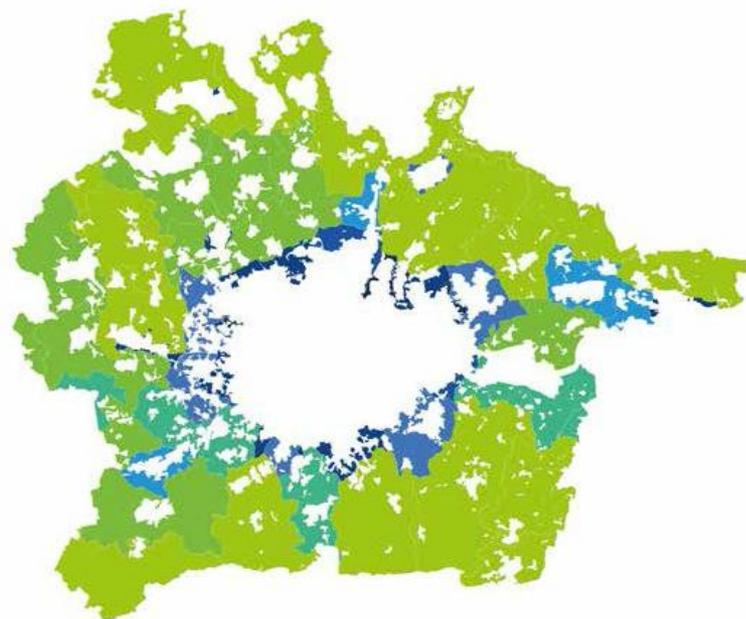
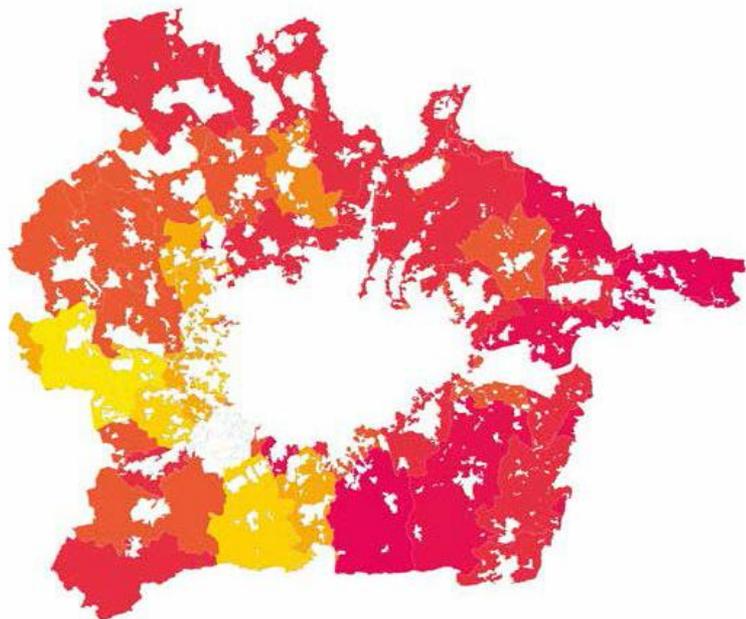


Green infrastructure benefits and urban policies: synergies and conflicts – some European experience



Source: The Planner



The European Environment Agency

The EEA is an EU agency that operates at the interface of knowledge and policy.

With a network of more than 300 institutions in 39 European countries, the EEA provides timely, reliable and relevant **information to support sustainable development.**

EEA work is targeted at EU institutions, EEA member countries, civil society and the general public.



EEA coverage

Member countries

Cooperating countries

*Kosovo under UNSCR 1244/99



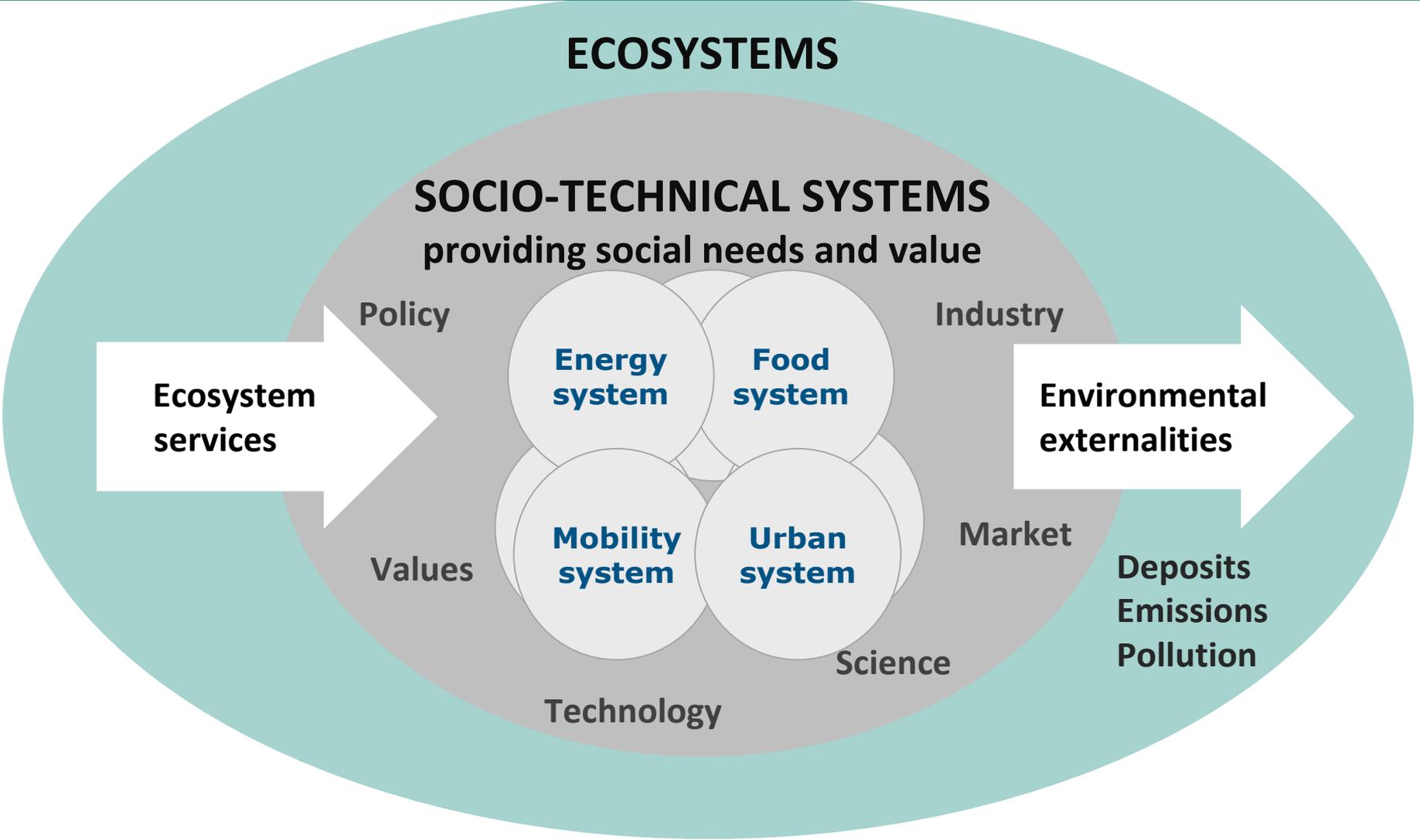
Vision of the 7th Environment Action Programme

‘In 2050, we live well, within the planet's ecological limits.

