Green Infrastructure - enhancing Europe's natural capital

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European Environment Agency

… 33 nations and cultures


European Environment Agency

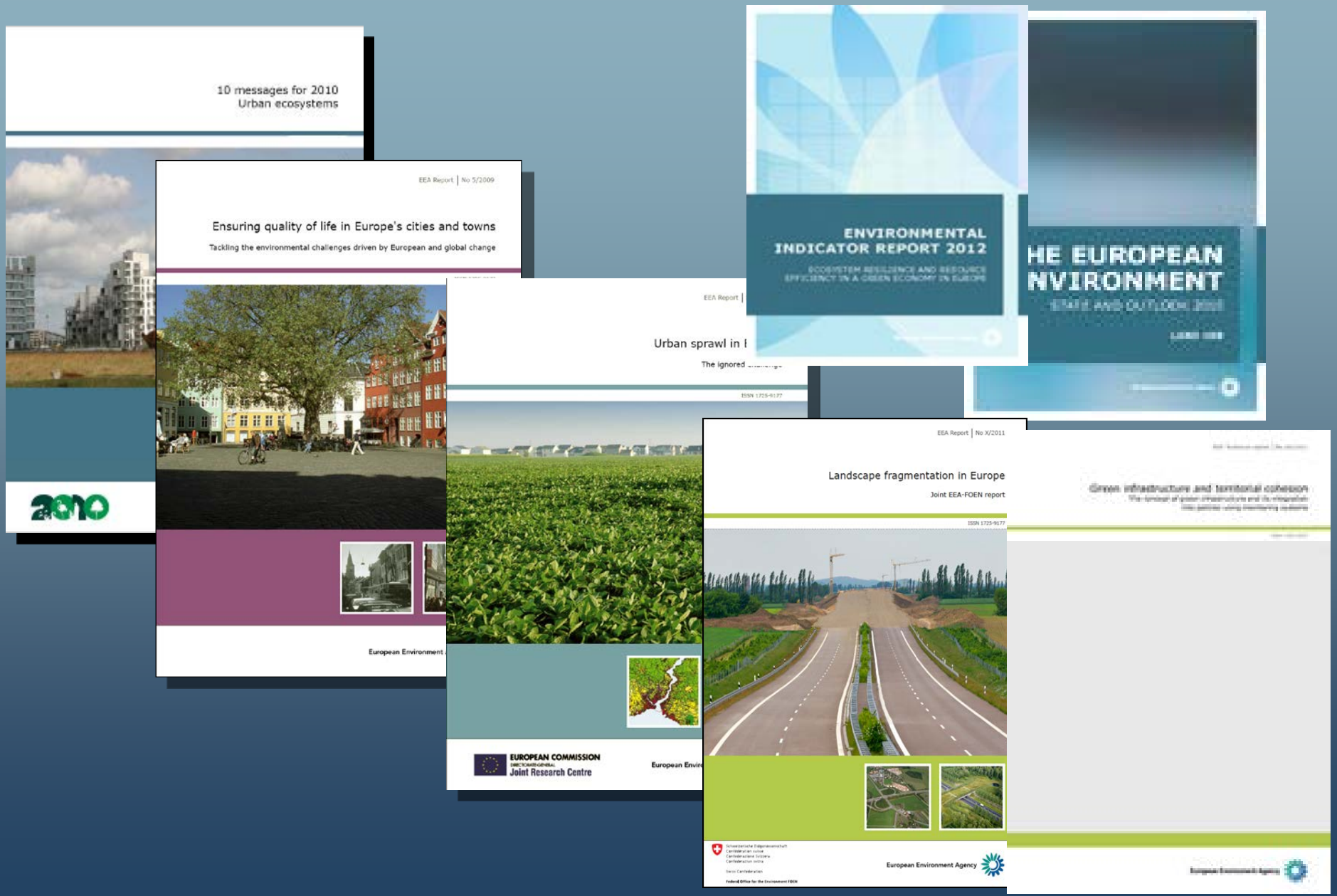
our mandate…

"… is to provide European decision makers and citizens with access to timely and relevant information and knowledge…"

in order to…

- provide a sound basis for **environmental policies**
- help answer **questions about the environment**
- ensure that **environmental thinking** is brought into the mainstream of **decision-making**
- **coordinate** European Environmental Information and Monitoring Network (EIONET)

Information



Outline

- Europe in a nutshell – current challenges
- Working with nature
- Why is Europe acting – the policy agenda?
- Examples on green infrastructure and its contribution to EU policies

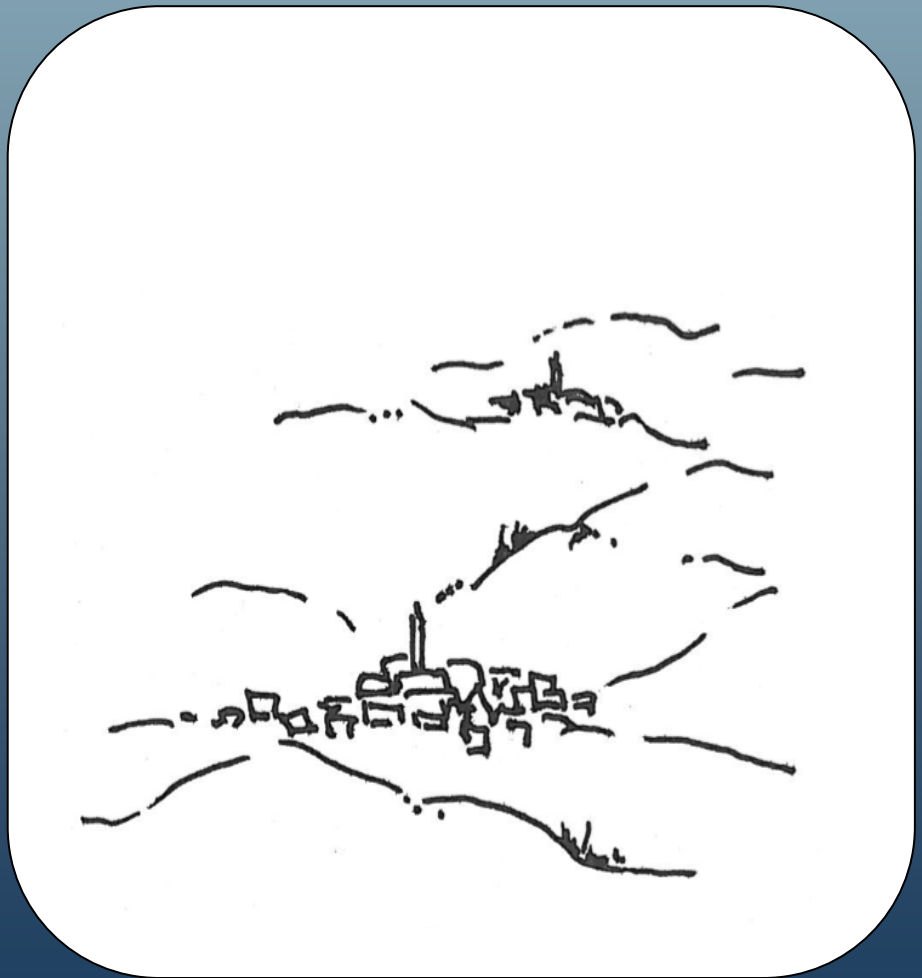
Europe in a nutshell – current challenges

Climate change is happening....

