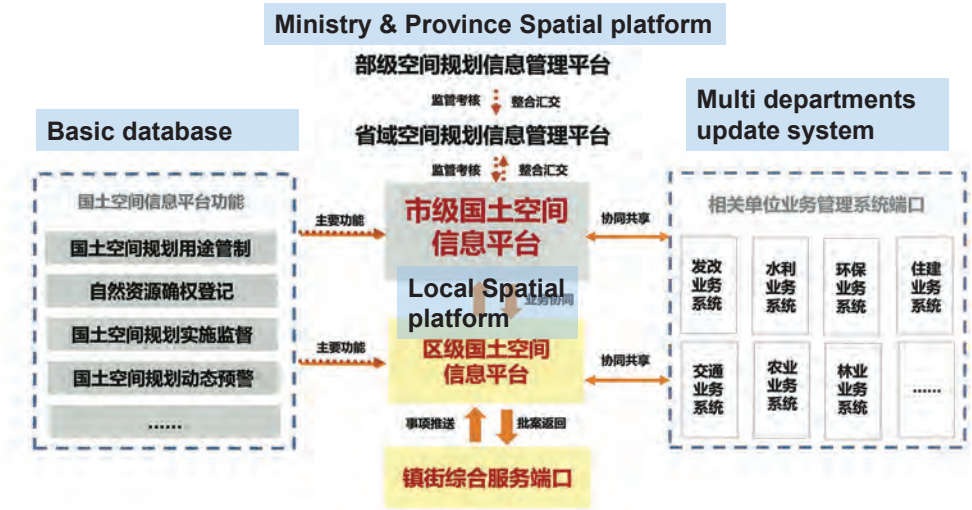
三条红线
Three Redlines

■ Current Practice on Guangzhou



一张蓝图
One Blueprint

■ Current Practice on Guangzhou



一张动态蓝图
One Dynamic Blueprint

■ 为什么要改革
Why reform on Planning?

■ 我们的实践—广州
Currnet practice—Guang Zhou

■ 主要改什么
The main characters

■ The Main Characters

Character 1：for high quality development

■ The Main Characters

05
核心战略

\+

Eco优先战略： 建立系统完备、分级管控的生态空间格局

Regional Development战略： 建立多中心、网络化、开放式的区域开发格局

Agriculture战略： 建立因地制宜、城乡协调的农业农村格局

Charming area战略： 建立绿色发展特色引领的魅力空间格局

Ocean战略： 建立陆海统筹、全域管控的海洋空间格局

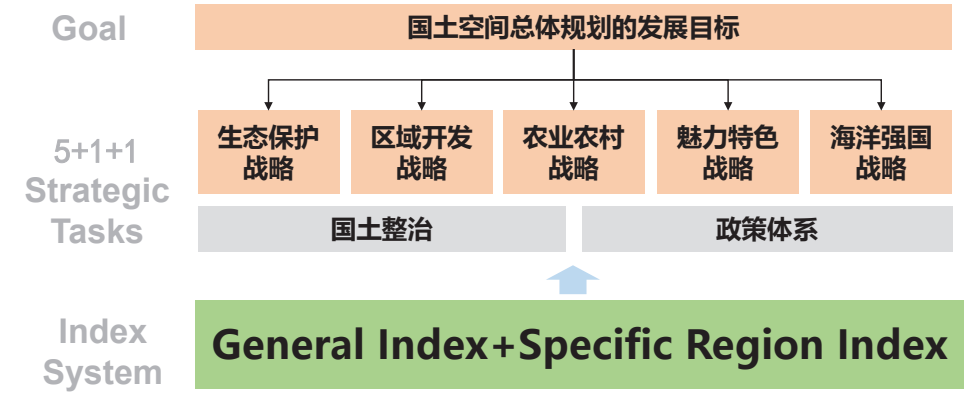
1
\+
1

国土综合整治

政策指引设计

Character 2：intergtality

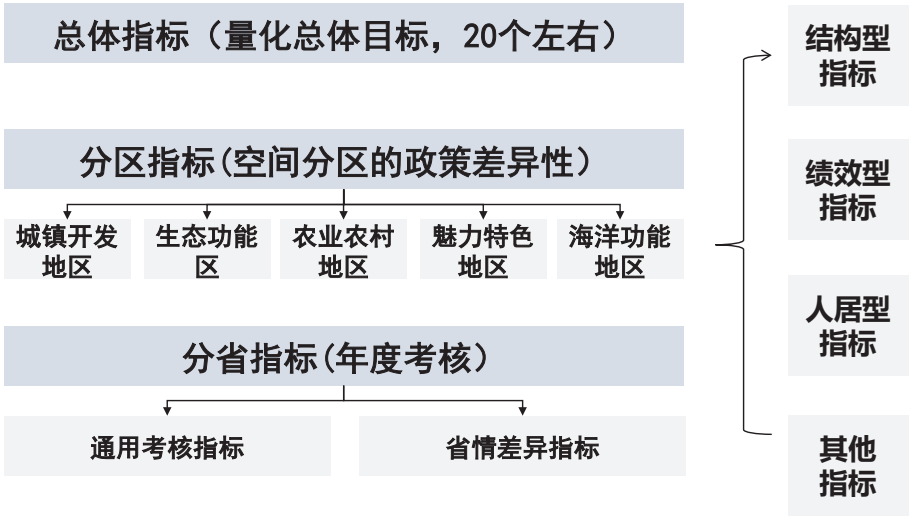
■ The Main Characters



落实到底，责任到地

Character 3：

■ The Main Characters



To be continued

ECO CIVILIZTION and A NEW URBAN AGENDA

- Urgent need of addressing the quality of urbanization to contribute to economic prosperity
- Prevent environmental risk
- Promote social well-being

- **Next steps for international corporation：**

Urban Modles and Paterns:
International Comparative Research
Good Institutions for Plannning and Governace:
International Experience Learning
Innovateive Technicles Implicationn On Cities and Urbanization:
International Joint Discussion

THANKS

Ioulia Ossokina
Eindhoven University of Technology (The Netherlands)
TU/e www.ossokina.com

Transportation and urban development: *an economic view*

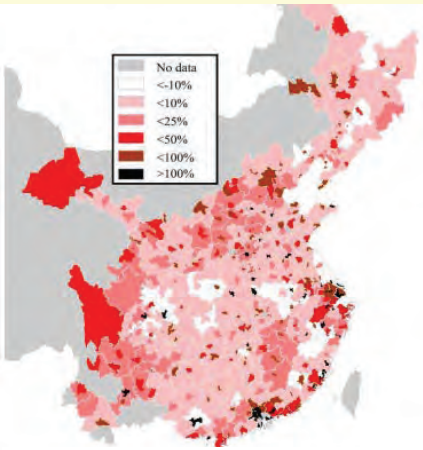
People, not structures, determine a city's success

Transportation shapes cities through people's behaviour

Death of cities due to new technologies? Not likely

Round Table on China Green Urbanization and Environmental Improvement

08 April 2019, The Hague, New Babylon



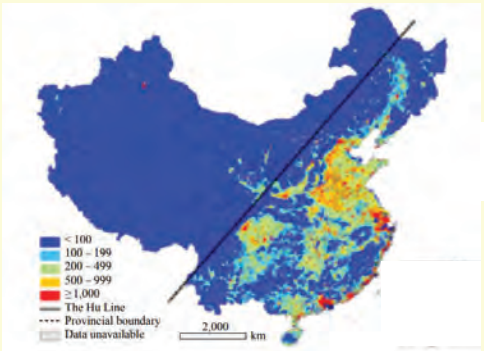
Population growth 1990-2010, from Baum-Snow et al., 2017

But first: China vs Netherlands

Beijing : 21.5 mln people, 1300 /km2

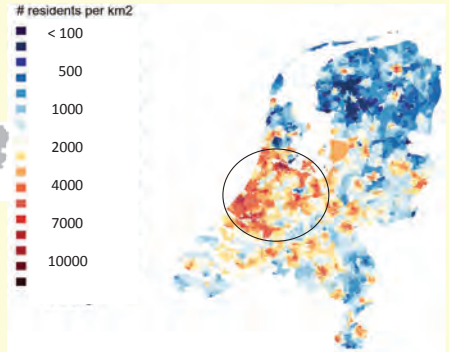
Amsterdam : 0.8 mln people, 5000 /km2
Randstad : 8.2 mln people, 1000 /km2

Urban population 60%



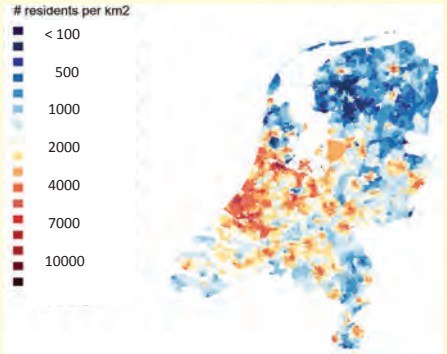
Qizhi et al., 2016

Urban population 90%



Teulings et al., 2018

Urbanization: people cluster in attractive locations



jobs

amenities

heritage

shopping

culture

wifi

nature

Clustering has pros and cons

Advantages of clustering: agglomeration

Sharing

Matching

Learning

Disadvantages of clustering: congestion

Open space deficit

Traffic congestion

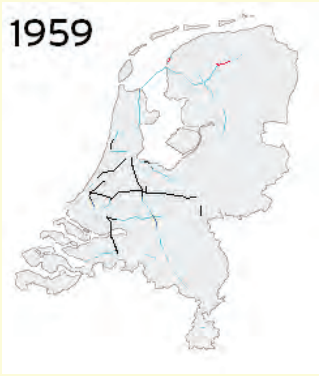
Environmental damage

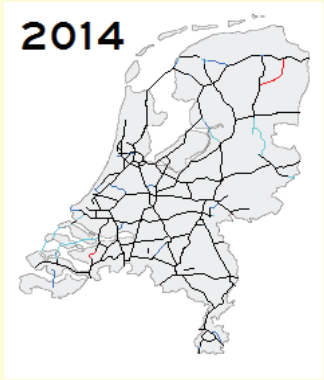
→ No death of cities

Transportation shapes cities through people's behaviour

20th century – highways

–> suburbanisation
(Baum-Snow, Garcia-Lopez)
Without highways there would be
5% more population in central cities





People and firms relocate when accessibility changes

Teulings et al., 2018

People compare home locations on:

Wage
Amenities
↑ Attractiveness ↓
Travel.time.costs
Land.price

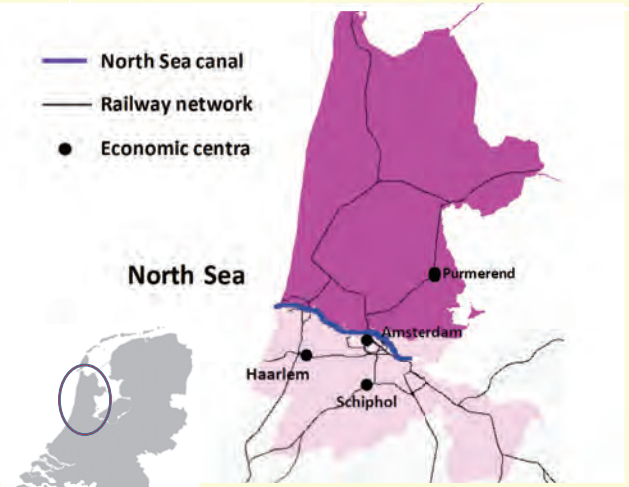
→ Travel time and costs adjust
→ Firms adjust work locations
→ People adjust home locations
→ Land prices adjust

Harry

Hermione

Dudley

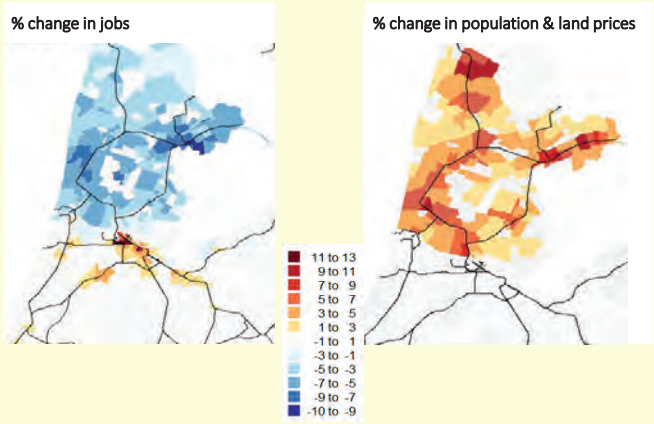
Case: effect of tunnels under North sea canal



Province Noord-Holland:
15% of population,
economic centres Amsterdam and Schiphol
cut in 2 parts by North Sea canal

What are the effects of building tunnels?