Our prosperity and healthy environment stem from an innovative, **circular economy** where nothing is wasted and where natural resources are managed sustainably, and **biodiversity** is protected, valued and restored in ways that enhance our society's **resilience**. Our **low-carbon** growth has long been decoupled from resource use, setting the pace for a global safe and sustainable society.’

Source: 7th EU Environment Action Programme

Living well, *within* environmental limits



Cities have an important role to play in the shift to fundamentally sustainable systems of production and consumption



Challenges can be seen throughout the urban system



Challenge 1:
Ecosystems

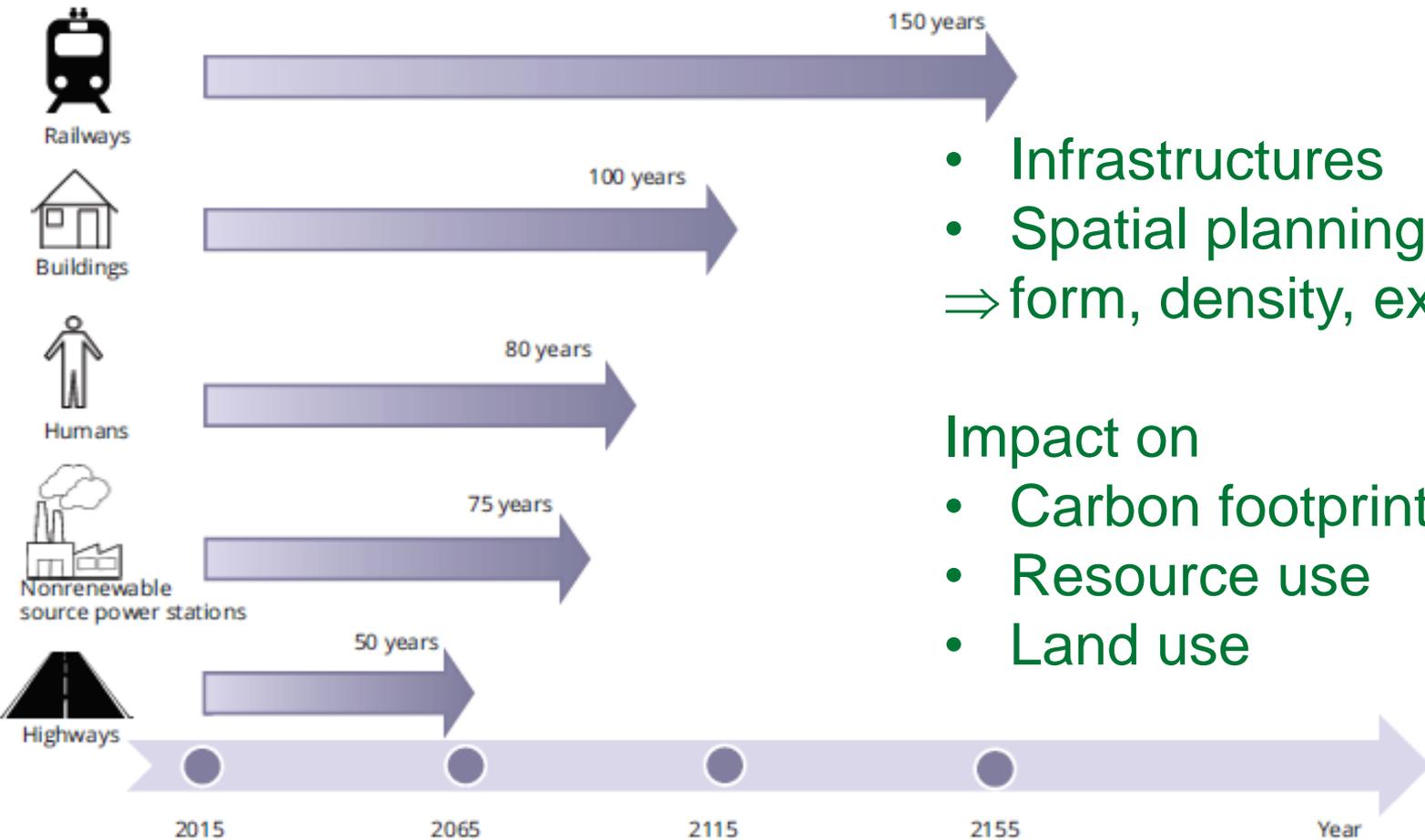


Challenge 2:
Social systems



Challenge 3:
The “grey”
urban system

Challenge 3: The “grey” urban system



- Infrastructures
- Spatial planning
⇒ form, density, extend

Impact on

- Carbon footprint
- Resource use
- Land use

Cities can be “locked-in” to unsustainable consumption and production patterns for decades.