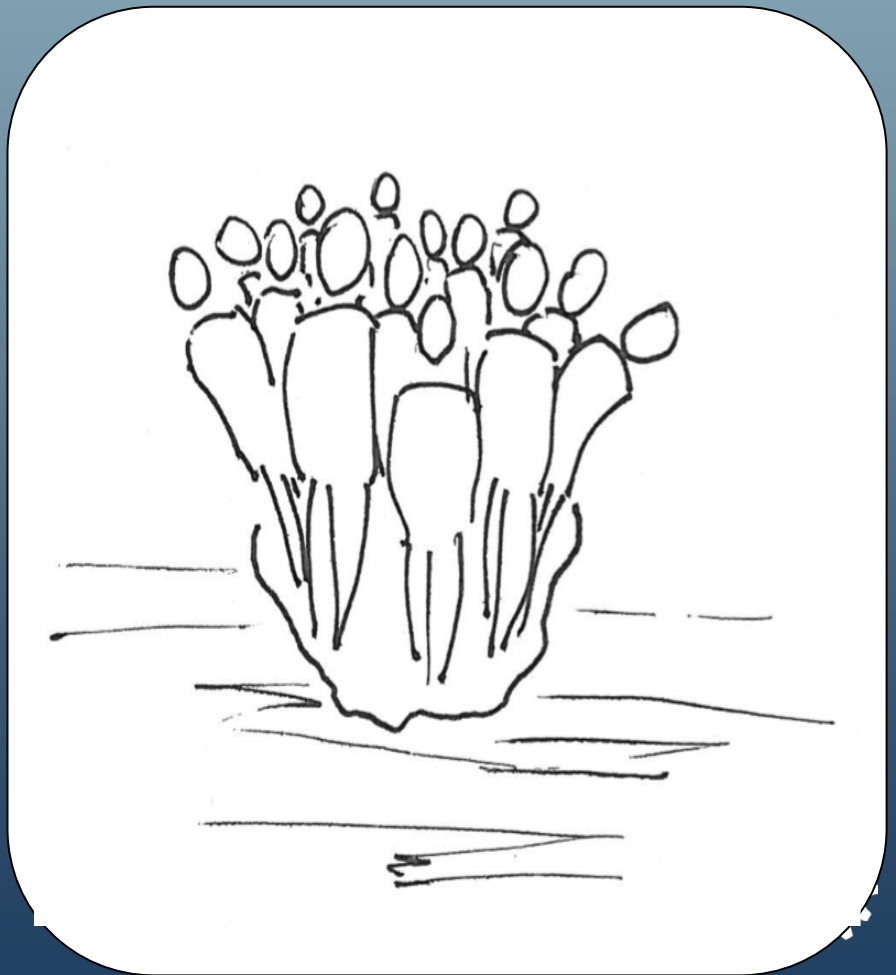
2 July 2011 in Copenhagen

…but **urban areas** are in particular at stake

4% area (CLC)



75% people



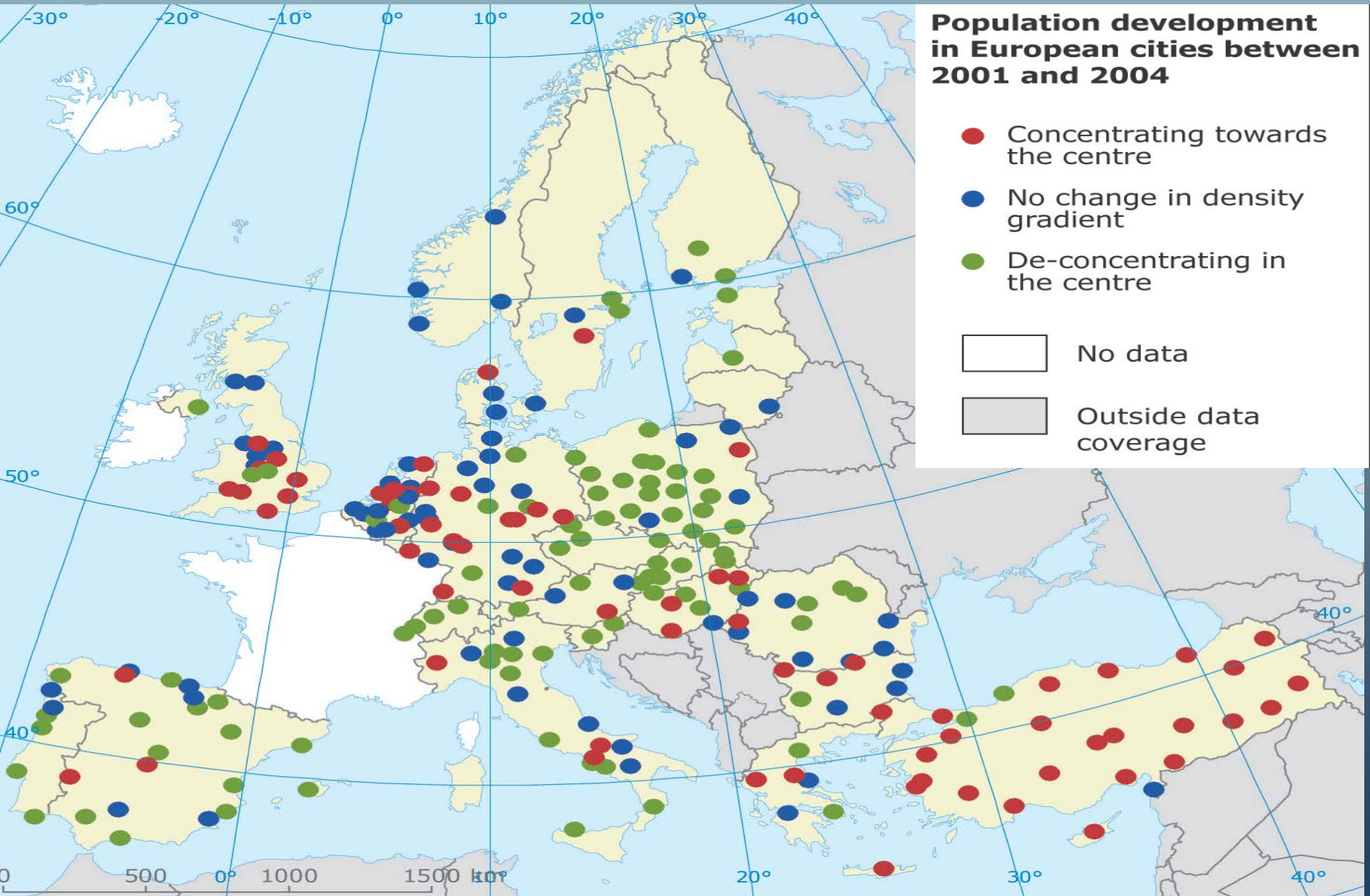
European cities still expanding...

Since mid-50s, European cities expanded by 78 %, whereas population grew by 33 %

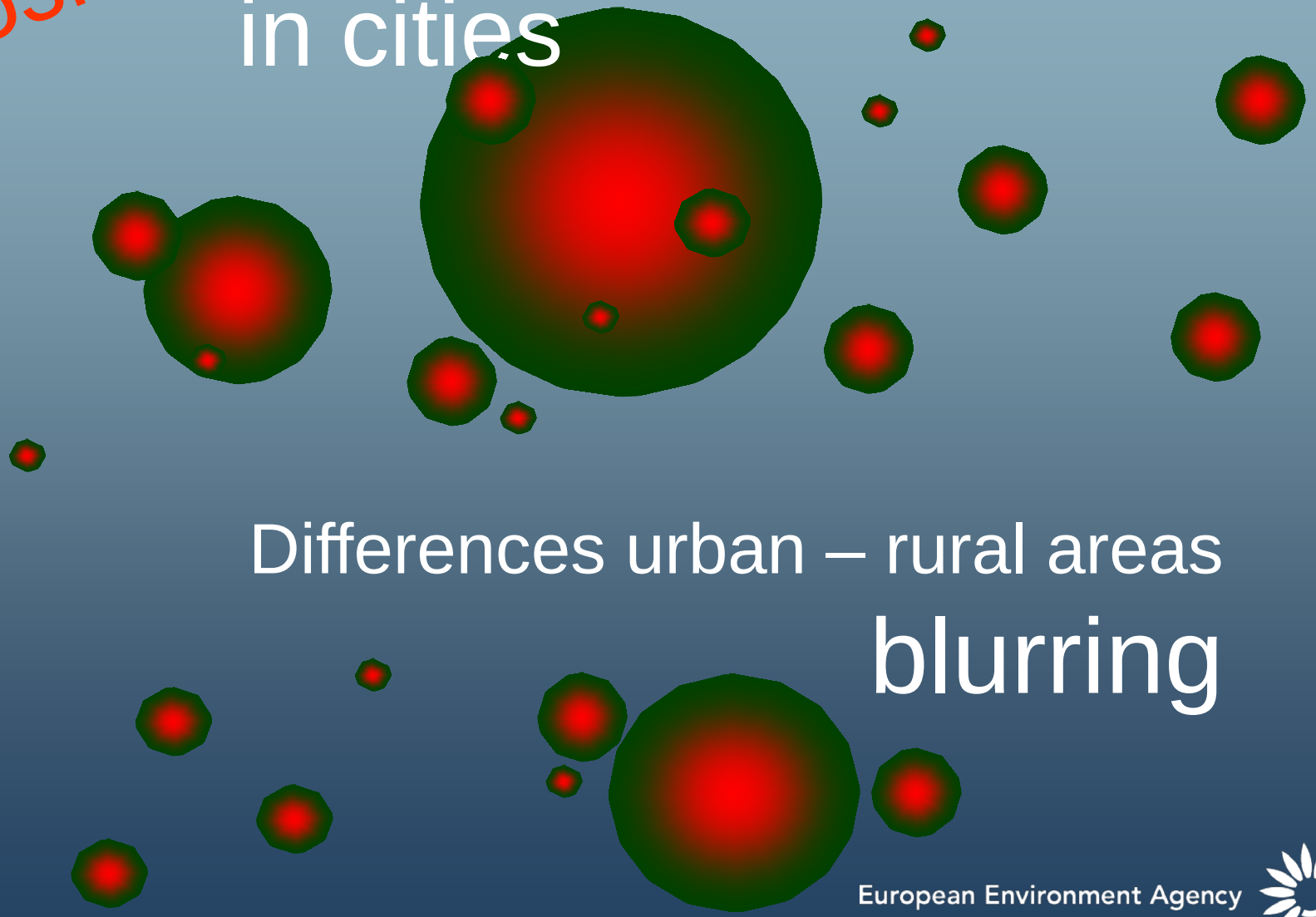
The amount of space consumed per person in the cities of Europe has more than doubled over the past 50 years