Relocation: centre gets jobs, hinterland gets population



Harry:

lived in the North, worked in the North,

changes job to Amsterdam

Hermione:

lived in Amsterdam, worked in Amsterdam,

changes house to the North

These mechanisms work for China too

Baum-Snow et al., 2017, 2019

Effects of highways for prefectures

Regional primate prefectures win

population, economic output, manufacturing and services ↑

At the cost of hinterland prefectures

population & agriculture ↑ manufacturing ↓

Effects of highways for cities

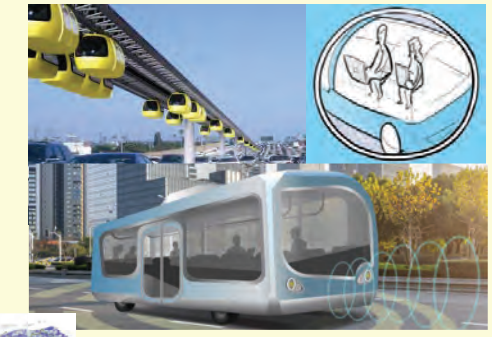
Central cities loose population to suburbs

↓ 4% population with each radial highway
20% population with each ring road

Will new technologies lead to death of cities?

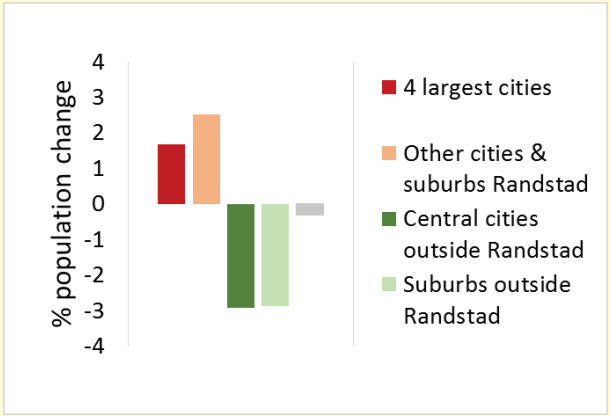
Automated private car → suburbanization

Automated rapid transit → urbanization



Large cities become even larger, small cities loose population

Gelauff et al., 2019



Randstad is a conurbation in the central-western Netherlands

Death of cities is unlikely. Because people want to live in cities.

Policy challenges

1) New transport technology requires new policy approaches

2) New technology attracts people to large cities _____
- Let cities grow at the cost of livability? OR
- Restrict growth making cities for the rich only?

3) Transport connection to metropoles can change the function of smaller cities _____
- Make them attractive living places
- At the cost of losing economic activity

Big data and behavioural research can help

Ministry of the Interior and Kingdom Relations

National Spatial Planning in The Netherlands

Marcia van der Vlugt
Spatial Planning Directorate

April 8, 2019

Characteristics and facts about The Netherlands

Characteristics and facts about The Netherlands

Historically efficient use of space was pure **necessity**:

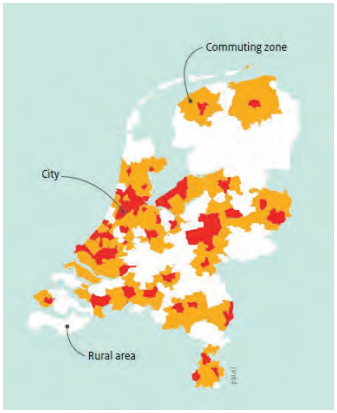
- Water safety
- Need for new land (polders, drainage, etc)
- Balance between urban and rural development

Characteristics and facts about The Netherlands

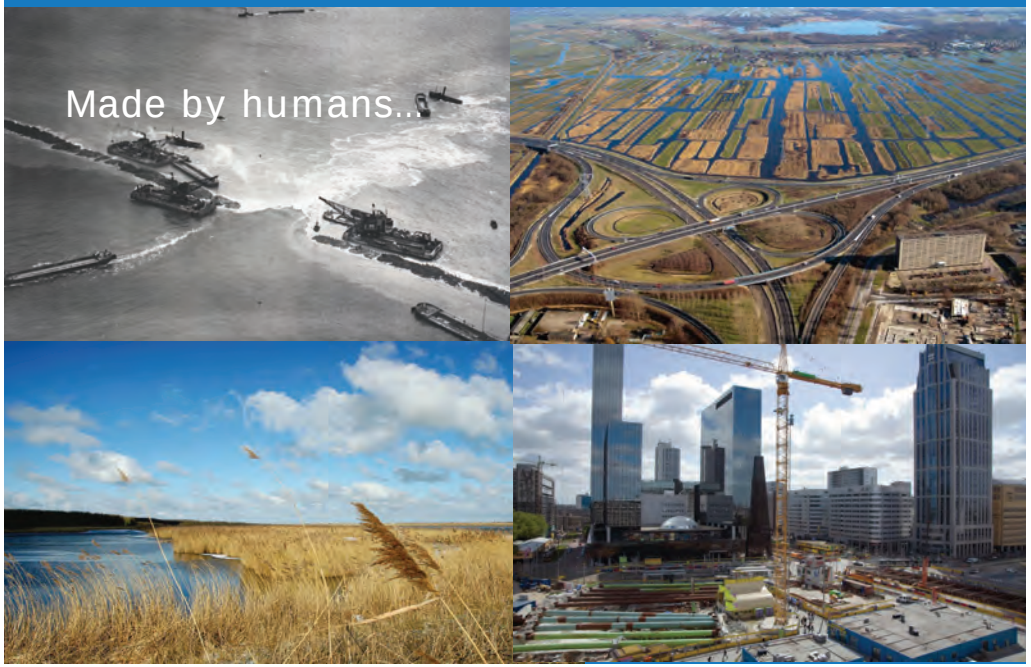
Efficient and smart use of space

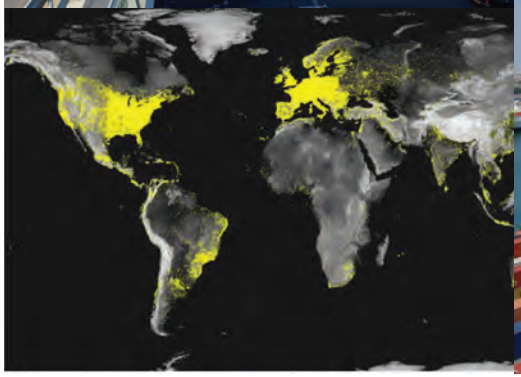
remains pure necessity:

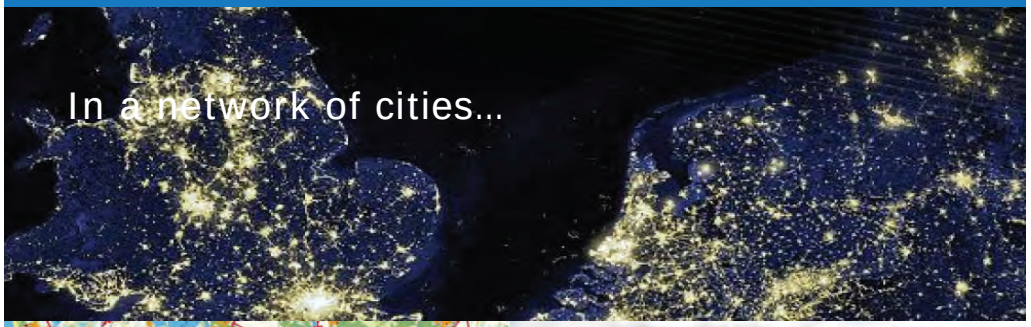
- 17 million people sharing 42,000 km2
- Population density of over 400 per km2
- Over 40% live in the Randstad conurbation
- 135,000 km roads
- 2.1 million hectares agricultural land



More facts:
https://www.pbl.nl/en/publications/cities-in-the-netherlands-chinese







Urbanisation challenges in The Netherlands

Since 1950s

- Green areas
- Suburbanisation
- Mobility
- Energy
- Water safety

Today

- Urbanization
- Ageing population
- Climate change
- Energy transition
- Scarcity of resources
- Traffic congestion
- Public transport services

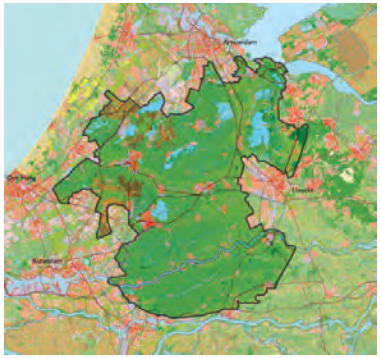
Historical background: National planning rules and strategic plans

20th Century - Seeking balance between cities and farmland. Need for housing as a main driver.

- 1901 - Housing Act. Modern planning starts: rules on housing
- 1930s - Beginning of regional plans: cities and surrounding land
- 1950-60s - National spatial planning: urban reconstruction after WWII / housing shortage
- 1970s - Suburbanisation (polycentric but concentrated)
- 1980-90s - Regeneration of existing city
- 2000s - New national spatial policy goals: decentralization of planning

Historical background: protection of green areas

- Rapid urbanisation 1950s: concerns on availability of rural land
- Leisure later.
- Restriction on new housing in green fields, preventing sprawl
- New towns at some distance of the cities to prevent massive suburbanisation of the 'Green Hart' of the Randstad
- Late 1990s: provincial policy of red and green lining



Historical background: protection of green areas

- Now:
  Scale of sustainable urbanisation to discourage building in greenfields.
- Results:
  - Main cities still surrounded by agricultural landscape
  - Preservation of historical landscape
  - Effects on recreation and health

Characteristics of Dutch spatial planning

- Multi level government
- Using urban design
- Consultation of stakeholders
- Long term objectives
- Integrated planning
- Monitoring progress

Organization of the government: Spatial planning decisions at 3 levels

1. **Local (355 municipalities, 21 water authorities)**
   > 1 Zoning plan, structure plan.
   > 2 Dikes and water safety
2. **Regional (12 provinces)**
   > Structure vision
3. **National (12 ministries)**
   > Structure vision/national plan
   > National interests
   > Coordination of national policy
4. **International**
   > Border areas,
   > European Union.
   No spatial planning competence, but influential.

Legal basis

Now

- The Spatial Planning Act (Wro)
- Implementation Decisions (Bro, Barro)
- *National Policy Strategy for Infrastructure and Planning (2012)*

2021

› Environment and Planning Act

› Digital system of the Environment and Planning Act (DSO)

› Implementation Decisions (Ob, Bkl, Bal, Bbl)

- *National Environmental Planning Strategy*

Ladder for sustainable urbanisation

The Ladder for sustainable urbanisation (Ladder) is an instrument for efficient use of space. The competent authority must meet a justification requirement if new urban developments are made possible in planning terms.