Challenge 2: Creating sustainability in changing social context

Growing
Aging
Diversifying
More unequal



Values, behaviour, lifestyle, culture

Political system, institutions, legal system

Economic system

Knowledge

Engagement, participation

Challenge 1: Ecosystems / green areas inside and around cities

Local climate
regulation

Carbon
sequestration

Flood
regulations



Ecosystem
services

Economic/recrea-
-tional value

Aesthetic
values



Limits to efficiency and technological gains



www.alamy.com - AC58P3



Long term visions are needed



1950 and 1960s' future
planning



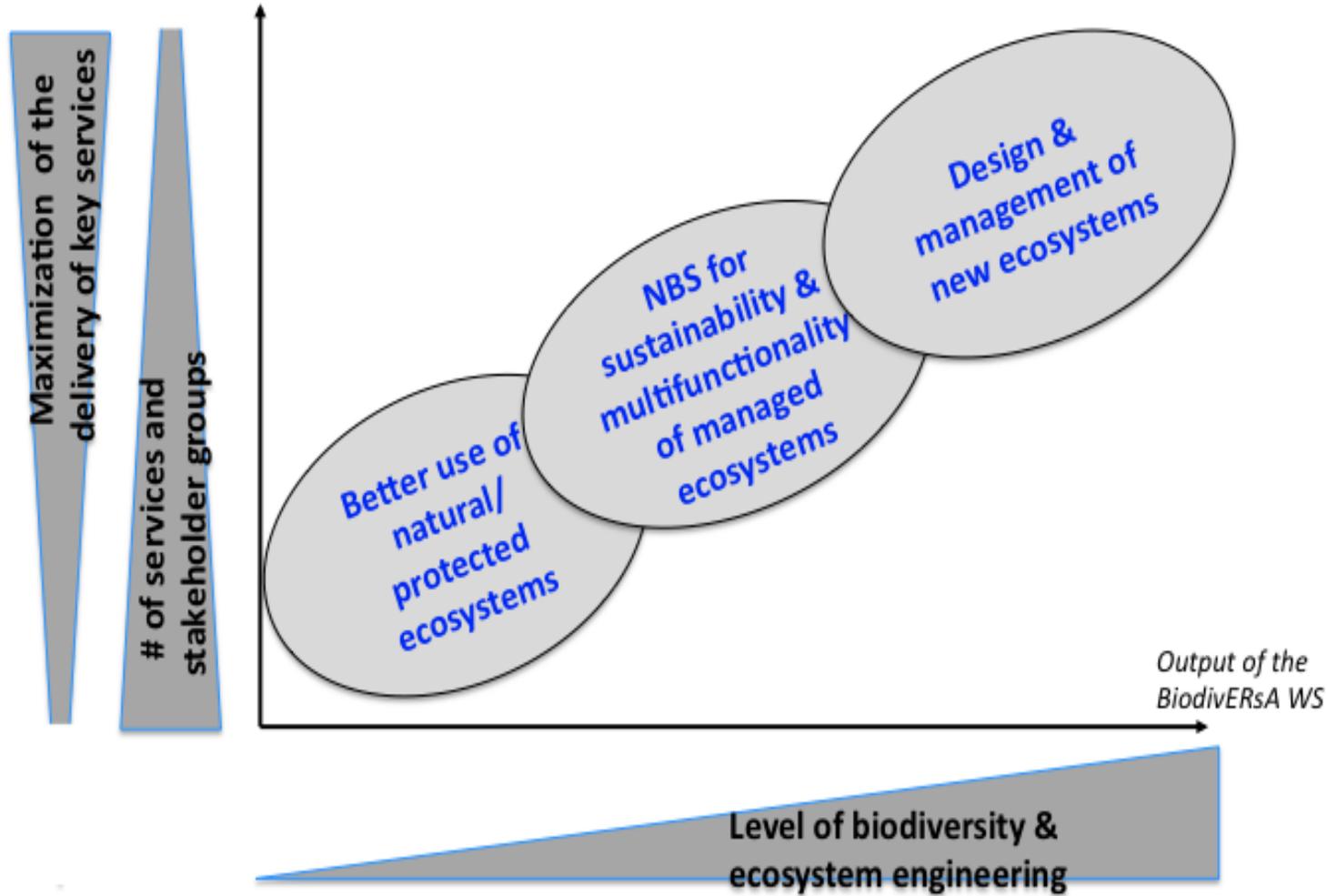
Today, 'green' cities are
the reference

By managing / enhancing our natural / cultural capitals: nature-based solutions?

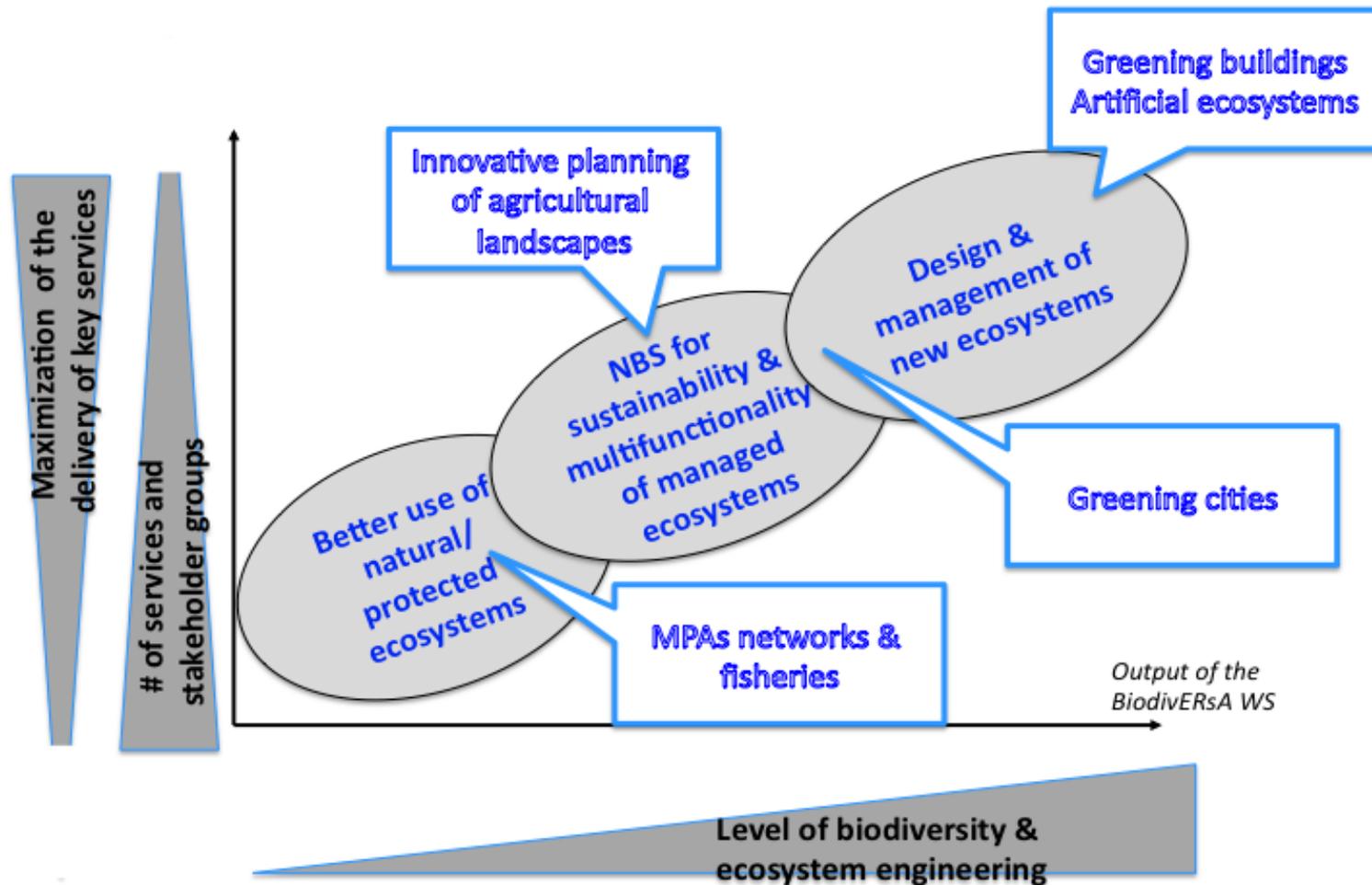
1- NBS Type 1: They consist in better using existing natural or weakly managed ecosystems; the ambition here is to better use them, delivering a range of ecosystem services in and outside these ecosystems while minimising the intervention on the systems themselves.

2- NBS Type 2: They correspond to the definition of management rules to develop sustainable and multifunctional ecosystems (possibly intensively managed) and better deliver selected ecosystem services.

3- NBS Type 3: They consist in managing ecosystems in very intrusive ways or even creating completely new ecosystems.



...benefiting from services from nature



European cities expending at the expense of services from nature - 2006-2016 comparison analysis