Over past decade 5 times area of Great London given up to just the sprawling area of European cities…

In fact, we are sprawling



Loosing Density & Compactness in cities

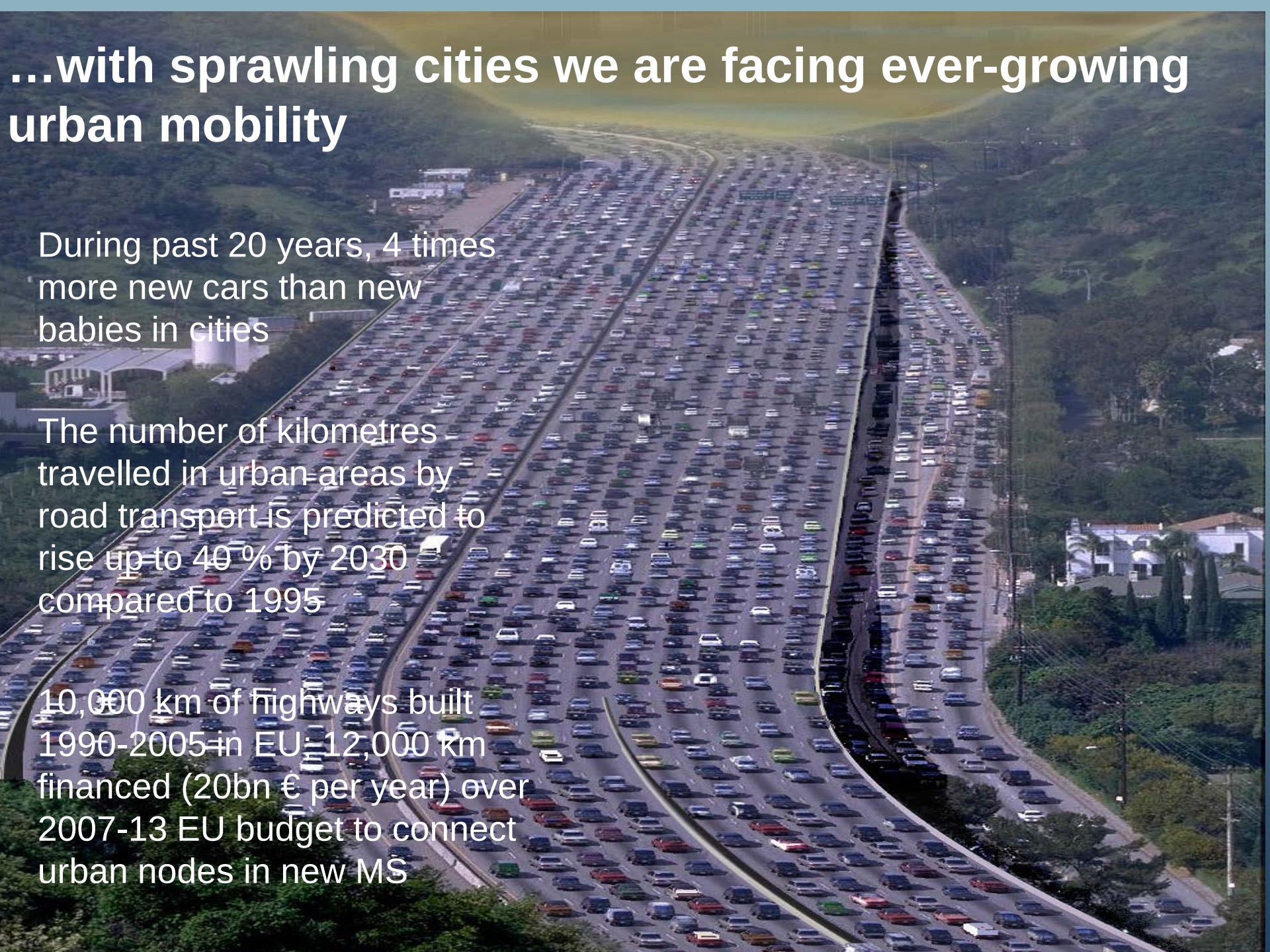


Differences urban – rural areas

blurring

European Environment Agency

…with sprawling cities we are facing ever-growing urban mobility

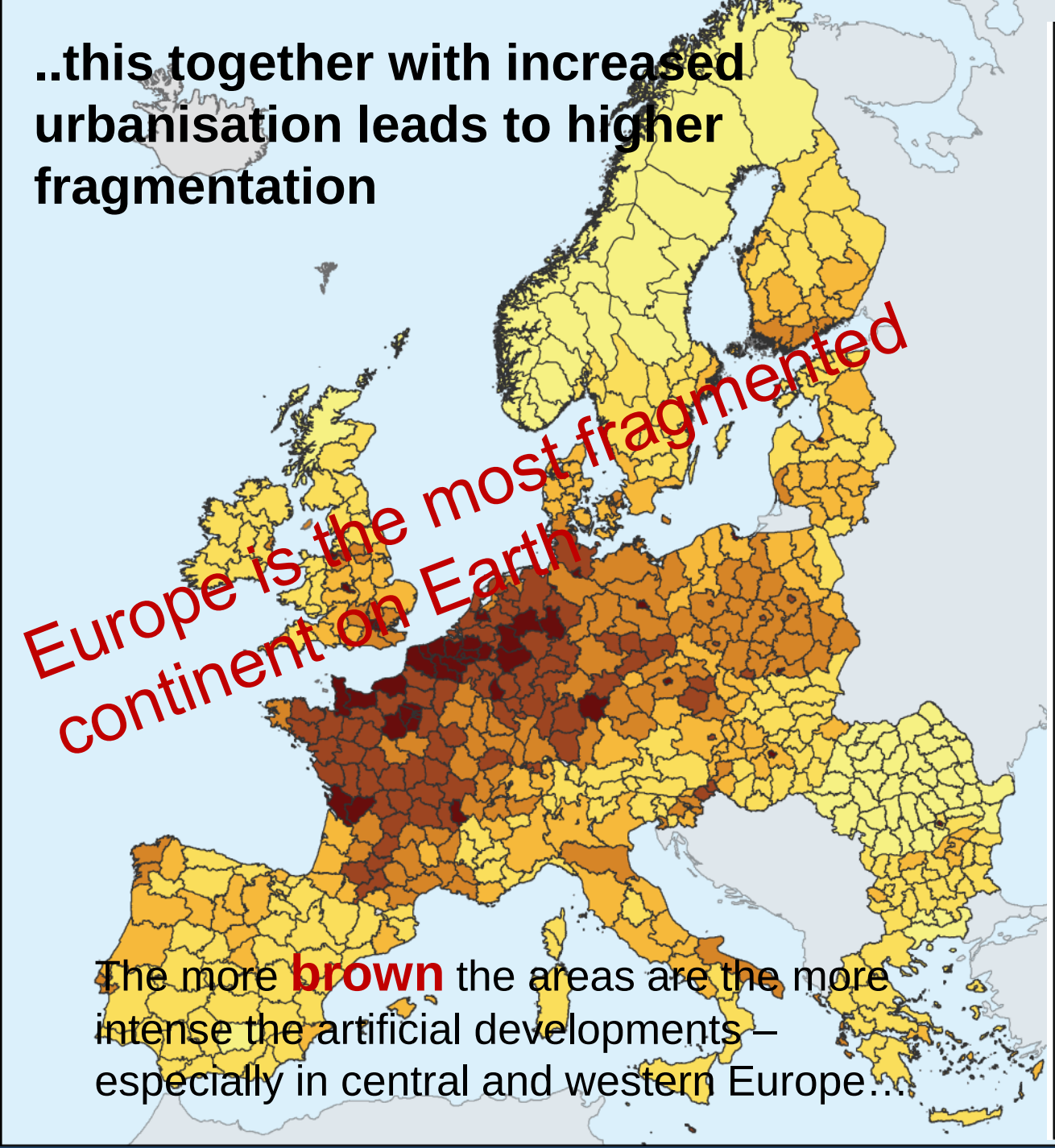


During past 20 years, 4 times more new cars than new babies in cities

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 1990-2005 in EU- 12,000 km financed (20bn € per year) over 2007-13 EU budget to connect urban nodes in new MS

..this together with increased urbanisation leads to higher fragmentation