Major transitions ask for new more integrated laws and plans

1. Transitions in the living environment

a. to renewable energy
b. adaptation to climate change
c. smart and green transport
d. the circular economy
e. liveable and accessible cities

Integrated approach

Major transitions ask for new more integrated laws and plans

2. Societal demand for more efficient procedures

Now working on: integrating Spatial Planning Act
into
Environmental and Planning Act

With this new act and transitions a new national strategy is needed.

Main challenges for the new national spatial vision on planning and the environment (NOVI)

1. Towards a sustainable and competitive economy
2. Towards a climate resilient and neutral society
3. Towards a future proof and accessible living and working environment
4. Towards a valuable living environment

Developing the national strategy: a process of cooperation

With different ministries

With different layers of government

New strategic national plan / vision

With scientists

With Society

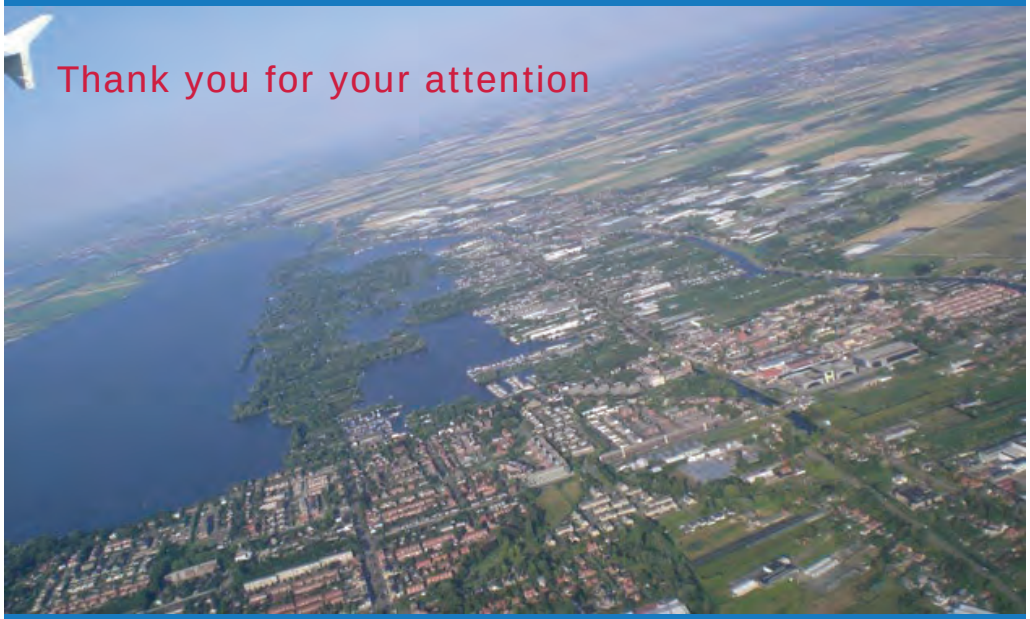
NGO's,companies, the public.

Conclusion

What can national planning do for urbanization?

- Always innovating itself: combining long term objectives, stakeholder consultation, organisations to manage this, and progress monitoring and adaptivity: coming towards an innovative planning.
- Relation between green areas, housing, business districts and transport modes.
- Role for both law, policy and urban design.

Thank you for your attention



Utrecht City – Sustainble growth for Healthy Urban Living

UTRECHT REGION

UTRECHT REGION

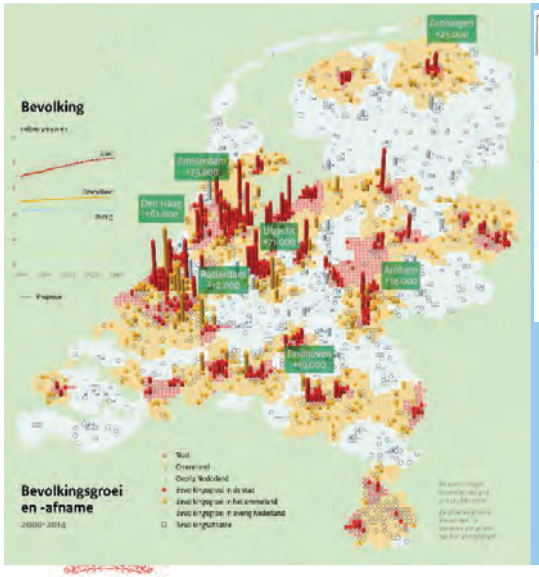
UTRECHT REGION

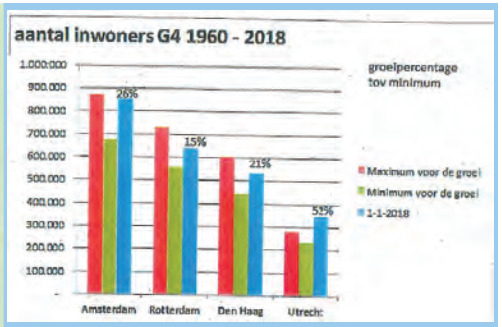
UTRECHT REGION

UTRECHT REGION

UTRECHT REGION

Growth





Gemeente Utrecht

Utrecht.nl

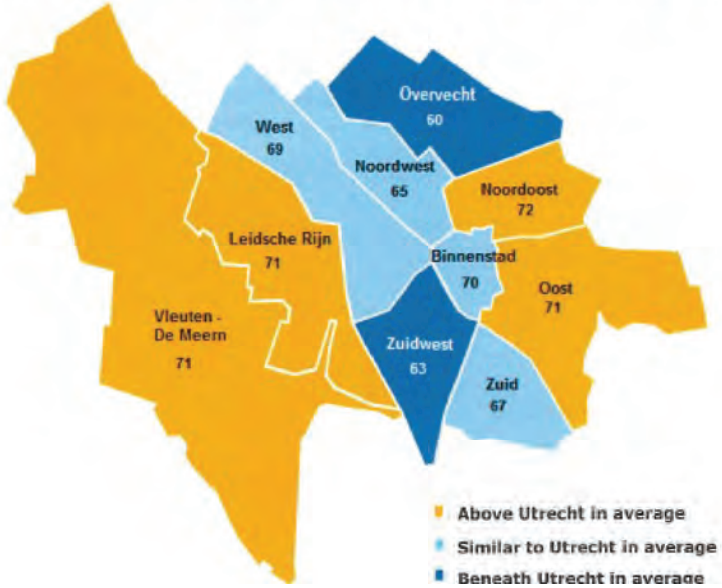
UTRECHT REGION

UTRECHT REGION

UTRECHT REGION

UTRECHT REGION

Life expectancy in good health, per neighbourhood - 2012

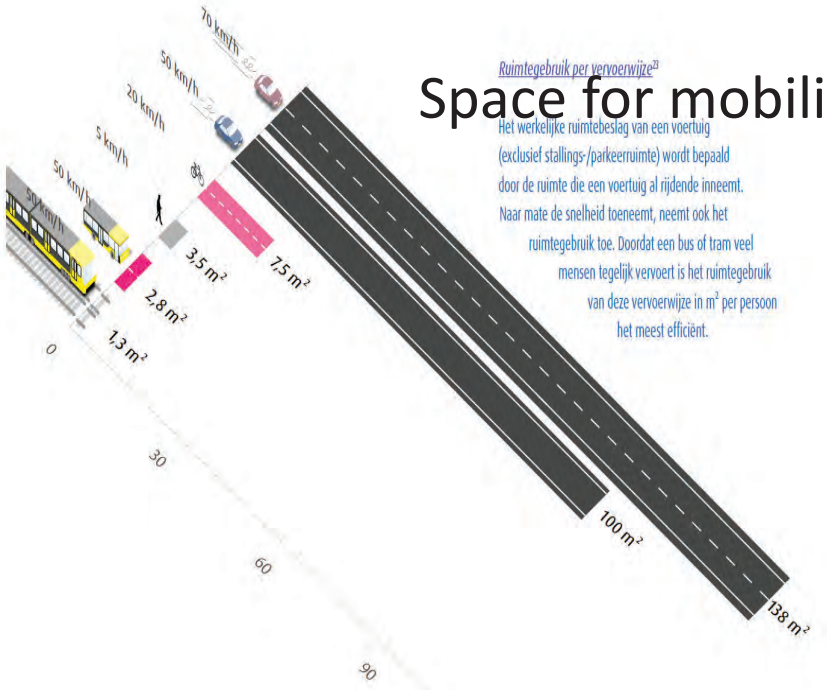


UTRECHT REGION

The answer: densification

UTRECHT REGION

Space for mobility



Ruimtegebruik per vervoerwijze[23]

Het werkelijke ruimtebeslag van een voertuig (exclusief stallings-/parkeerruimte) wordt bepaald door de ruimte die een voertuig al rijdende inneemt. Naar mate de snelheid toeneemt, neemt ook het ruimtegebruik toe. Doordat een bus of tram veel mensen tegelijk vervoert is het ruimtegebruik van deze vervoerwijze in m^2 per persoon het meest efficiënt.