EEA Report | No 10/2006

Urban sprawl in Europe

The ignored challenge

ISSN 1725-9177

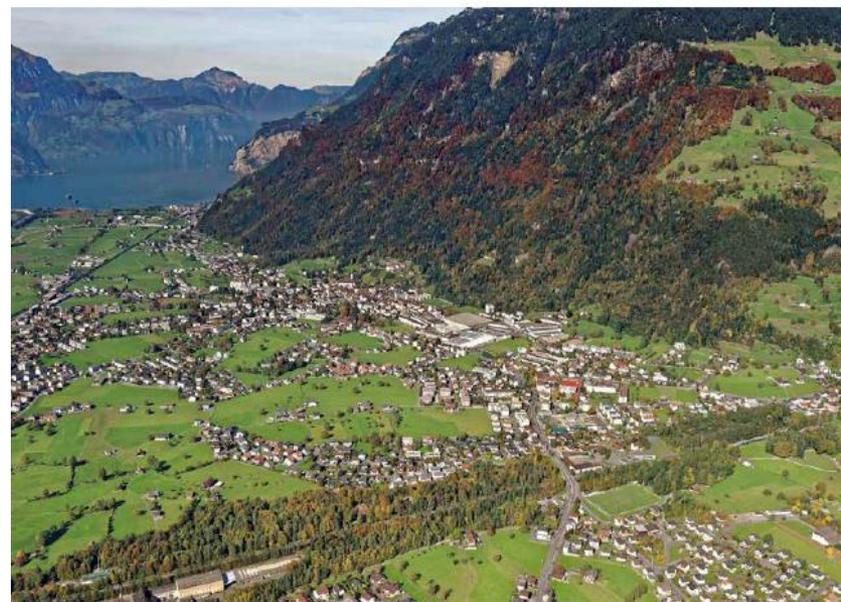


EEA Report | No 11/2016

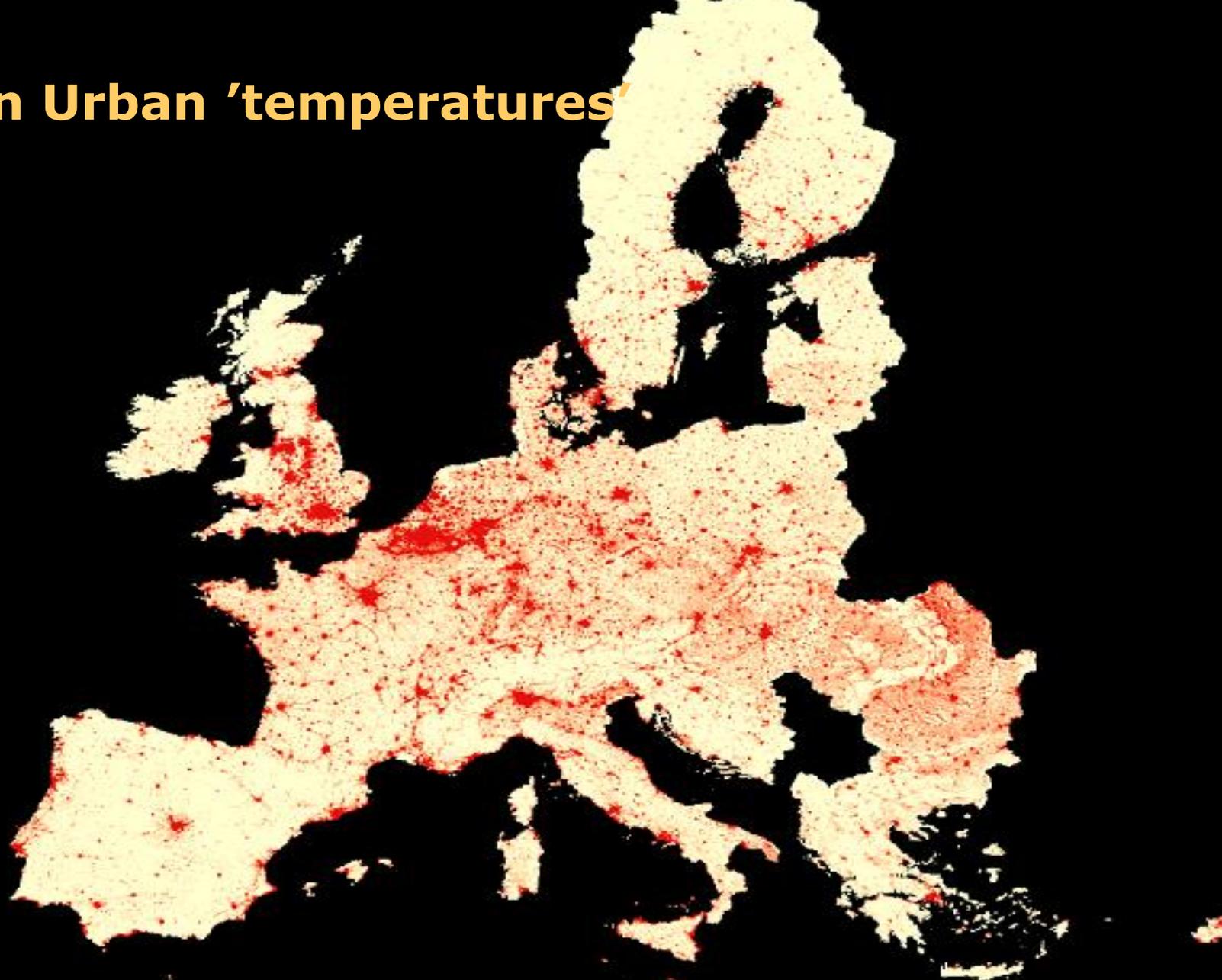
Urban sprawl in Europe

Joint EEA-FOEN report

ISSN 1977-8449



European Urban 'temperatures'



74 % population live in Urban Areas...80 % by 2020

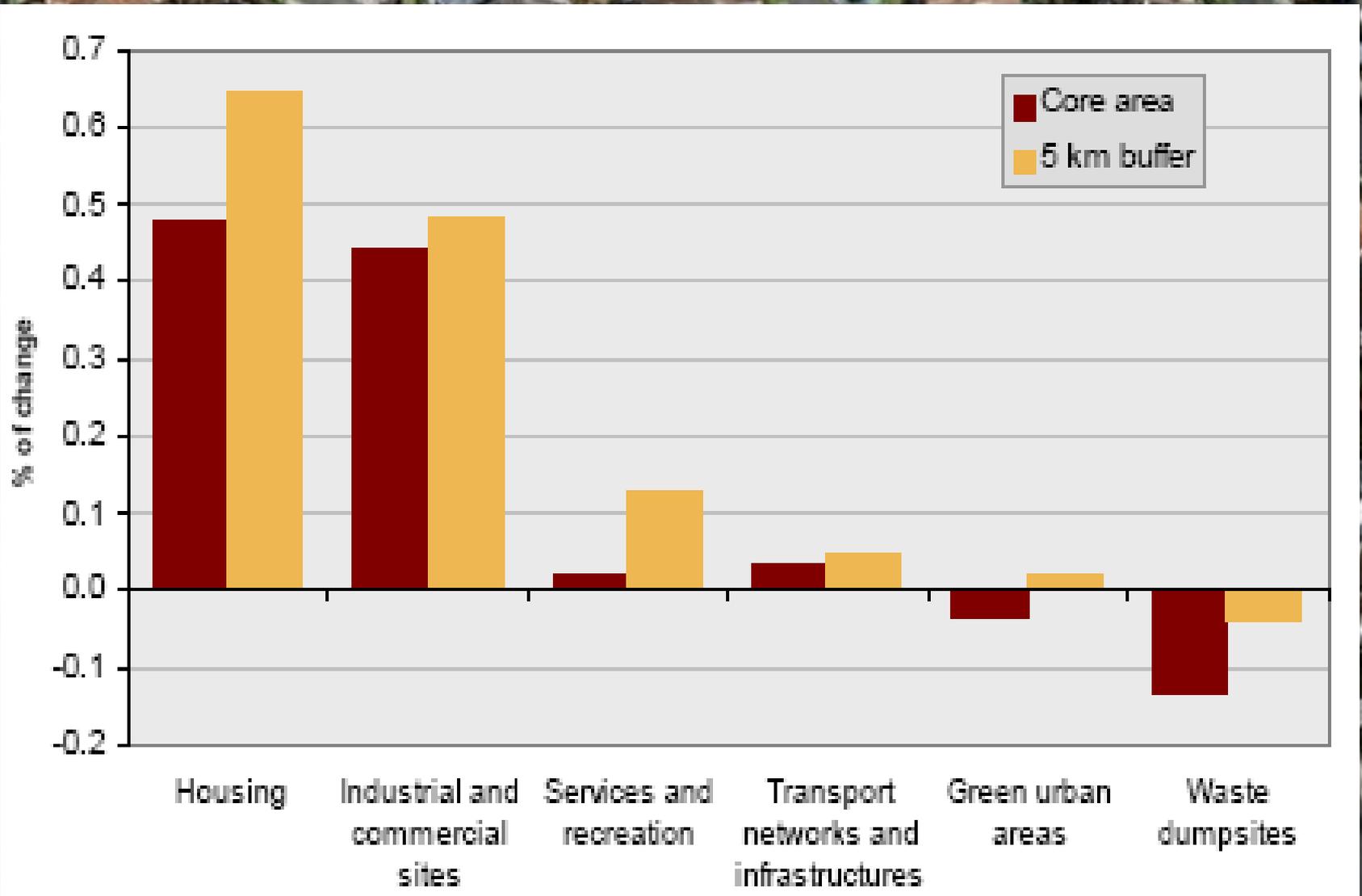
5 times the size of Great London.....