The more **brown** the areas are the more intense the artificial developments – especially in central and western Europe…

Degree of landscape fragmentation 2009 in the NUTSX regions (for non-mountainous land areas)
Effective mesh density (number of meshes per 1000 km²)

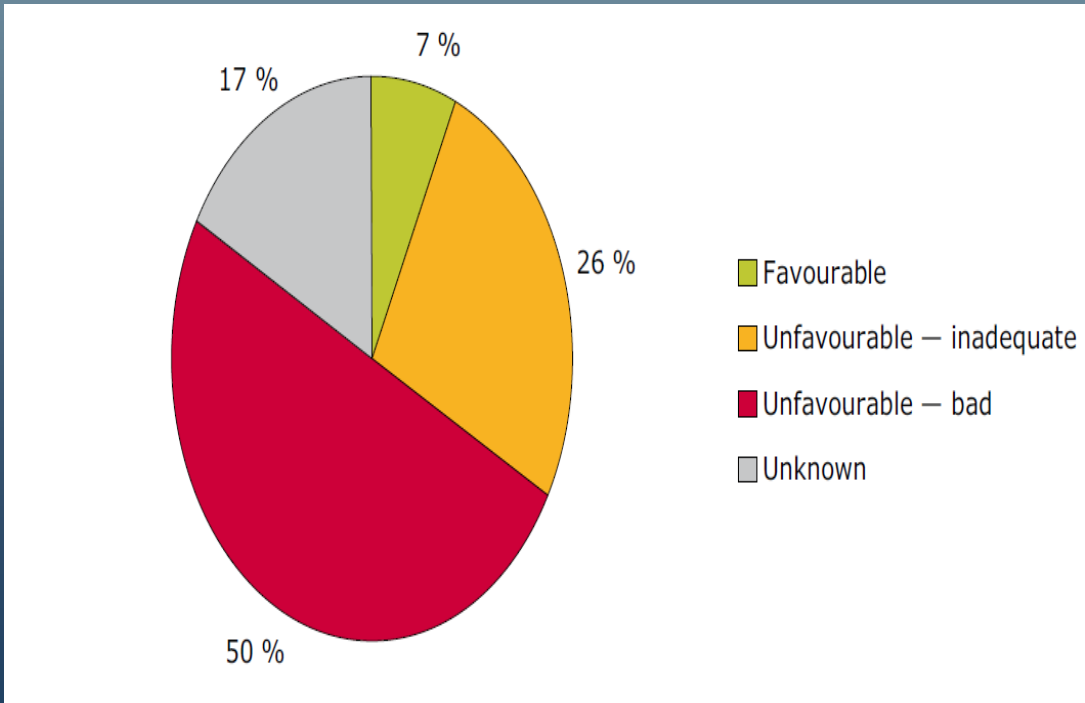
- < 2.00, Remote or low pop. density
- 2.01–10.0, Rural rangeland
- 10.01–20.0, Rural agriculture
- 20.01–50.0, Semi-rural
- 50.01–100.0, Ex-urban
- > 100.01, Urban
- Outside data covage

Consequences on biodiversity in Europe

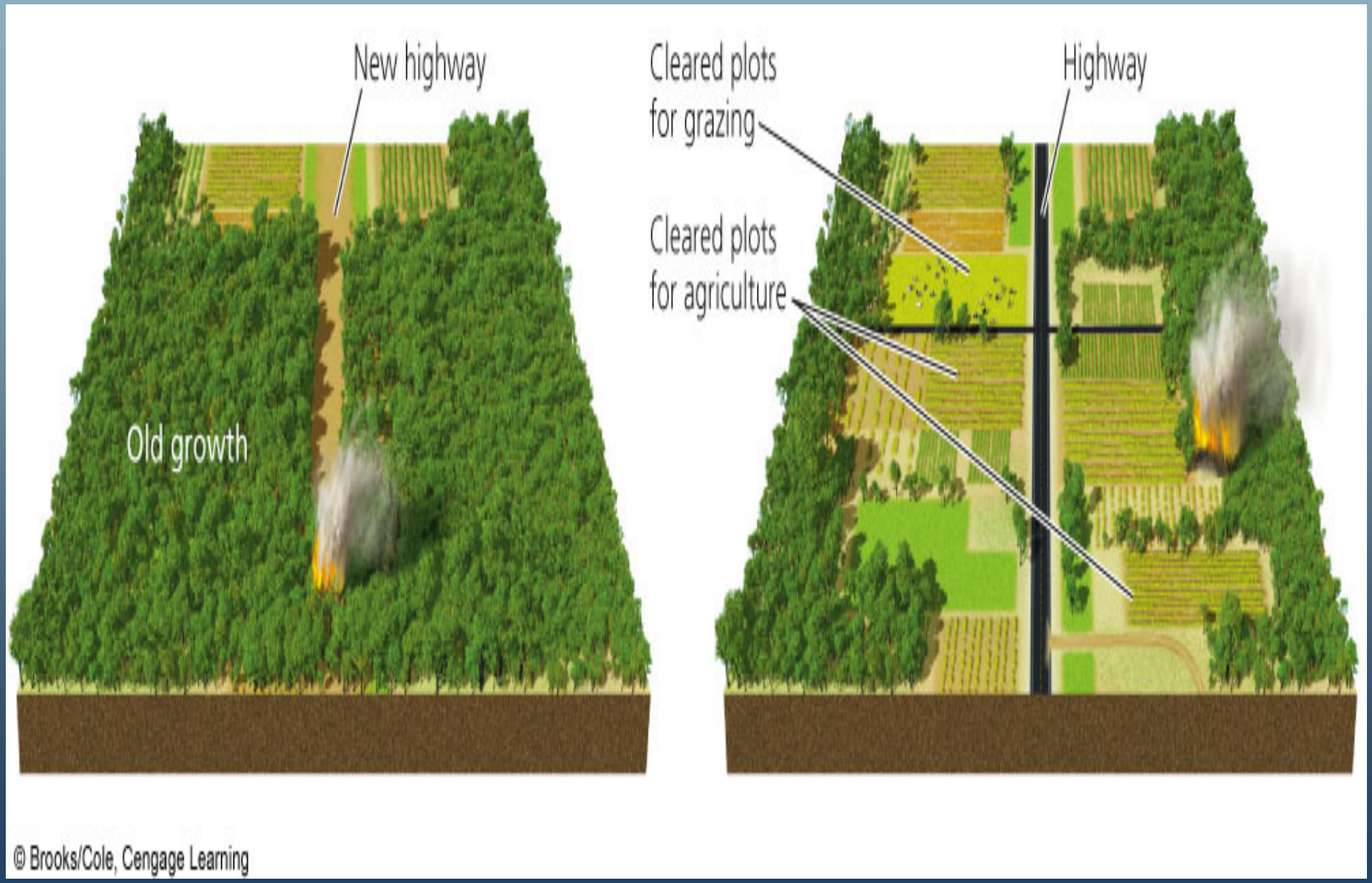
- 50% of wetlands and high-nature-value farmland gone
- 40% of all European bird species have unfavourable conservation status