CHT REGION

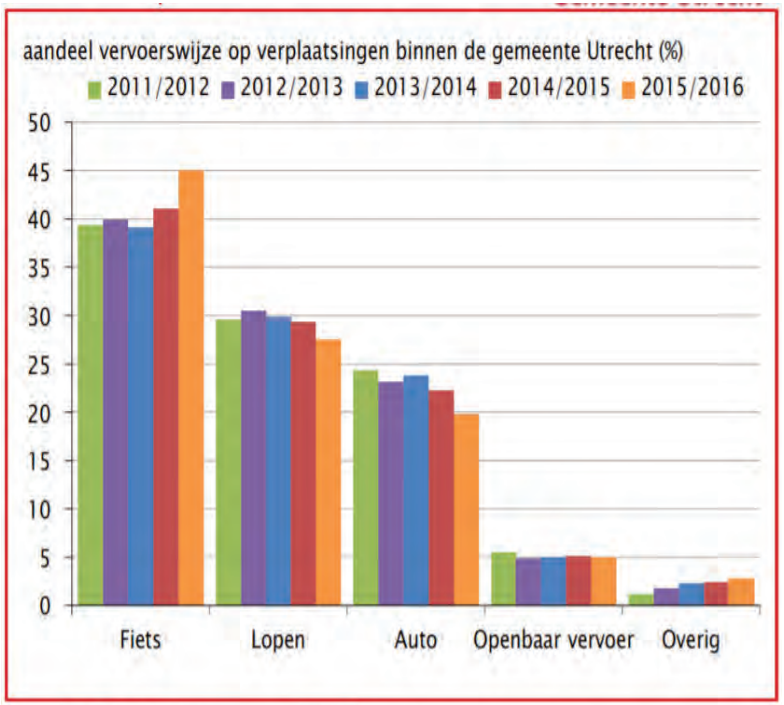
Focus on bike and public transport

UTRECHT REGION

Space for quality public area

'Allure' op Mariaplaats

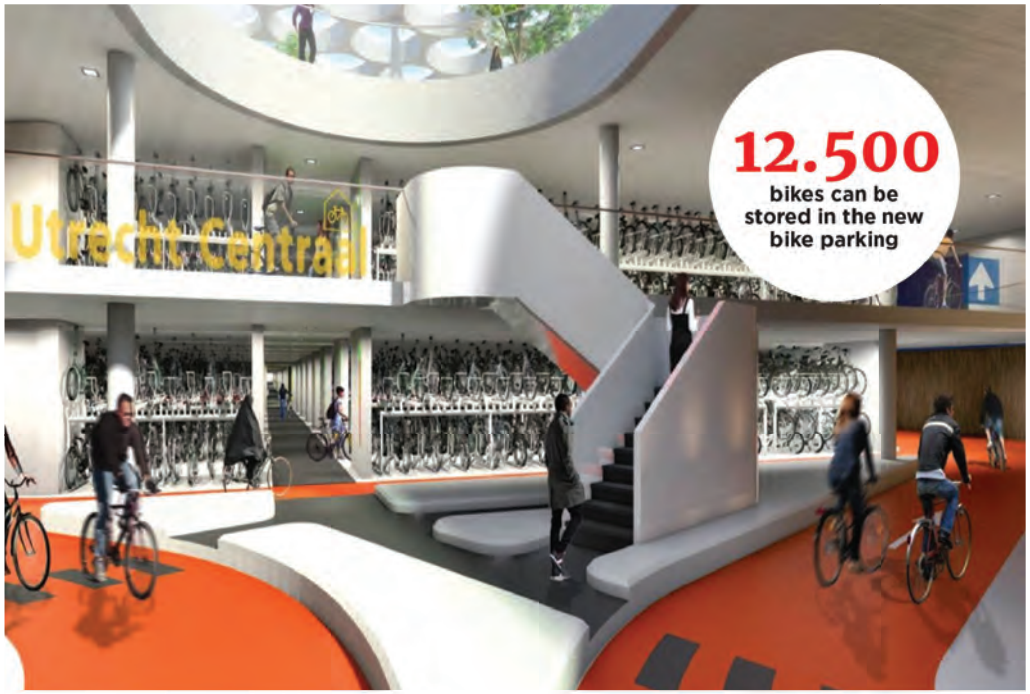
UTRECHT REGION



Bron: CBS (2016) i.o.v. gemeente Utrecht

UTRECHT REGION

UTRECHT REGION



UTRECHT REGION

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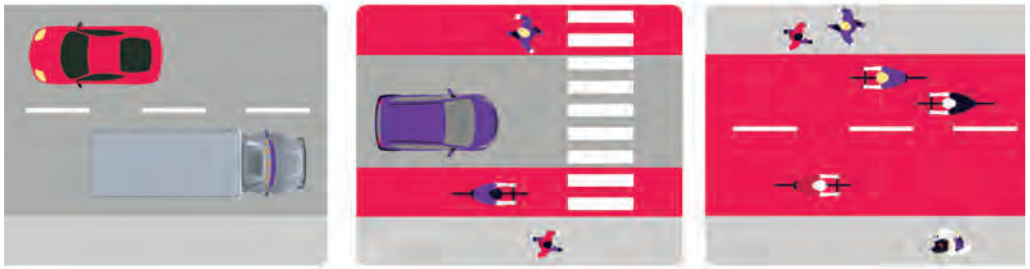


Utrecht City Centre

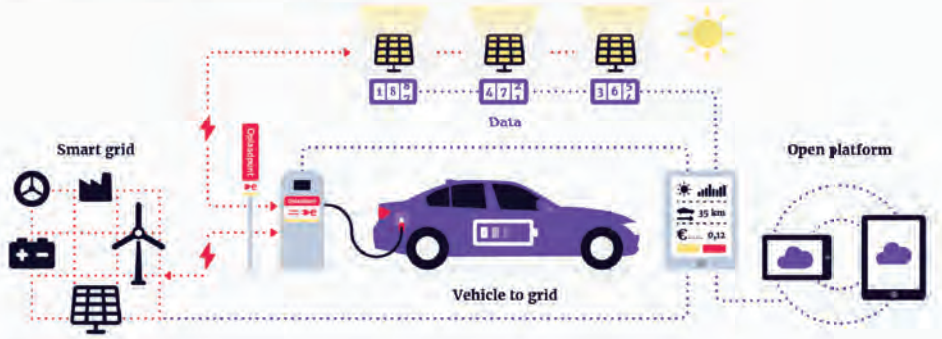
30% less cars

20% more cyclists

UTRECHT REGION

Healthy environment – Sustainability

- Houses with net zero energy costs
- Increase solar charging with citizens
- Lomboxnet. Smart grids (vehicle-to-grid)



UTRECHT REGION

UTRECHT REGION

FIRST FULLY LOW-EMISSION ZONE IN THE NETHERLANDS

UTRECHT REGION

UTRECHT REGION

UTRECHT REGION

UTRECHT REGION

UTRECHT REGION

Rotterdam Climate Resilient Delta City

Approach; Governance; Implementation;
Mainstreaming; Stakeholders

Arnoud Molenaar
Chief Resilience Officer, City of Rotterdam
@ResilientRdam
www.resilientrotterdam.nl

OUR RESILIENCE GOALS.

1. Rotterdam: A balanced society
2. World port city built on clean and reliable energy
3. Rotterdam Cyber Port City
4. Climate resilient Rotterdam to the next level
5. Infrastructure ready for the 21st century
6. Rotterdam Networkcity – truly our city
7. Anchoring resilience in the city

Rotterdam Resilient Port City

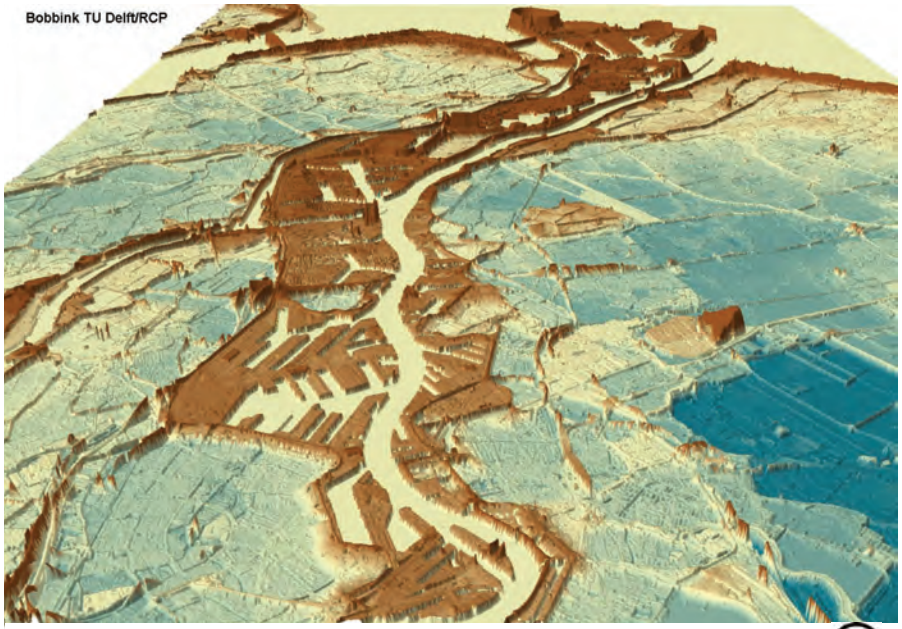
City

Area :	320 km2
Inhabitants:	625.000
Nationalities:	175
Municipal Budget:	4,2 billion Euro's

Port

Area:	105 km2 (50 km2 commercial sites)
Length of port area:	45 km.
Direct employment:	over 70,000 jobs
Goods throughput:	over 400 million tonnes of goods per annum
Shipping:	33,000 sea-going vessels and 110,000 inland vessels per annum

Challenges



Topo map: above (brown) and below (blue) sea level

Ongoing urban development...

2nd Juli 2011 | Copenhagen | more than 150 mm of rain fell in 2 hours causing an estimated 6 billion € of damage

3 June 2016: Flooded Seine River in Paris hits 6m

August 2017: HOUSTON – 100.000 homes damaged

23 Juni Randstad: Damage estimated 20 miljn euro

Effects related to Climate Change

Flooding Noordereiland

Water quality

Excessive rain fall

Levee breakthrough (drought)

Inundated cellars

Heat waves

The Process

Water = Urban Quality…

Rotterdam climate change adaptation strategy

Holistic, multi-level and multi-stakeholder strategy

Robust and resilient

Sewerage + watersquare

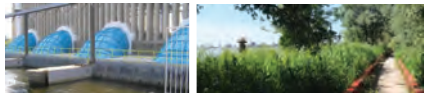
Protection and moving in tune

Dikes + adaptive building en design

Delta works, small scale projects

Storm surge barriers + 'Remove tile, plant greening'

Technology and nature



Pumping + green banks

Timeline Rotterdam 's transition process towards a resilient delta city

Water

+ Spatial Planning

+ Climate Change

+ Resilience (wide spectrum)

Implementation

Multifunctional Solutions

Water square Benthemplein…

Water square Benthemplein…

…AND CLIMATE RESILIENCE BY DESIGN...

Urban Floodplain

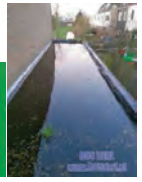
PLAY GROUND & WATER SQUARE FREDERIKSPLEIN

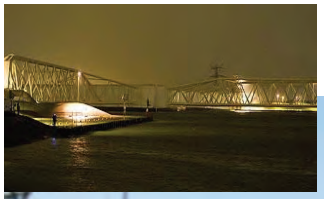
Green Roofs Program: community involvement

ZOHO: First Climate Proof District

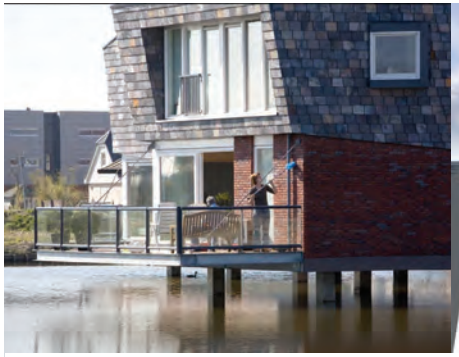
Building a green framework and programmatic clusters for and with the neighbourhood

+






…SEALEVEL RISE - RESILIENCE BY DESIGN...




Opportunity: Adaptive Water Front development


Next Level

OUR RESILIENCE GOALS.

1. Rotterdam: A balanced society
2. World port city built on clean and reliable energy
3. Rotterdam Cyber Port City
4. Climate resilient Rotterdam to the next level
5. Infrastructure ready for the 21st century
6. Rotterdam Networkcity – truly our city
7. Anchoring resilience in the city

RESILIENCE GOALS.

GOAL 4:

CLIMATE ADAPTIVE ROTTERDAM TO A NEW LEVEL

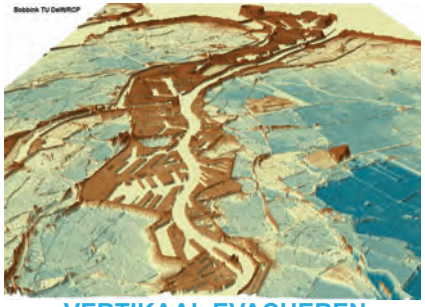
"Climate proof plus cyber proof critical infrastructure"

"Large scale implementation of small scale solutions together with citizens"

"Next level of integrated approach"

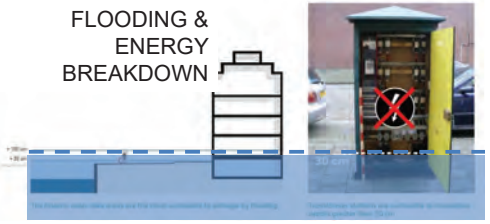
1.000.000 M2 SUSTAINABLE ROOF LANDSCAPE IN ROTTERDAM CITY CENTRE

INFRASTRUCTUUR EN KWESTBAARHEID



VERTIKAAL EVACUEREN

FLOODING & ENERGY BREAKDOWN



New York: black-out by Hurricane Sandy in okt. 2012

Inadequate protection of vital infrastructure

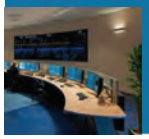
Source: Iwan Baan

VULNERABLE!!