Great London: It takes 293 times its area to sustain its needs...

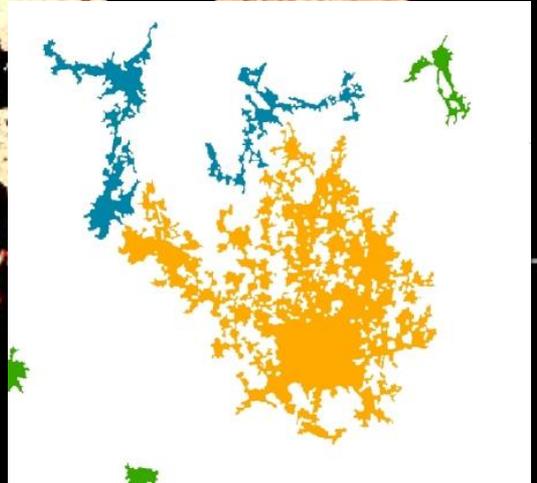
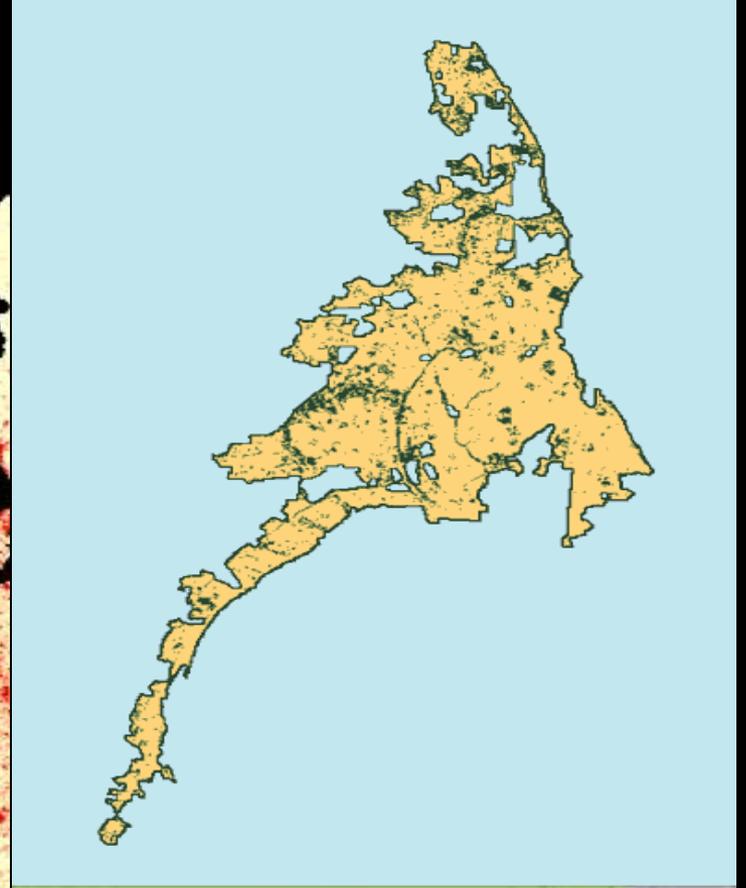
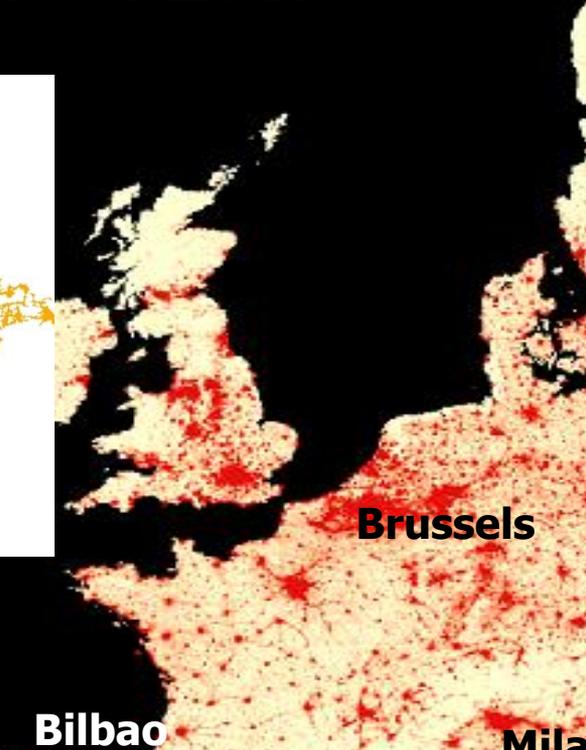
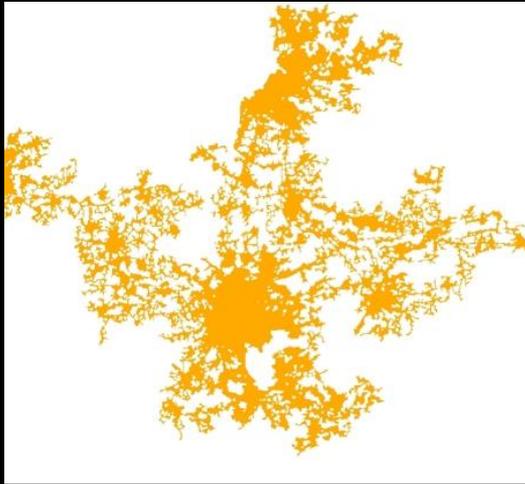
Sprawl of urban areas



Top-drivers of urban land development...