EU Health Check 2009
« 50% of species and up to 80% of habitats have unfavourable conservation status »

Conservation status of habitat types

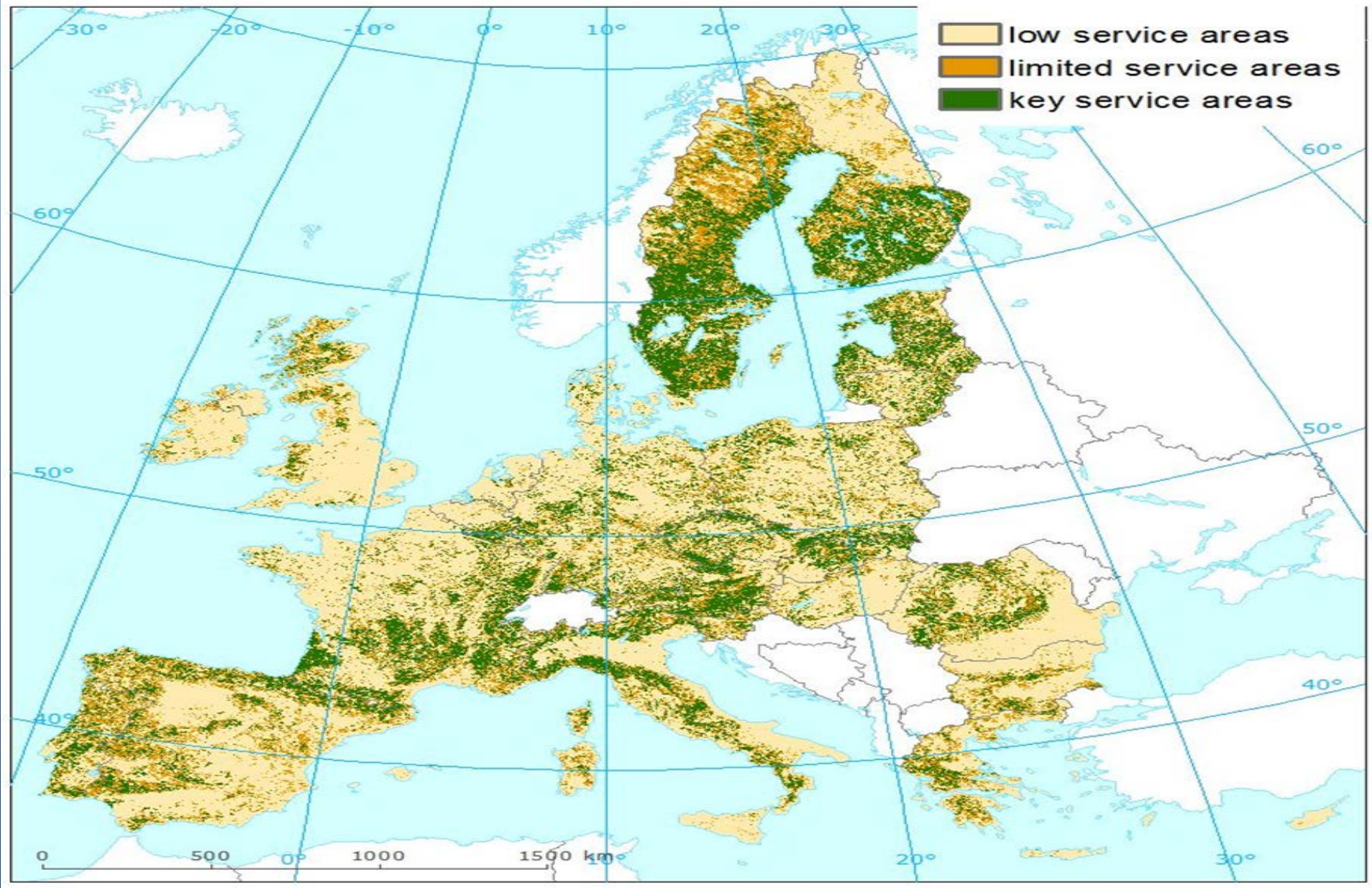


But the risk has not been reduced

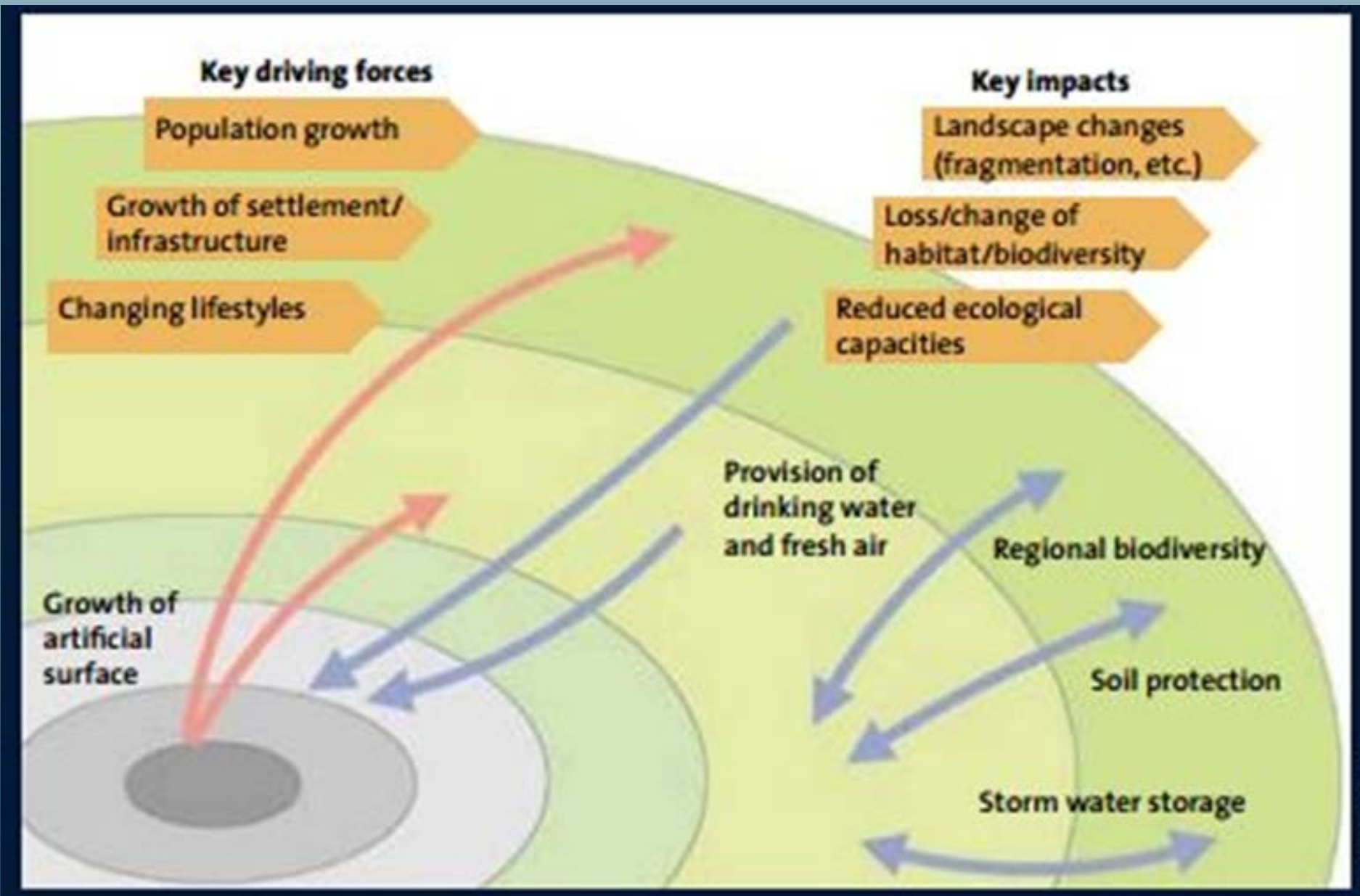


Consequences on ecosystem goods and services

Distribution of the GI elements based on the capacity to deliver ecosystem services