RESILIENCE GOALS.

GOAL 3:

ROTTERDAM CYBER PORT CITY




"Rotterdam aims to be a cyber resilient city and port; an important condition required to attract new business and investment"

THE ROTTERDAM "DELTAPLAN" CYBER

1. Cyber Aware Society
2. Cyber Competence Improvement
3. Cyber Resilience Desk
4. Cyber Resilience Co-Op
5. Cyber Building Codes
6. Disruption Learning Cycle
7. Cyber Resilience Community of Practice

COOPERATION

100RC: "We help cities around the world become more resilient to the physical, social, and economic challenges that are a growing part of the 21st century"

ROTTERDAM'S CLIMATE RESILIENCE 'ECOSYSTEM'

ROTTERDAM IS READY TO SHARE AND TO HELP!

- **APPROACH**: HOLISTIC CLIMATE RESILIENCE STRATEGY
- **SOLUTIONS**: MULTIFUNCTIONAL, USE NATURE & WATER SENSITIVE DESIGN
- **PARTNERS**: KNOWLEDGE INST., CONSULTANCIES & DESIGN BUREAUS

M. BLOOMBERG: *"Each part of the climate change problem has a solution that can make our society healthier & stronger"*

Thank You!

www.resilientrotterdam.nl

Resilient Rotterdam...
Be creative!

Global Center on Adaptation

Herman Sips
Senior Manager Partnerships
Lead officer China

GLOBAL CENTER ON ADAPTATION

The Global Center on Adaptation

- The Global Center on Adaptation advances bold actions that help societies across the world become more resilient to climate-related threats.
- Aim to accelerate climate adaptation worldwide
- Dual headquartered between Rotterdam and Groningen and
- Office in Beijing before Climate Summit 2019

GLOBAL COMMISSION ON ADAPTATION

Global Commission on Adaptation

Our Leadership

Ban Ki-moon
8th Secretary General of the United

Bill Gates
Co-founder of the Bill & Melinda

Kristalina Georgieva
CEO, World Bank

“

Without urgent adaptation action, we risk undermining food, energy and water security for decades to come.

The costs of adapting are less than the cost of doing business as usual. And the benefits many times larger.”

Ban Ki-moon
8th Secretary General
of the United Nations

Our Convening Countries

- Argentina
- Bangladesh
- Canada
- China
- Costa Rica
- Denmark
- Ethiopia
- Germany
- Grenada
- India
- Indonesia
- Marshall Islands
- Mexico
- Netherlands
- Senegal
- South Africa
- United Kingdom
- Uzbekistan

Our Commissioners

Our Flagship Report

The report will set out:

WHAT
new actions need to be taken and what must be done differently.

WHY
adapting to climate risks and accelerated action is essential.

HOW
we can start working today to make the world a safer, better place.

Our Action Tracks

- Food Security and Rural Livelihoods
- Infrastructure
- Finance
- Nature-based Solutions
- Cities
- Empowering locally led action

Our Key Events

- **21st May 2019** Commissioners meeting to share first draft
- **June 2019** Final report draft shared with Commissioners & convening countries
- **Summer 2019** Commission meeting to adopt report recommendations
- **Sept 2019** Launch of Flagship Report & select Action Tracks
- **Oct 2019 – Oct 2020** Commission's Year of Action
- **Oct 2020** Climate Adaptation Action Summit

Our Key Events 2019

2019 Events	Location	Date
CBA13	Addis Ababa	April 1–4
49th session of the IPCC	Kyoto	May 8–12
ECCA 2019	Lisbon	May 28–31
Spring meetings of IMF and World Bank	Washington DC	April 12–14
Resilient Cities Congress	Bonn	June 26–28
G20 summit	Osaka	June 28–29
World Water Week	Stockholm	August 25–30
UNSG Climate summit	New York	September 23
Chatham House Climate Change Conference	London	October 7–8
COP25	Santiago	November 11–22

GLOBAL COMMISSION ON ADAPTATION

Our Year of Action

- Advance recommendations from Flagship Report and Action Tracks
- Help accelerate adaptation around the world
- Improve human well-being and result in more sustainable economic development and security
- Findings presented in October 2020 at Climate Adaptation Summit hosted by The Netherlands

GLOBAL COMMISSION ON ADAPTATION

Thank you!

(WORLD) WATERNET

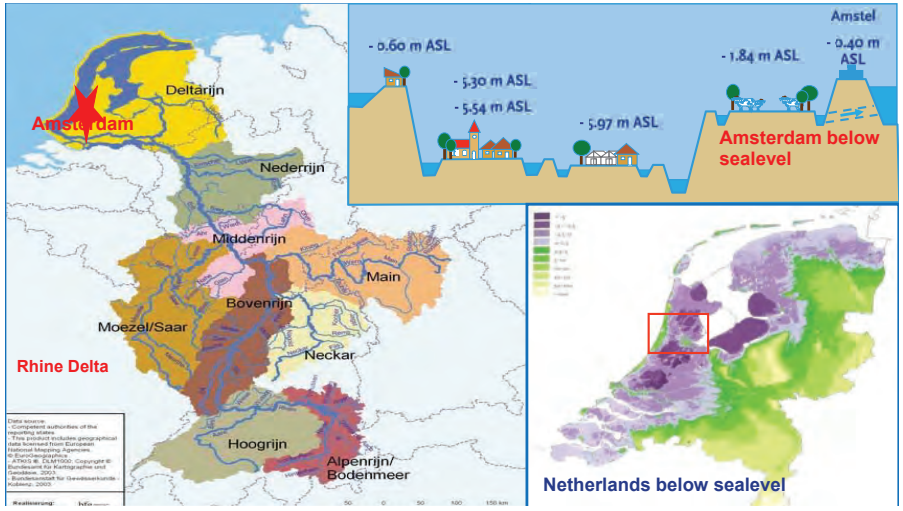
Kees van der Lugt, Regional Director World Waternet
Kees.van.der.lugt@waternet.nl

world waternet

Waternet is the Amsterdam public water cycle company

We provide water services to 1.3 million people in an urban delta area, on behalf of the City of Amsterdam and the Regional Public Water Authority

Waternet is the Amsterdam public water cycle company

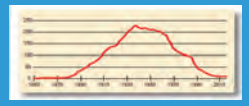


Regional water sector Netherlands

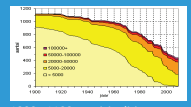

10 drinking water companies


23 regional water authorities


393 municipalities


1935: > 200 drinking water companies


1950: 2600 regional water boards


1900 >1100 municipalities

公共水务机构
Public water government

阿姆斯特丹市政府

City of Amsterdam
- 饮用水 Drinking water
- 污水 Sewerage
- 雨水 Storm water
- 地下水 Groundwater
- 航运和内陆水道 Shipping and inland waterways

Amstel, Gooi and Vecht地区水务局

Regional Water Authority Amstel, Gooi and Vecht
- 洪涝防护 Flood protection
- 水位管理 Water level management
- 水质管理 Water quality control
- 污水处理 Waste water treatment

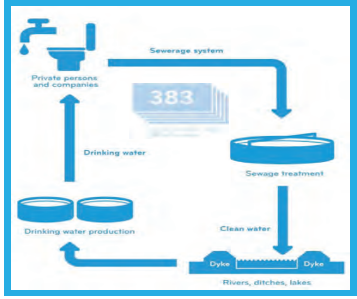
阿姆斯特丹综合水务管理机构——“水网”

waternet
waterschap amstel gooi en vecht
gemeente amsterdam

world waternet

waternet

核心价值 Core values
- 方便的 Expedient
- 可持续的 Sustainable
- 以客户为中心 Customer oriented



收费表 Tariff

2016年，一个四口之家需要支付：
a 4 person household in 2016 has to pay:

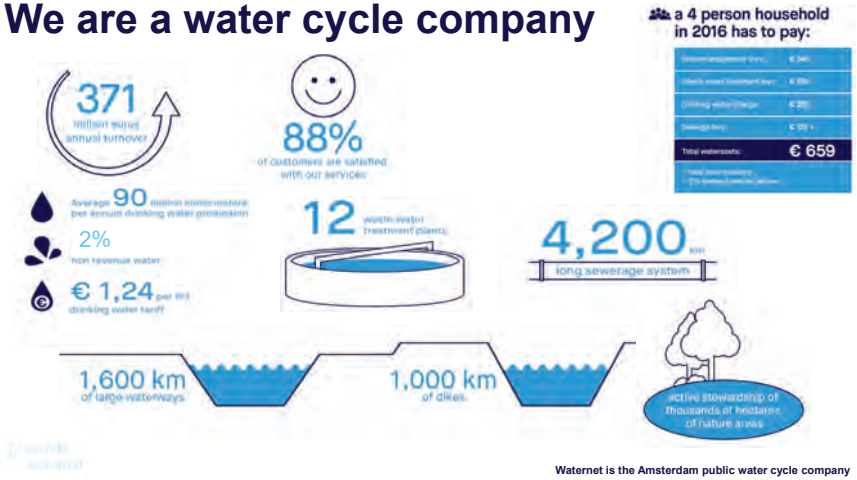
•水管理征税 Watermanagement levy:	€ 144
•污水处理征税Waste water treatment levy:	€ 159
•饮用水收费 Drinking water charge:	€ 205
•排水征税 Sewage levy:	€ 151 +
总计 Total watercosts:	**€ 659**

= 总成本回收 total cost recovery
= 2%年平均收入 2% average annual income

非盈利客户服务 Non profit customer service

• 客户满意度 Satisfied customers	83%
• 品牌意识 Brand awareness	91%

We are a water cycle company



Waternet is the Amsterdam public water cycle company

Integrated approach Amsterdam

- Watercycle management
- (Solid) waste to energy
- Urban development
- Smart City

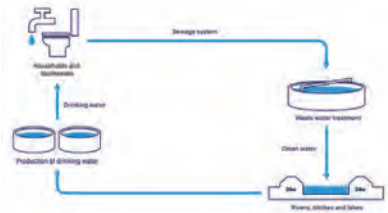
world waternet

We are experts in the whole water cycle

Amsterdam is No.1 in Blue City Index

Urban Water Atlas for Europe, European Commission 2017

wereld waternet



The advantages of our integrated water cycle approach:

- ✓ 88% of customers are satisfied with our services
- ✓ 20 Million euro cost reduction
- ✓ Innovation and cross-cutting improvements in the whole water cycle
- ✓ 100% climate neutral by 2020 (currently 60%)

Waternet is the Amsterdam public water cycle company

将创新应用于实践
Applying innovation in practice







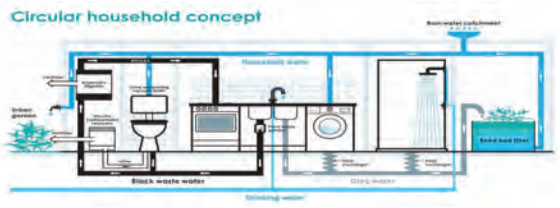
- 循环利用能量与资源
  Recirculation of energy and resources
- 适应气候变化
  Climate resilience
- 智能运营（IT，管理）
  Smart operations (IT, governance)

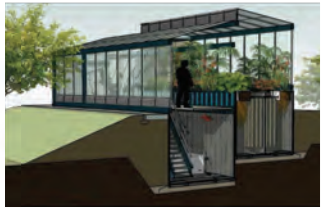
/innovation

Energy & Resources out of the watercycle

Drinking water production and distribution

Circular City: new sanitation, energy, resources






Green gas

Struvite reactor

Urine collection

Amsterdam Rainproof

Protecting vital infrastructure

platform / network organis

. More awarenes
. More value of rain
. Less damage
. More mainstreaming

Accumulated flood risk map

Multi layer safety approach

- Disaster management
- Physical planning
- Prevention

waternet

Water resilience: Amsterdam Rainproof

Knowledge Partner: City linkages

Berlin, Copenhagen, New York, Paris, Singapore

World Waternet matches public water institutions with water cycle experts and financiers