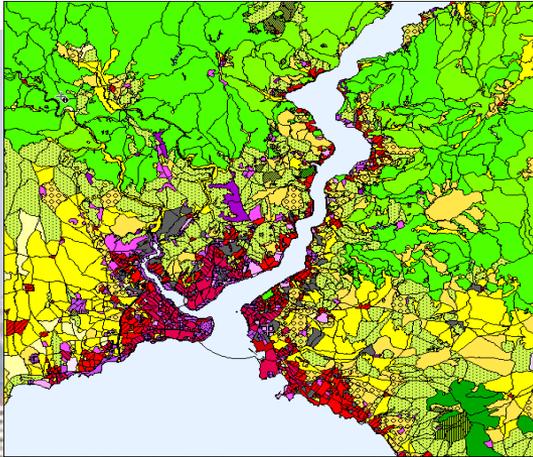
Urban forms or morphological zones



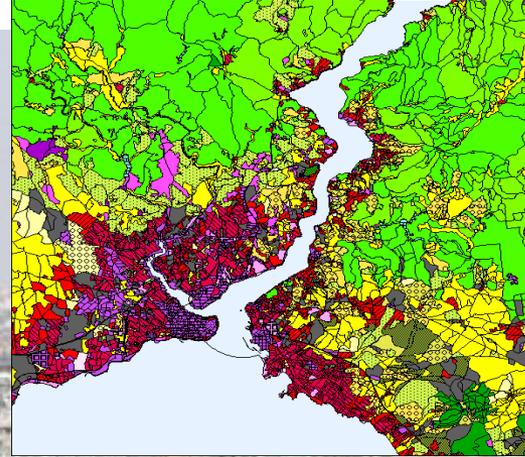
For Europe, about
900 UMZ

Istanbul, Turkey

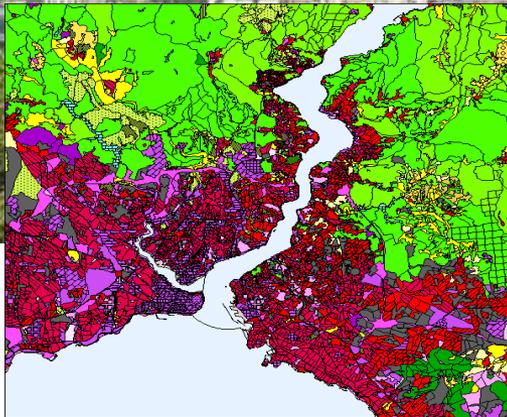
1945



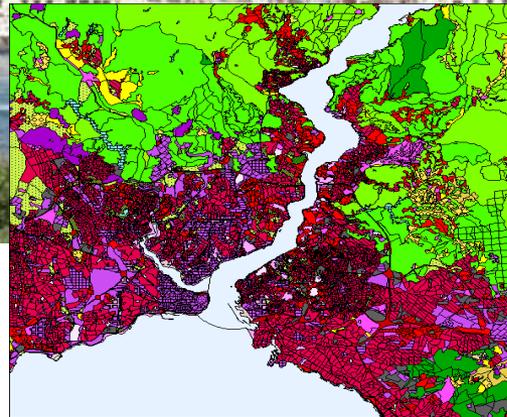
1968



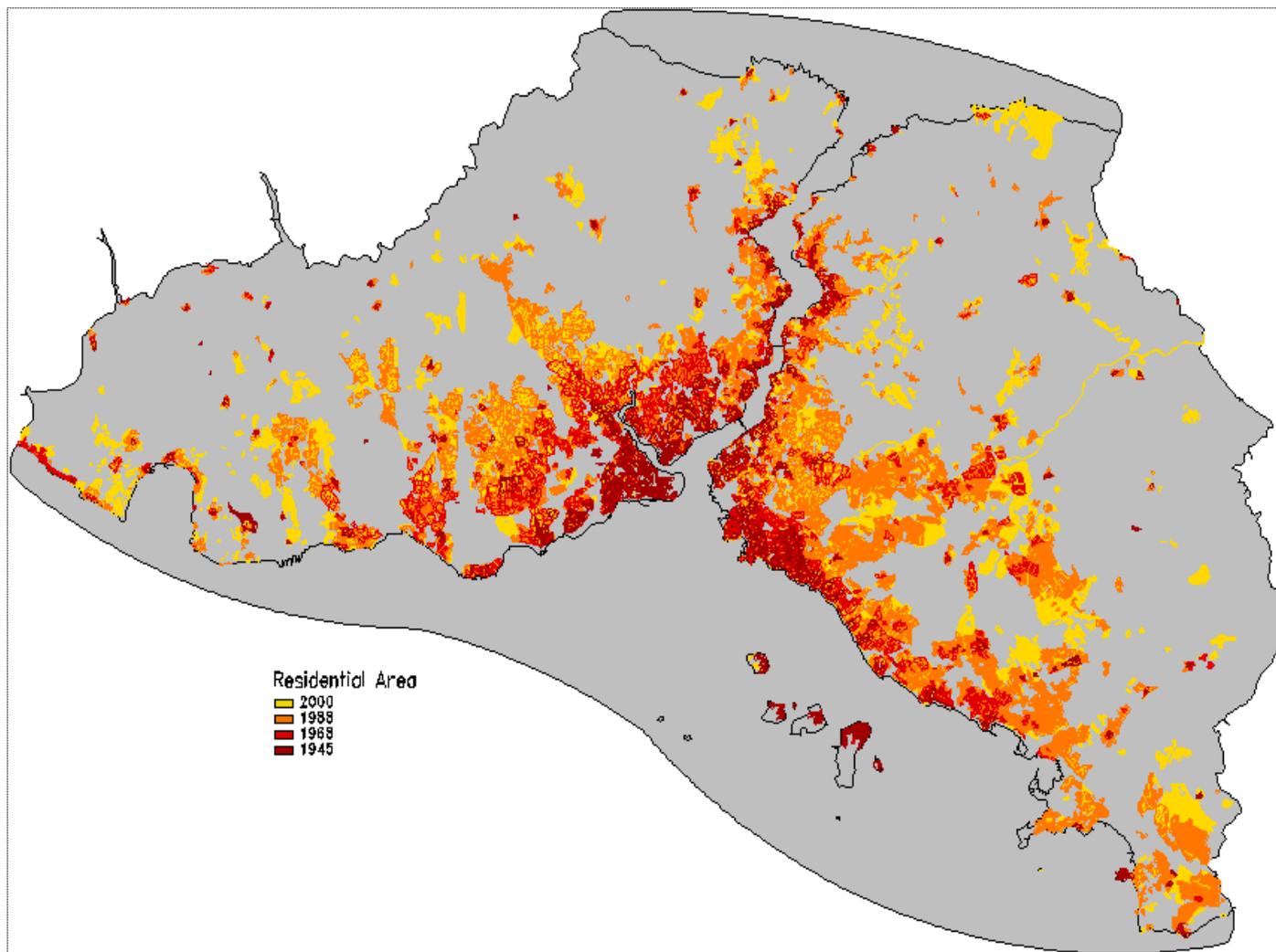
1988



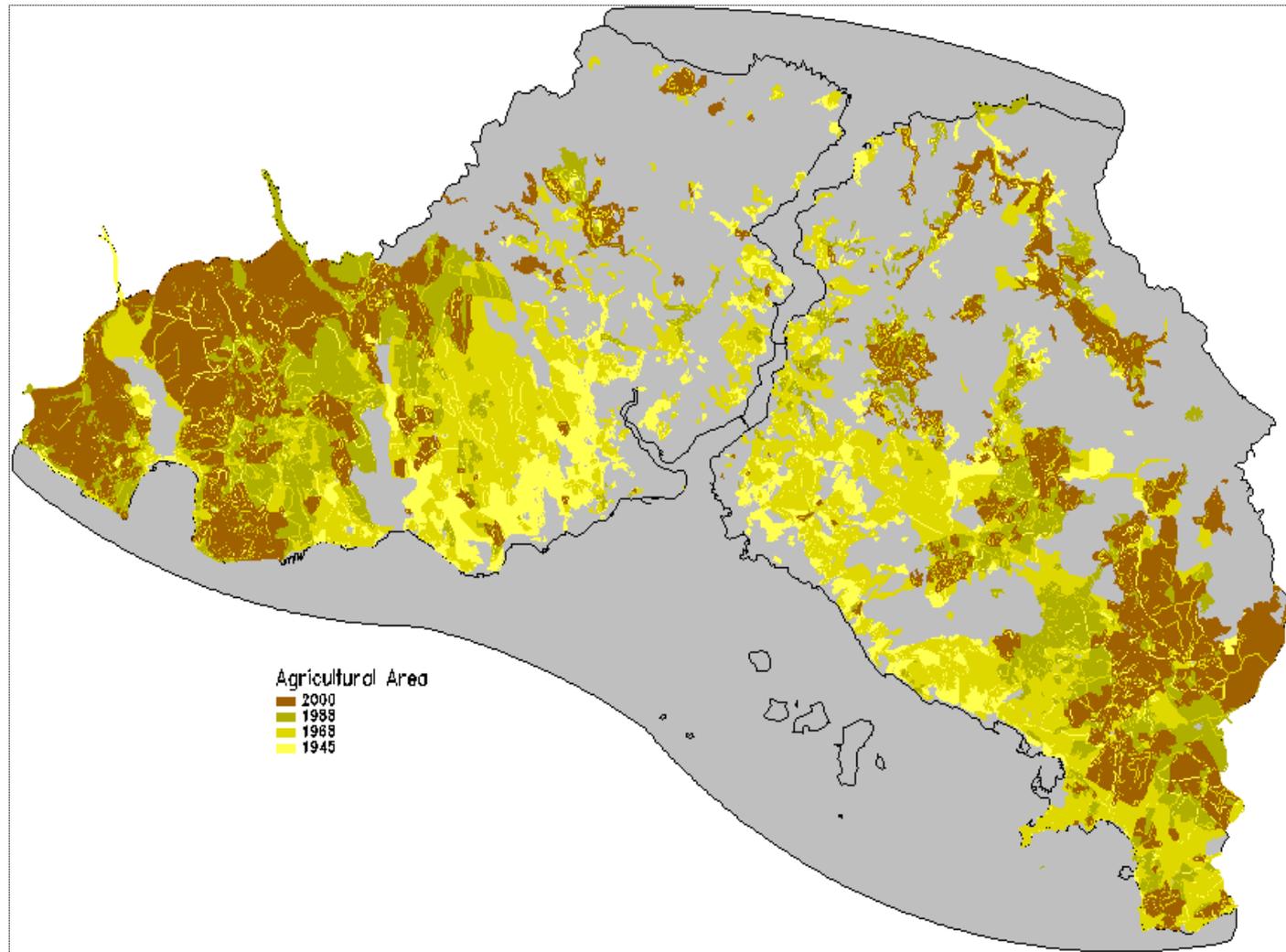
2000:



Land use change in Istanbul: increase in residential area



Land use change in Istanbul: loss of agricultural land



...mostly related to urban space

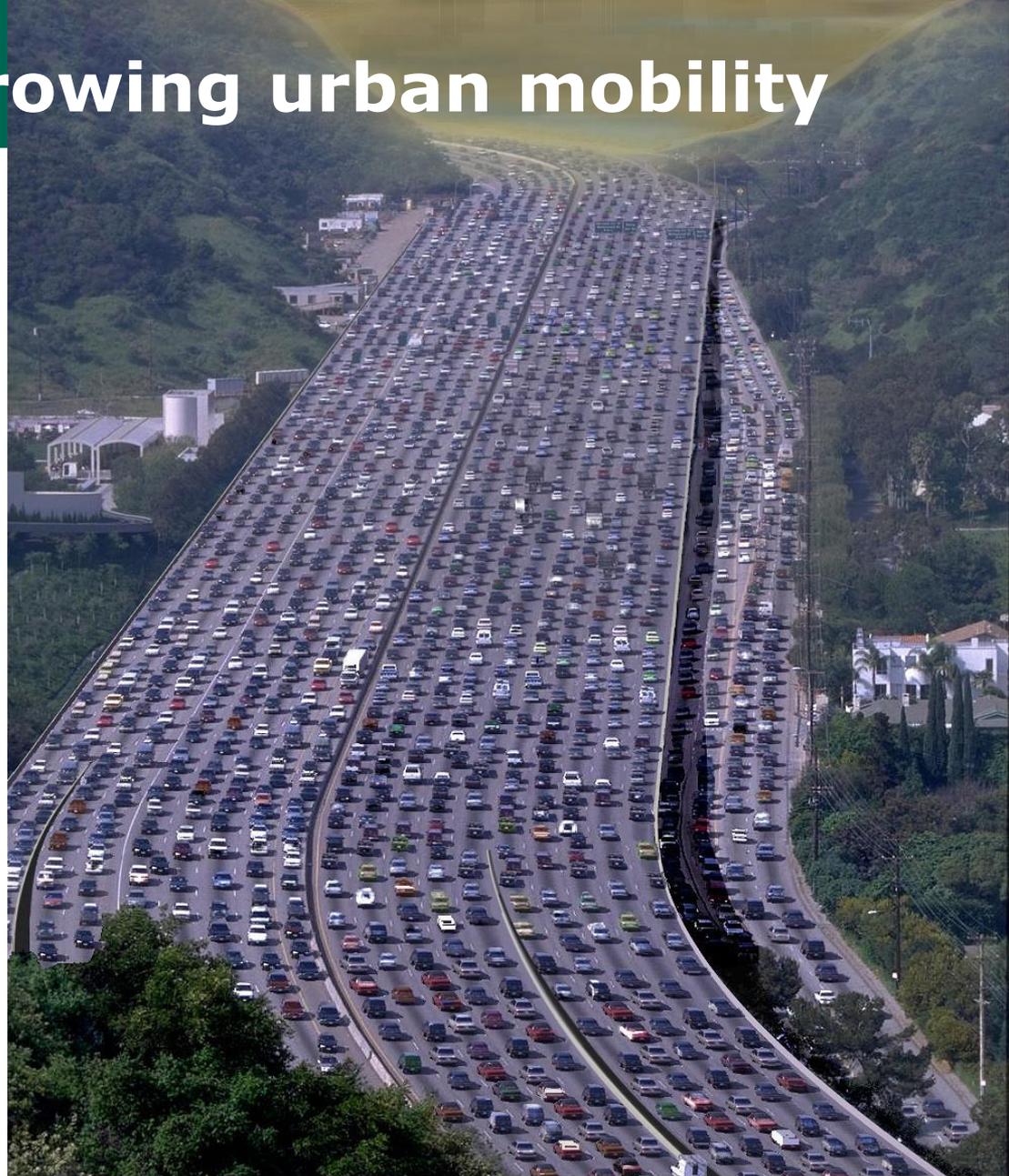
- **Since mid-50s, European cities expanded by 78 %, whereas population grew by 33 %**
- **Over the past 20 years, the extent of built-up areas in many countries has increased by 20 %, while the population has increased by only 6 %**
- **The amount of space consumed per person in cities has more than doubled over the past 50 years**
- **In Germany 52 % of the soil in built-up areas is sealed (or the equivalent of 15 m² per second over a decade)**
- **Regions such as Mediterranean coastal areas have experienced 10 % increase in soil sealing during the 1990s.**

And ever-growing urban mobility

During past 20 years, 4 times more new cars than new babies in cities

The number of kilometres travelled in urban areas by road transport is predicted to rise up to 40 % by 2030 compared to 1995

10,000 km of highways built in EU during past decade; 20bn € per year over 2007-13 to connect urban nodes in new Member States



Managing further urban growth in the face of Climate change

- **Interactions between climatic and non-climatic factors**
- **Cities and mitigation**
- **Urban design and planning to adapt to changes**



Didn't you hear? There's a flash flood warning in effect!