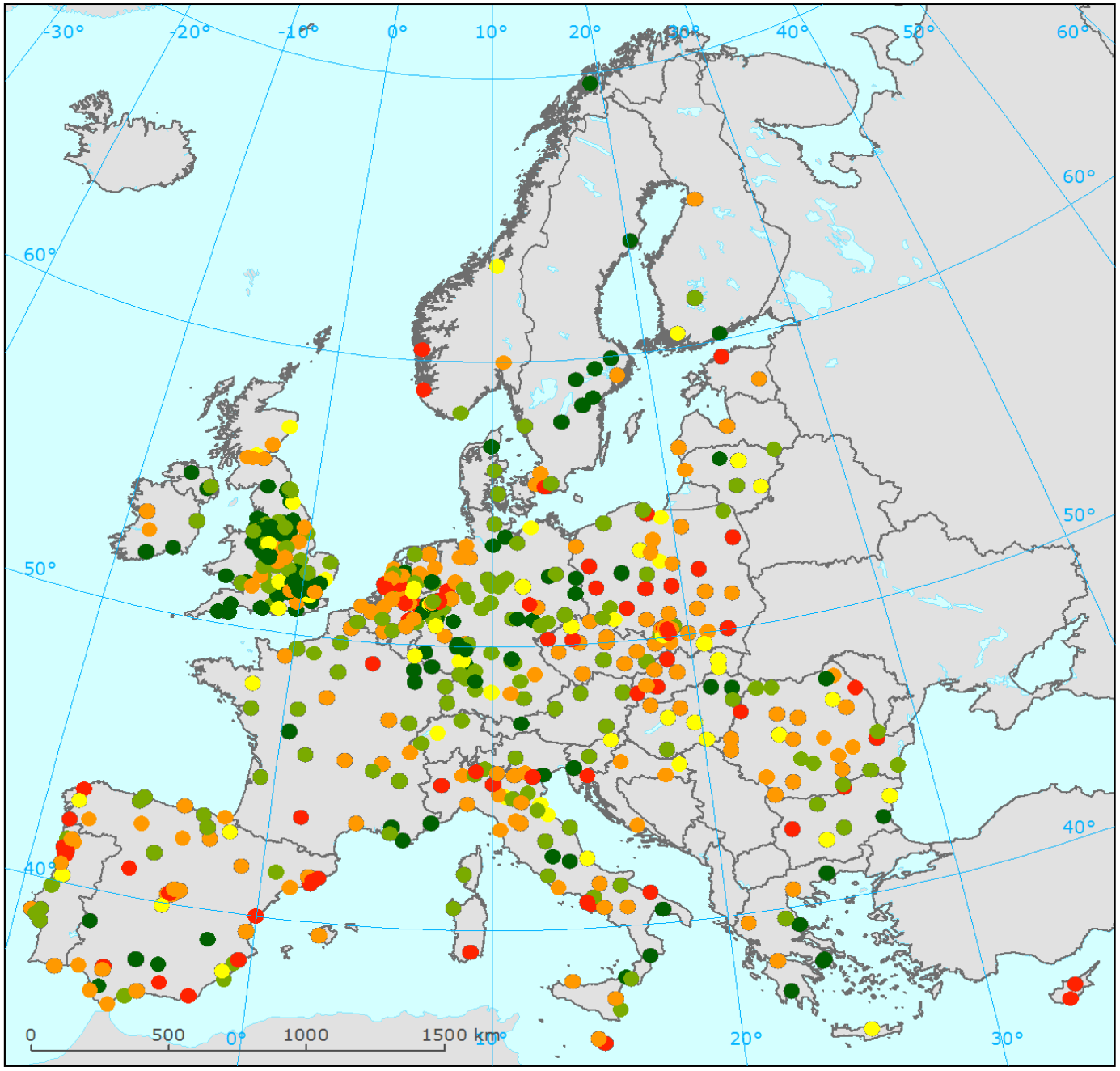


Dynamics between environment and landscape changes makes spatial planning even more important.....




BUT...

…hard covered surfaces are still increasing



Legend

Soil Sealing
2006 - 2009
net changes

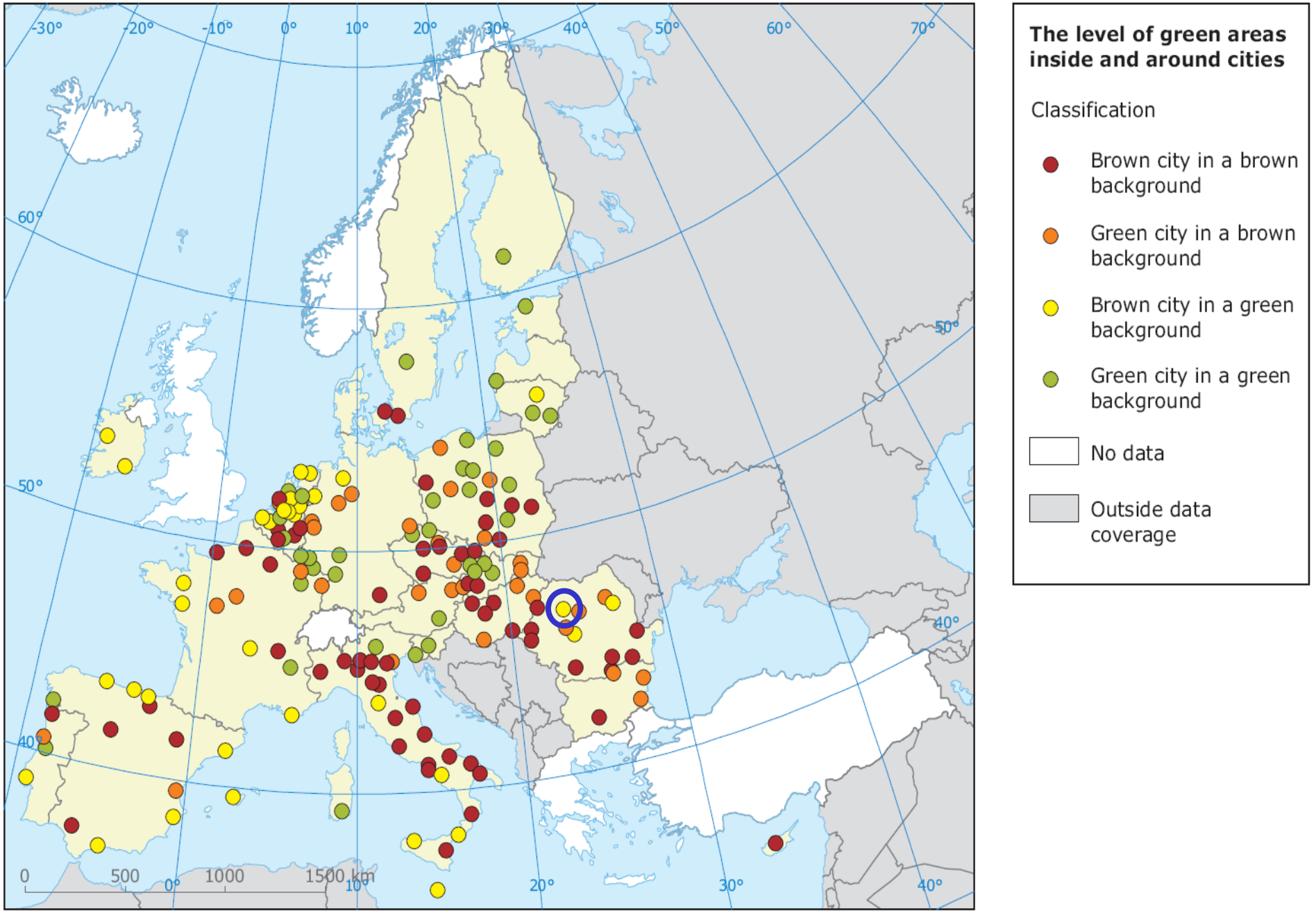
- no change
- low increase
- moderate increase
- high increase
- very high increase