Kees van der Lugt – Regional Director
Kees.van.der.lugt@waternet.nl

Water Cycle experts

waternet | DUTCH WATER AUTHORITIES

Financiers: € 3.5 Million

world waternet

Our partners:
Public water institutions in 21 metropolitan areas

wereld waternet

Waternet is the Amsterdam public water cycle company

We strive towards water services for all

6 CLEAN WATER AND SANITATION | 11 SUSTAINABLE CITIES AND COMMUNITIES | 13 CLIMATE ACTION

To meet the Sustainable Development Goals, we are dedicated to:

- ✓ Increase access to water and sanitation services of all people in metropolitan regions
- ✓ Integrated water resources management in the whole water cycle
- ✓ Maintain and conserve the water supply sources in a sustainable way
- ✓ Govern and Cooperate with all stakeholders in the whole water cycle
- ✓ Triple the water infrastructure investments by 2030
- ✓ Raise awareness for behavioral change
- ✓ Innovations, new technologies, methods, concepts and finances

Water Operator partnerships

- Long term G2G cooperation
- Strenghten organization
- Knowledge exchange
- Burkina Faso, Indonesia, Egypt, Ethiopia, Kenia, Laos, Mali, South Africa,

world waternet

WOP Laos: towards financial, technical and operational resilience

Zhuhai
Road to a Rainproof City

Deyang: Multi functional ecological Wetland Park Jingnan

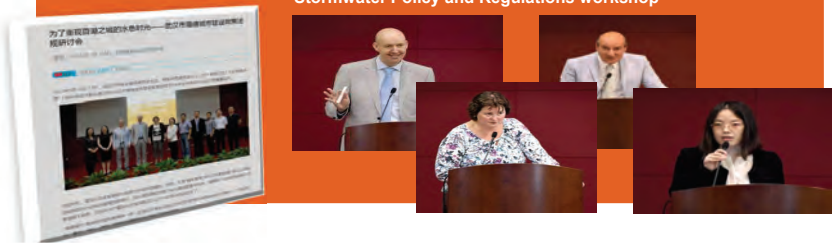
- Drinking water supply
- Water storage
- Nature
- Education
- Recreation

world waternet 中信建筑设计研究总院有限公司 ARCADIS Design & Consultancy for natural and built assets

Arcadis and World Waternet active in Wuhan Sponge City program

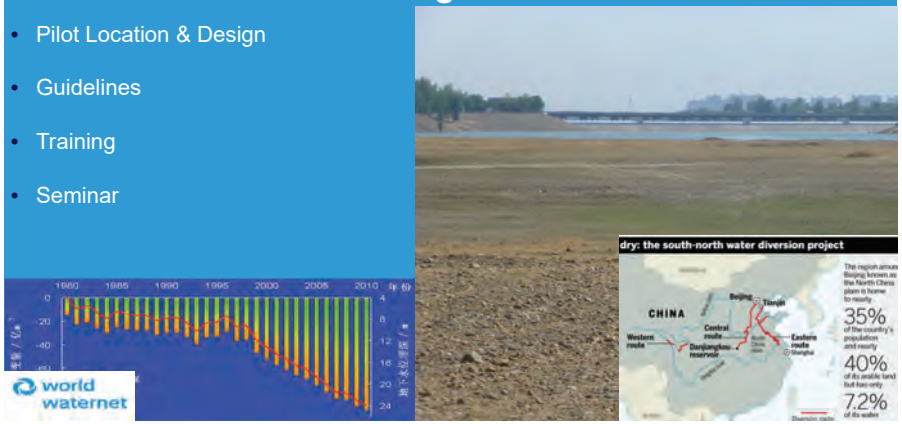
Reviewing and advising on technical affairs and water policy

Stormwater Policy and Regulations workshop



Beijing
Artificial Recharge Chaobai River

- Pilot Location & Design
- Guidelines
- Training
- Seminar



Amsterdam International Water Week

Save the date: 4-5 November!

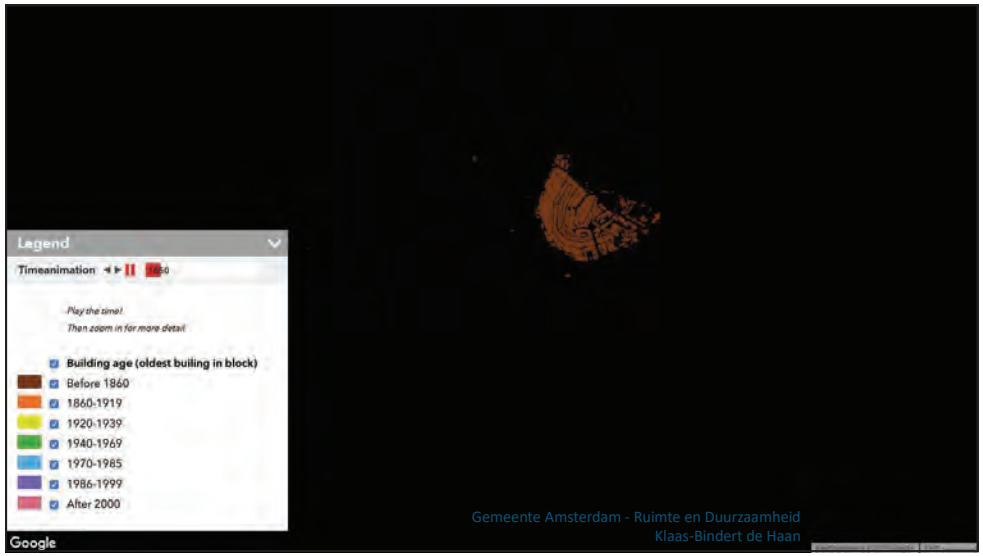
waternet

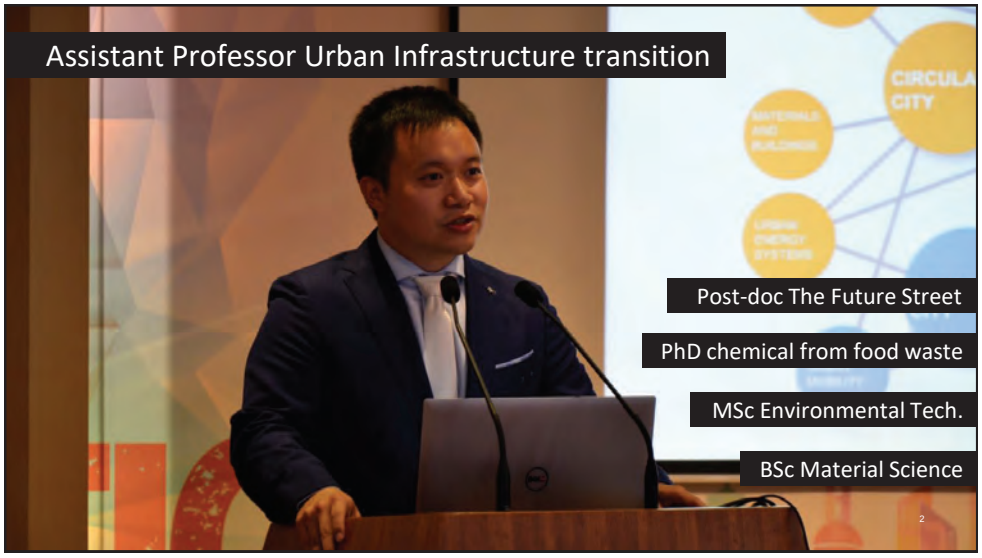
TITEL

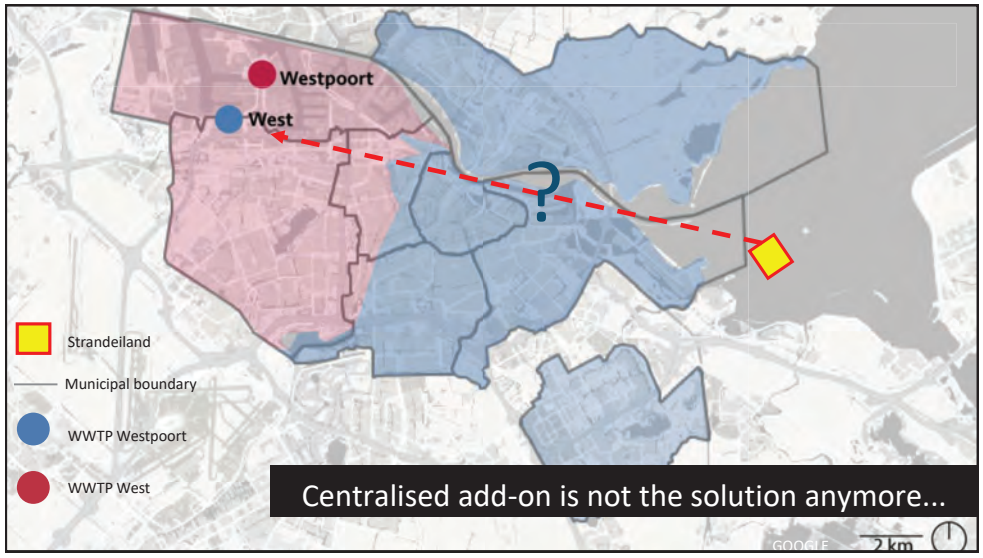
Integral Urban Infrastructure Transition

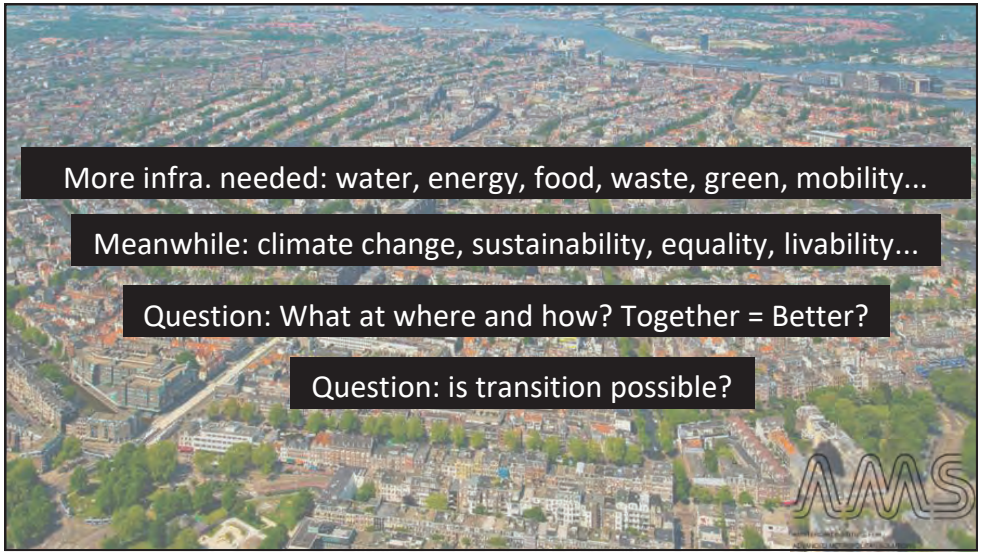
Dr.ir. Wei-Shan Chen
Amsterdam Institute for Advanced Metropolitan Solutions
Contact: office@ams-institute.org
9th April 2019