BUS

Original Artist



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Flooding or building in the floodplain ...



The river Rhine has already lost four-fifth of its natural floodplains. Similarly, at the river Elbe only 15% of the natural floodplains remain.



... natural

... and developed



An aerial photograph of a coastal city, likely Barcelona, Spain, showing a dense urban area with a harbor filled with boats and a prominent tower. The city is set against a backdrop of blue mountains and a clear sky. The foreground is dominated by lush green trees and a palm tree on the left.

Cities in the frontline...

>80%

of Europeans will soon be 'urban'

Adapting Buildings and Cities for Climate Change

A 21st century survival guide

Sue Roaf
David Crichton
Fergus Nicol



Heat and health...

EEA Report | No 26/2016



Rivers and lakes in European cities Past and future challenges

ISSN 1977 8449



...up to water management –
restoration of water bodies

Cool down...

...air TREE concept

Viva Madrid?



...TREE in cities...

Up to 10° C difference between peri-urban and central areas

100 m² of trees help reduce T by 1° C

Green surfaces 10° C cooler than artificial ones

...there is much more to it...



Green Infrastructure? It enhances natural capital



Blackwall Reach Tower Hamlets, London

...it provides ecological, economic and social benefits through natural solutions – and is a key tool to sustainable spatial planning and development



The services provide benefits to people....

Local climate regulation

Flood regulation

Timber production

Recreation

Aesthetic values

Production of food



Carbon sequestration

Habitat services

Place / Ecosystem-based management...

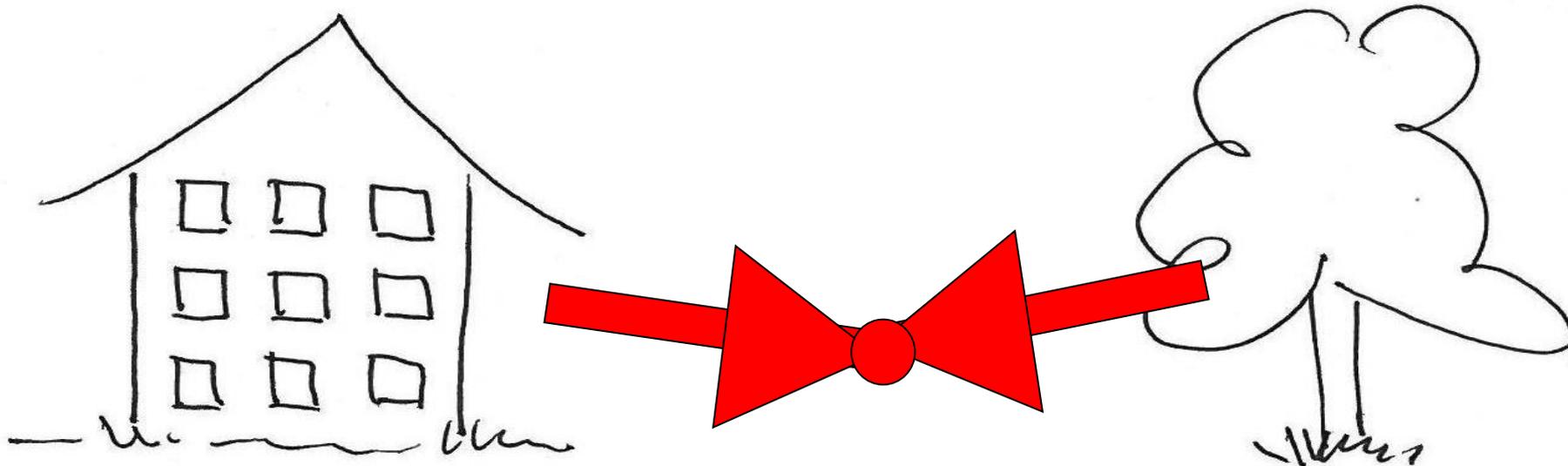
An example - London: The de-culverted Quaggy — a multifunctional blue-green city space

- To provide further flood water storage, the park itself was lowered and reshaped to create a floodplain capable of storing a maximum of 85 000 m³ of flood water. Boardwalks, pathways and viewing points were designed to encourage access to the river and ponds, all of which were integral parts of the scheme



- The project has been successful in reducing flood risk for the surrounding area, as well as in reconnecting people to nature (after the restoration, park visits increased by 73 %). The implementation of the project as part of a wider catchment scheme has enabled other habitat mitigation measures in more constrained environments downstream to be implemented.

Urban & Nature



- Work more progressively with nature – a strong ‘urban’ agenda
- Integrated urban design – quality of life...
- Greening cities makes them more liveable and at the same time generate win-win solutions – a pleasant environment at lower costs
- It is about pushing forward the nature-based solutions

Recent European study (April 2016): The Health and Social Benefits of Nature and Biodiversity Protection

Health and social benefits of nature assessed Direct and indirect health benefits

- Improved air quality & health benefits
- Improved climatic conditions – addressing heat stress
- Noise reduction benefits
- More pleasant & peaceful, less stressful environment
- Healthier lifestyles – nature experience
- Outdoor recreation and physical activity
- Wellbeing – living in attractive location

Promoting social cohesion

- Quality of green public spaces, reduced social tension
- Opportunities for involvement – volunteers, employment, management

The report features numerous practical case examples across Europe that illustrate how stakeholders – in different constellations – work together to realise health and social benefits by working with and in nature in urban, suburban settings

Source:

<http://ec.europa.eu/environment/nature/biodiversity/intro/docs/Health%20and%20Social%20Benefits%20of%20Nature%20-%20Final%20Report%20Main%20sent.pdf>



Consider emotional intelligence and values as well



Drivers of urban sprawl

Macro-economic factors

- Economic growth
- Globalisation
- European integration

Micro-economic factors

- Rising living standards
- Price of land
- Availability of cheap agricultural land
- Competition between municipalities

Demographic factors

- Population growth
- Increase in household formation

Housing preferences

- More space per person
- Housing preferences

Inner city problems

- Poor air quality
- Noise
- Small apartments
- Unsafe environments
- Social problems
- Lack of green open space
- Poor quality of schools

Transportation

- Private car ownership
- Availability of roads
- Low cost of fuel
- Poor public transport

Regulatory frameworks

- Weak land use planning
- Poor enforcement of existing plans
- Lack of horizontal and vertical coordination and collaboration

BETTER NOT BIGGER



*How to
Take Control of
Urban Growth
and Improve
Your Community*

EBEN FODOR



Munich

Smart Growth Marvel

Best practices...

Why is it different?

How do they manage?



Thank you!

David.Stanners@eea.europa.eu

Ronan.Uhel@eea.europa.eu



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