Country borders

Water

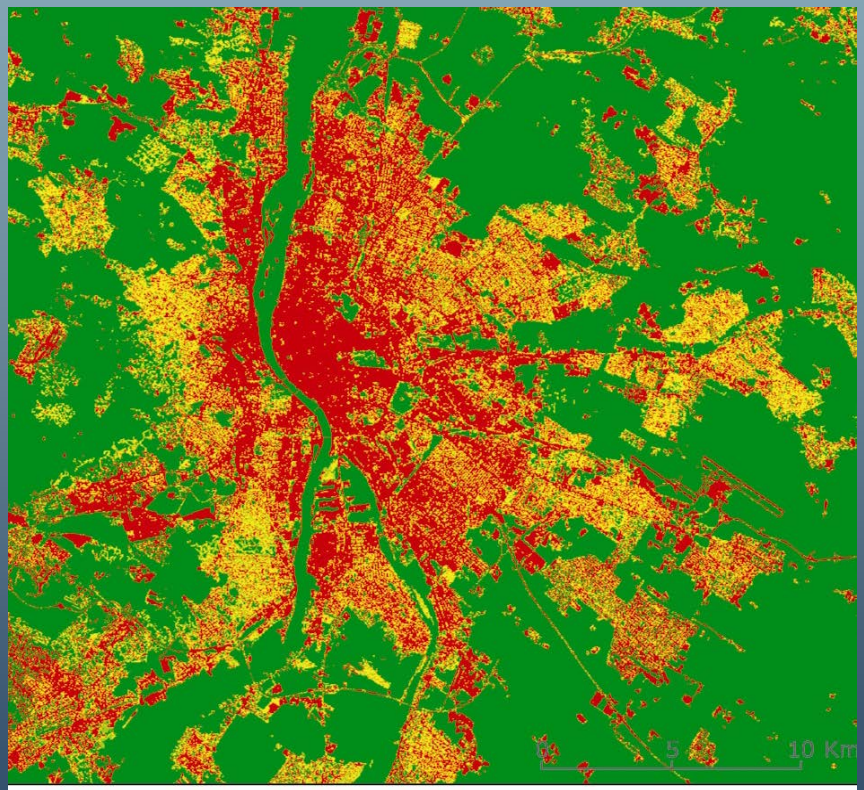
N
W
E
S

Map 2.4 The level of green areas inside and around cities



A brown city in a brown background leads to higher risk of urban heat islands

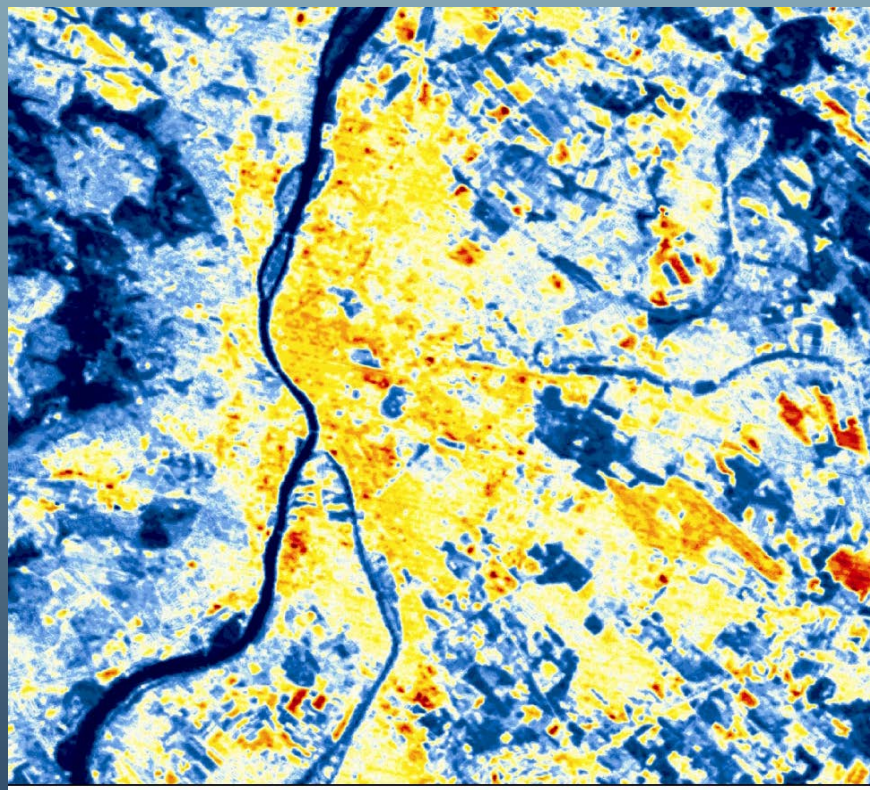
The intensity of heatwaves in urban areas is influenced by the urban fabric and design



Degree of soil sealing (impermeability) of Budapest

Degree of soil sealing [%]

0 30 50 80 100



Surface temperature of Budapest, 1 August 2005, 9:30 CET

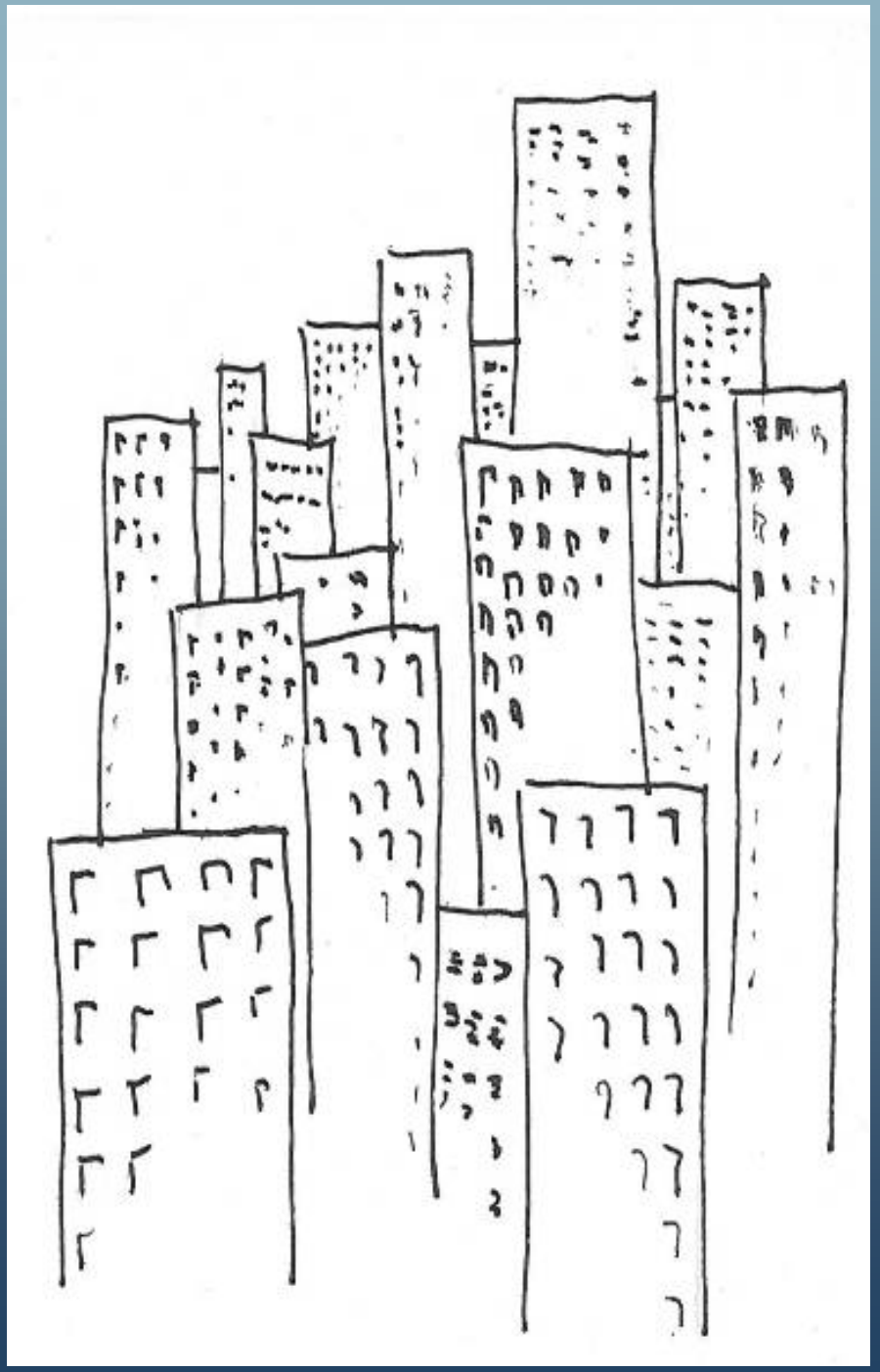
Temperature (°C)

≤ 15 16 19 22 25 28 31 34 35 36 37 40 43 ≥ 45


So what can we do?
Spontanious adaptation still happening...