AMS AMSTERDAM INSTITUTE FOR ADVANCED METROPOLITAN SOLUTIONS

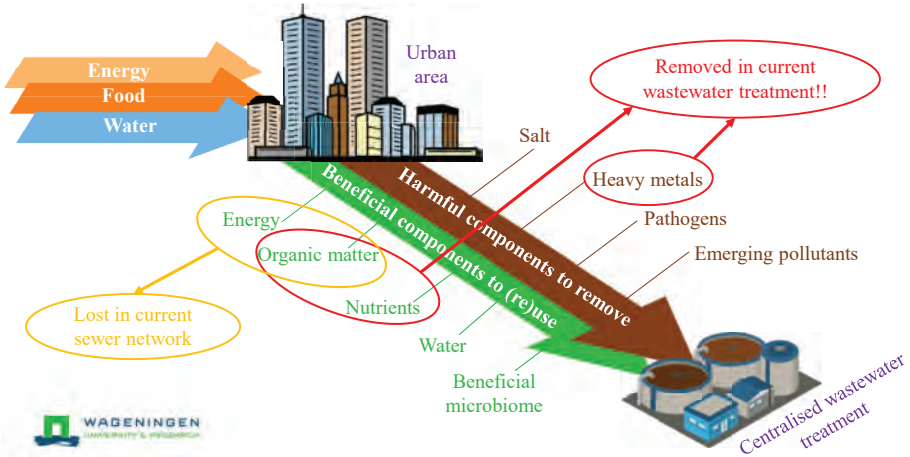






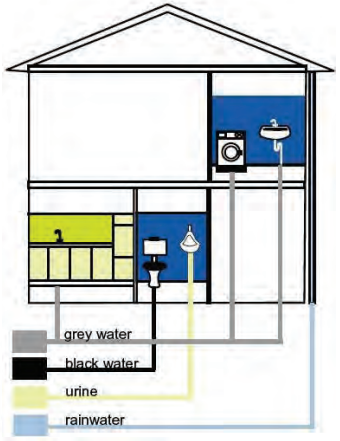


Starting point: Current WWTP

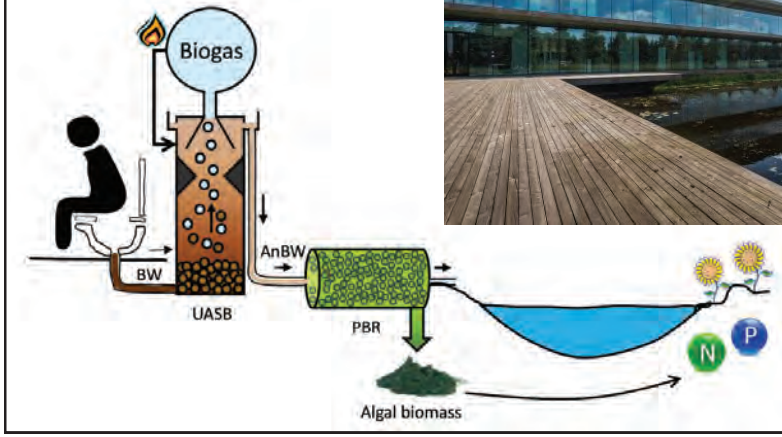


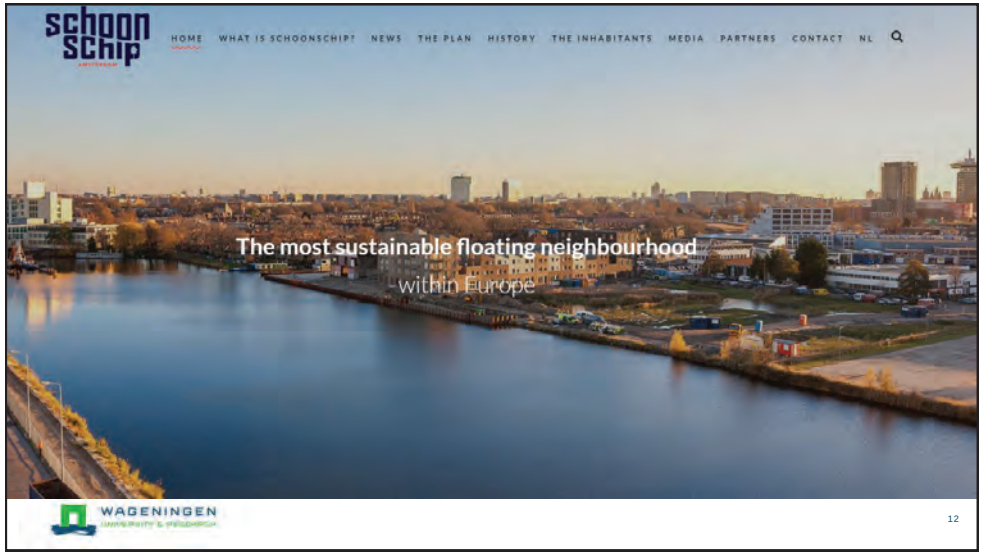
Sour-separation sanitation

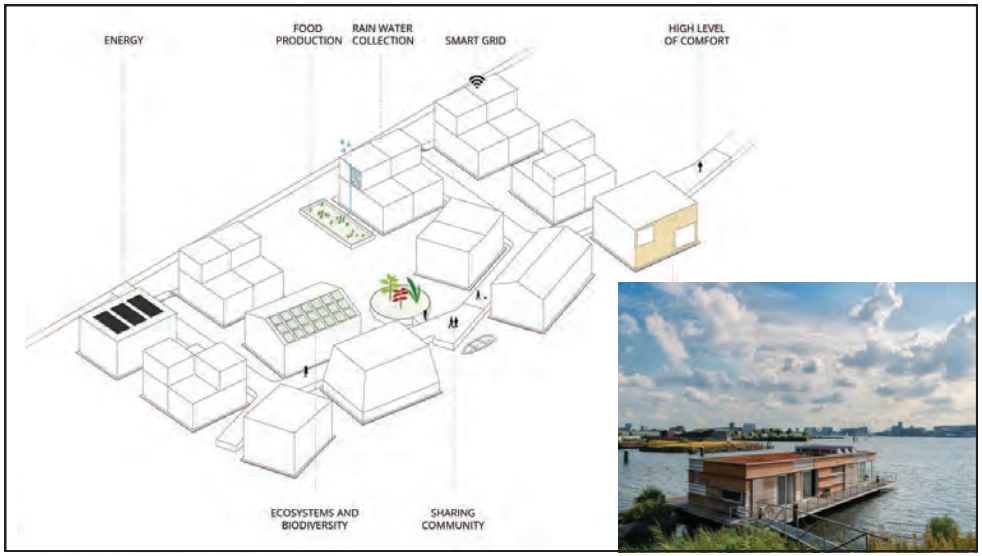
Sour-separation sanitation



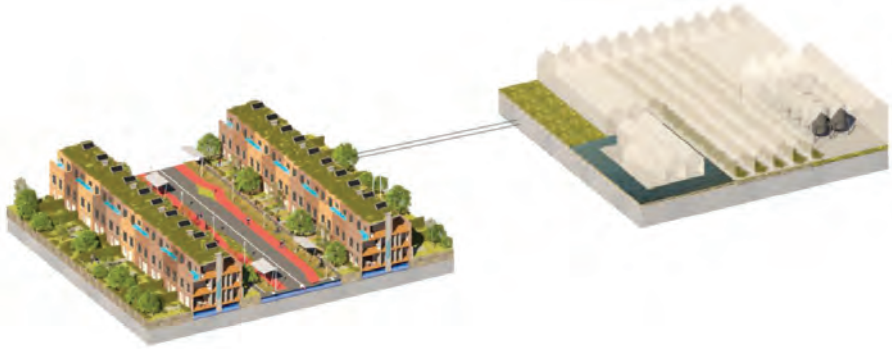
Dutch Academy of Science





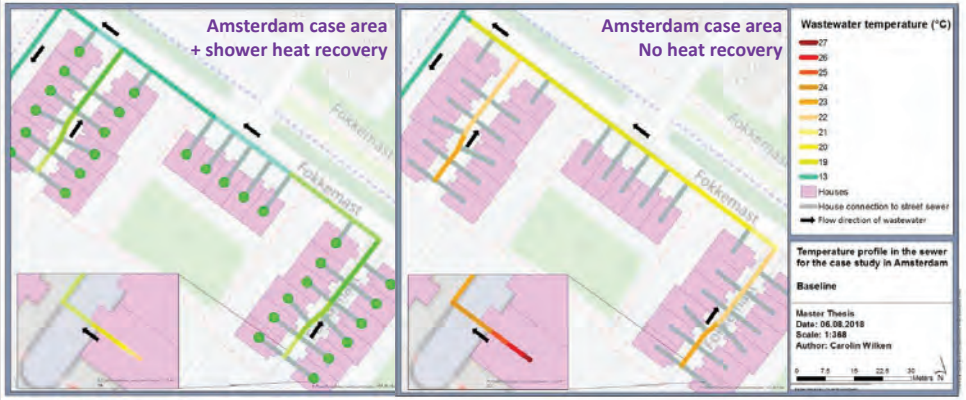


Urban infrastructural ecology for water-food-energy nexus



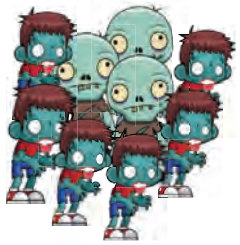
WAGENINGEN · FLORIADE · AMS · TU Delft · KWR · THE GREEN VILLAGE

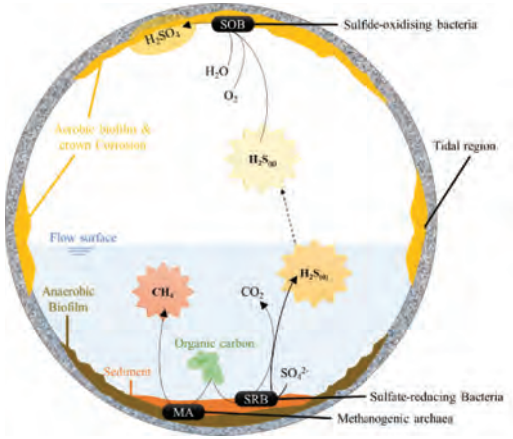
Decentralised heat recovery from wastewater



WAGENINGEN

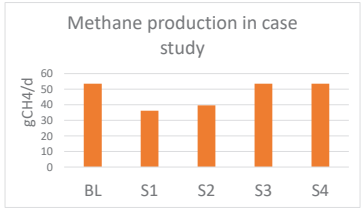
Decentralised heat recovery from wastewater

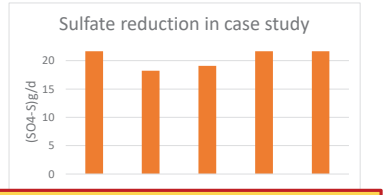




WAGENINGEN

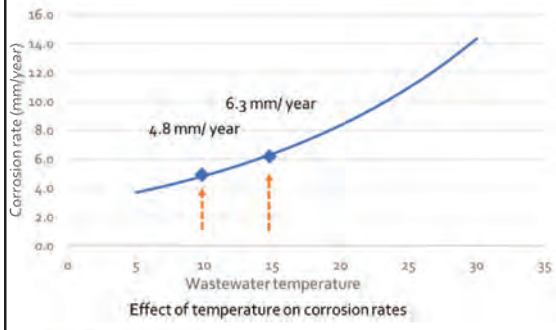
Steer resource dynamics in sewer: Amsterdam



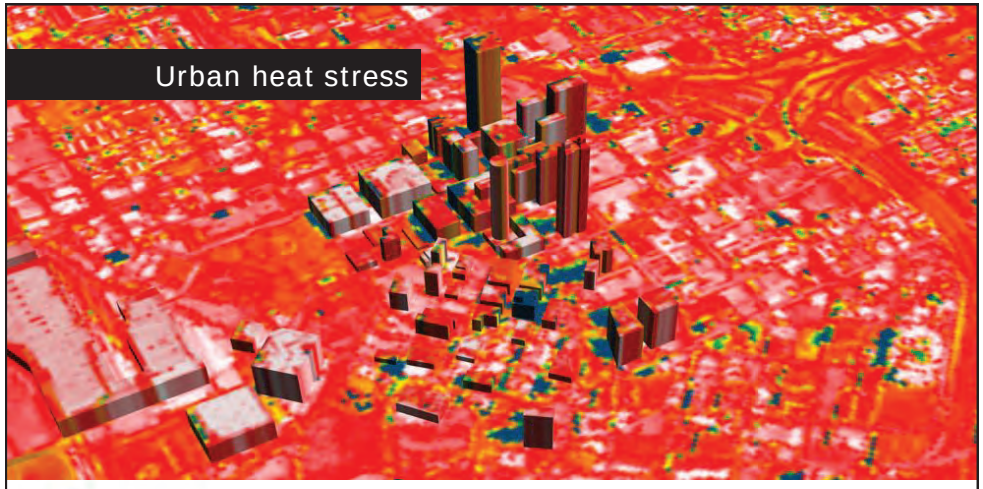


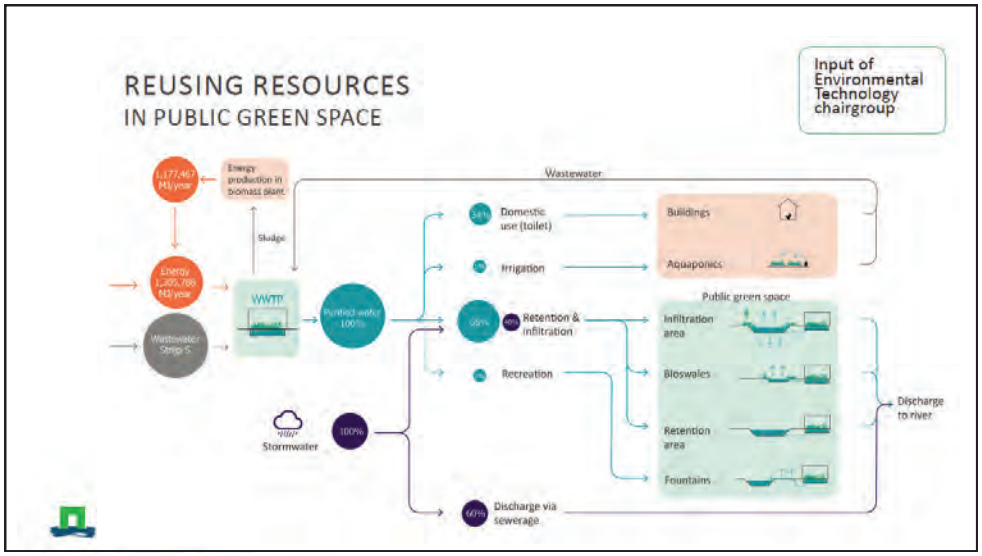
Estimated Global warming potential reduction ~ 1875 t CO_2 -eq./year

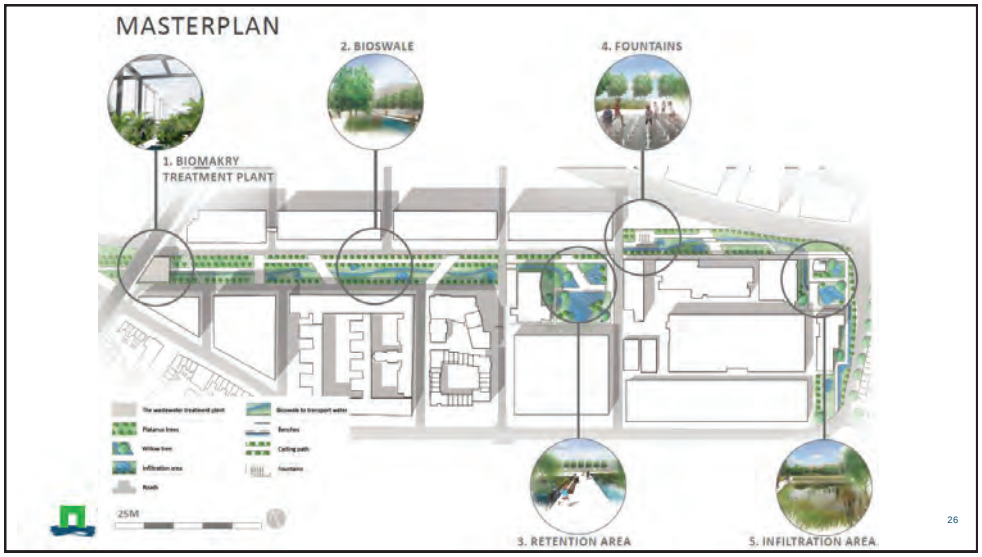
Win-Win: Heat recovery + reduced corrosion!



WAGENINGEN

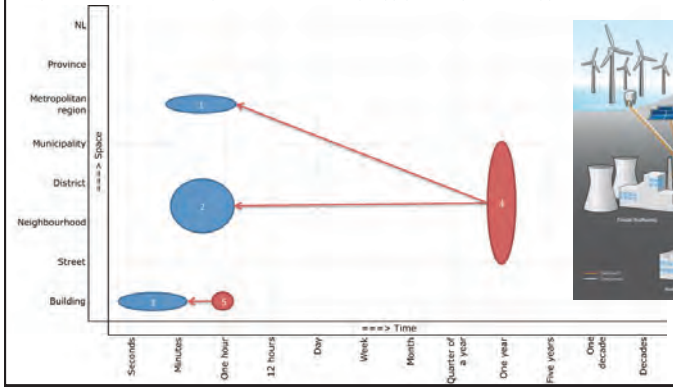


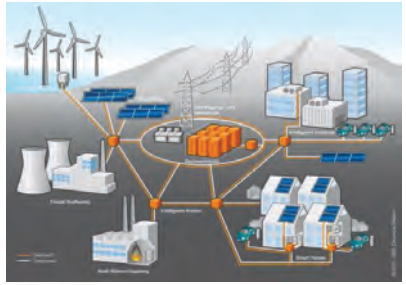




Transition to Smart grid: Is there enough data?

1. Information need
   1: regional electricity demand&supply; 2: local electricity demand; 3: electricity supply per supplier
2. Information availability
   4: residential electricity demand; 5: electricity supply of one potential supplier

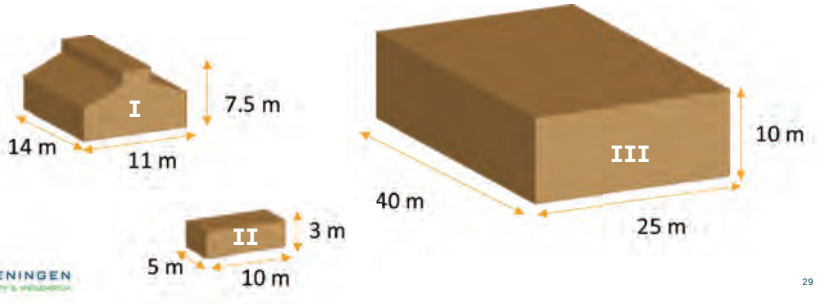




28

Is there enough above ground land/space?

- Typology 1: row houses - 1:600 (Sneek) – 0.2% covered of total residential area
- Typology 2: within building three parking lots (Den Haag)
- Typology 3: system connected with 8000 houses and 200 utilities (Amsterdam)



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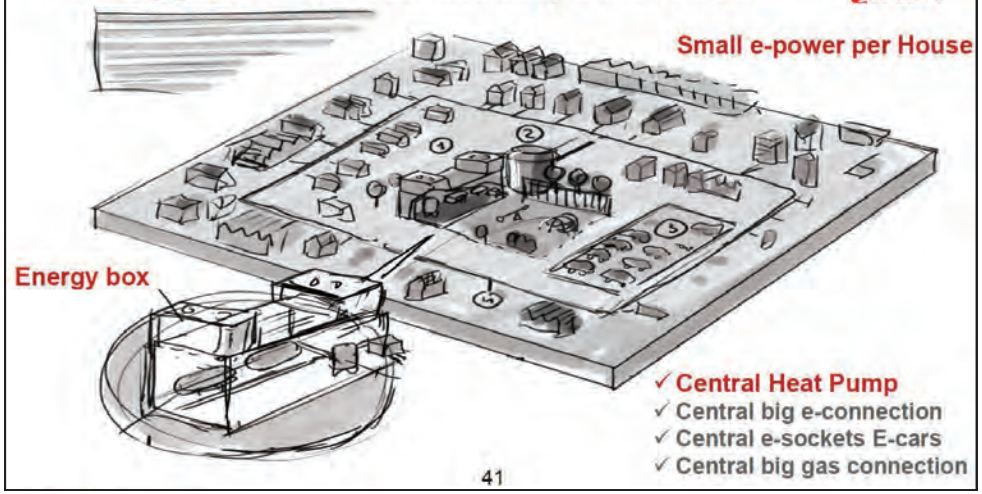
"Energy box" for community of houses

Qirion



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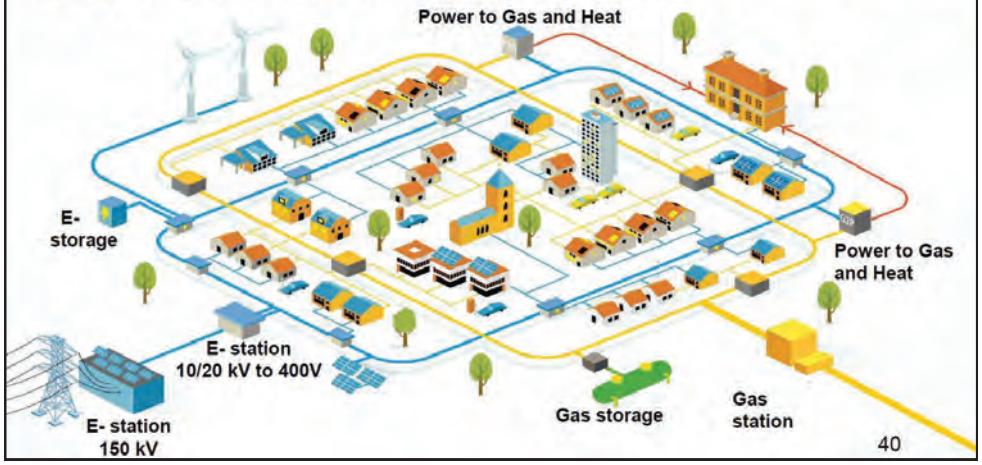
G, E, H infrastructure for your house

alliander



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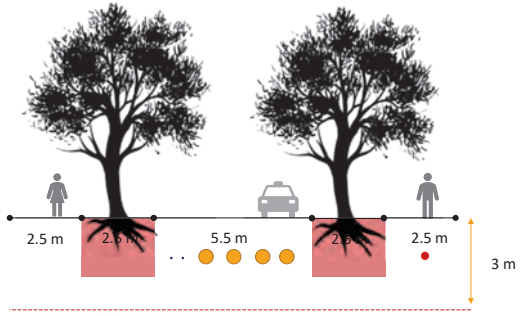
Is there enough underground space?



- Heating and cooling pipes 0.5 m.
- 'Oergeul' - Historical soil
- Bundle of cables of telecom and data
- Vacuum pipes

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Integral Urban Infrastructure Transition

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