Density

alone does **not** work




We need to work with Nature more intelligently....
makes the difference


.....green roofs

.....green walls

- Create an attractive living environment
- Enhance biodiversity
- Regulate the local climate

The green wall near London Victoria station -

UK’s largest vertical garden...

Constructed to help prevent central London from flooding

Containing more than 20 different seasonal plant species and around 10,000 plants

Technology: Storage tanks gather rainwater from the building's roof and use it to feed the plants..

Ventilation Corridors – Stuttgart

climate risks

sector

Location
Stuttgart, Germany

Total budget
unknown

Non-financial costs
Business

Non-financial benefits
Enviroment

Project partners
Office for Urban Planning, Department of land use planning

Public or private project
Public

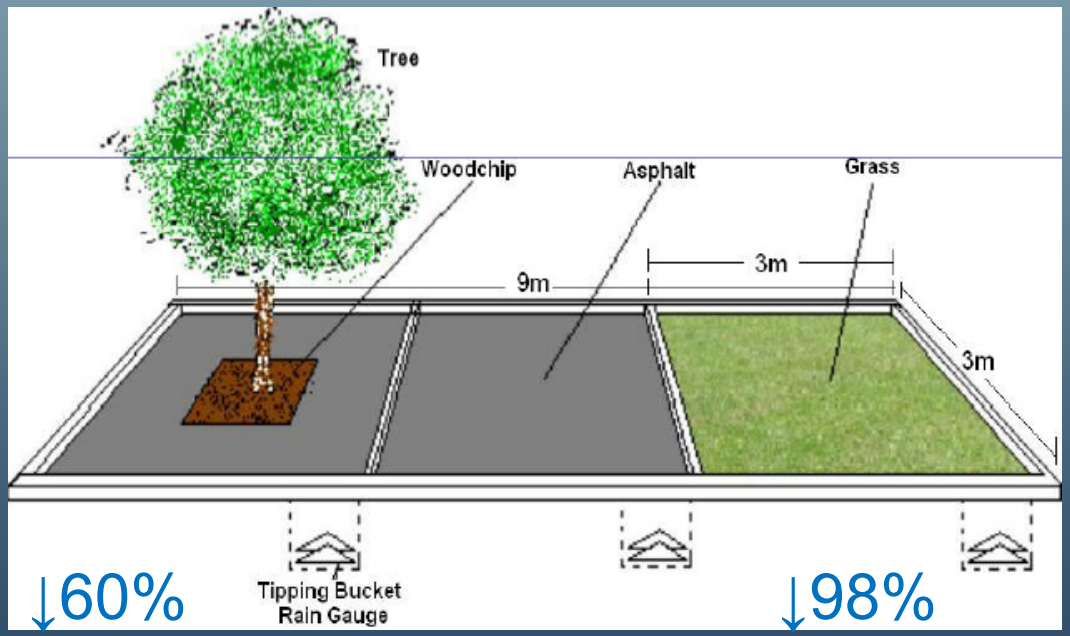
Contact
Municipality of Stuttgart, Office for Environmental Protection, Department of Urban Climatology
Ulrich Reuter, e-mail: ulrich.reuter@stuttgart.de

The open corridors allow for the inflow of cooler air from surrounding areas to the inner city.

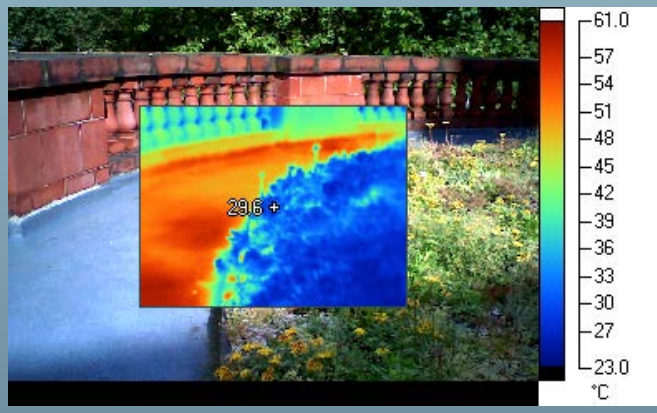
….managing urban climate by greening

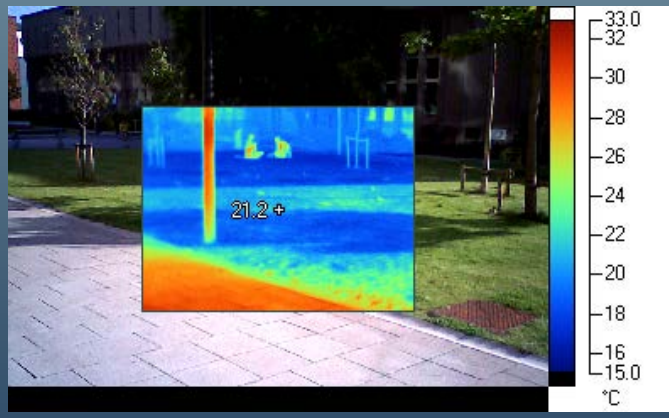
Reducing temperatures

Reducing surface water runoff



© Roland Ennos

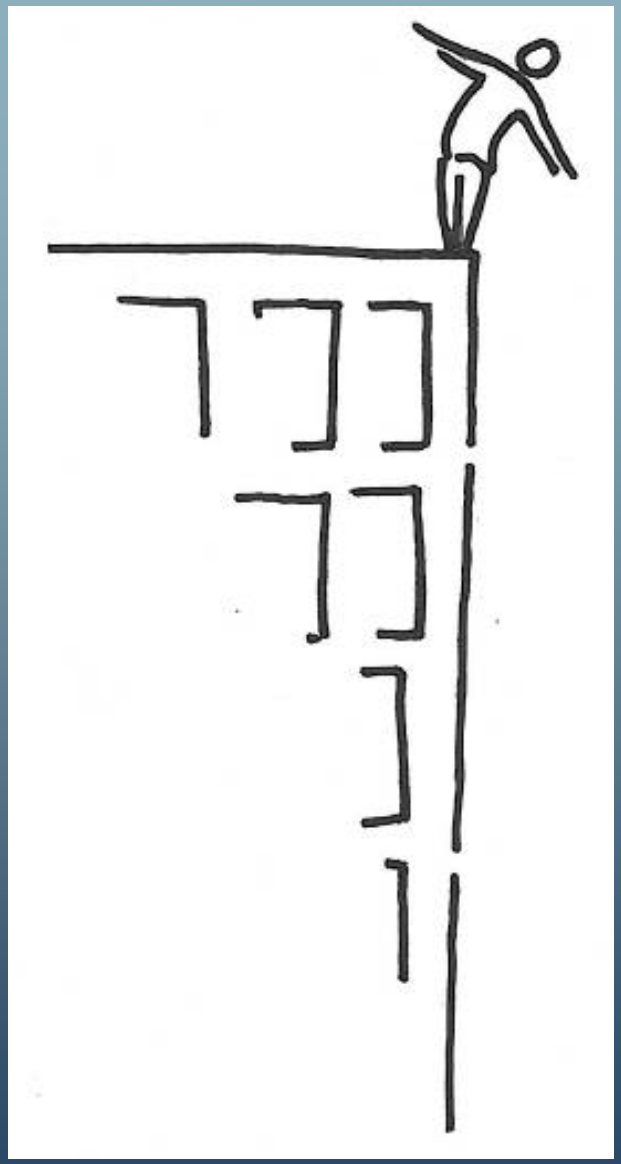




© Andrew Speak

opportunities

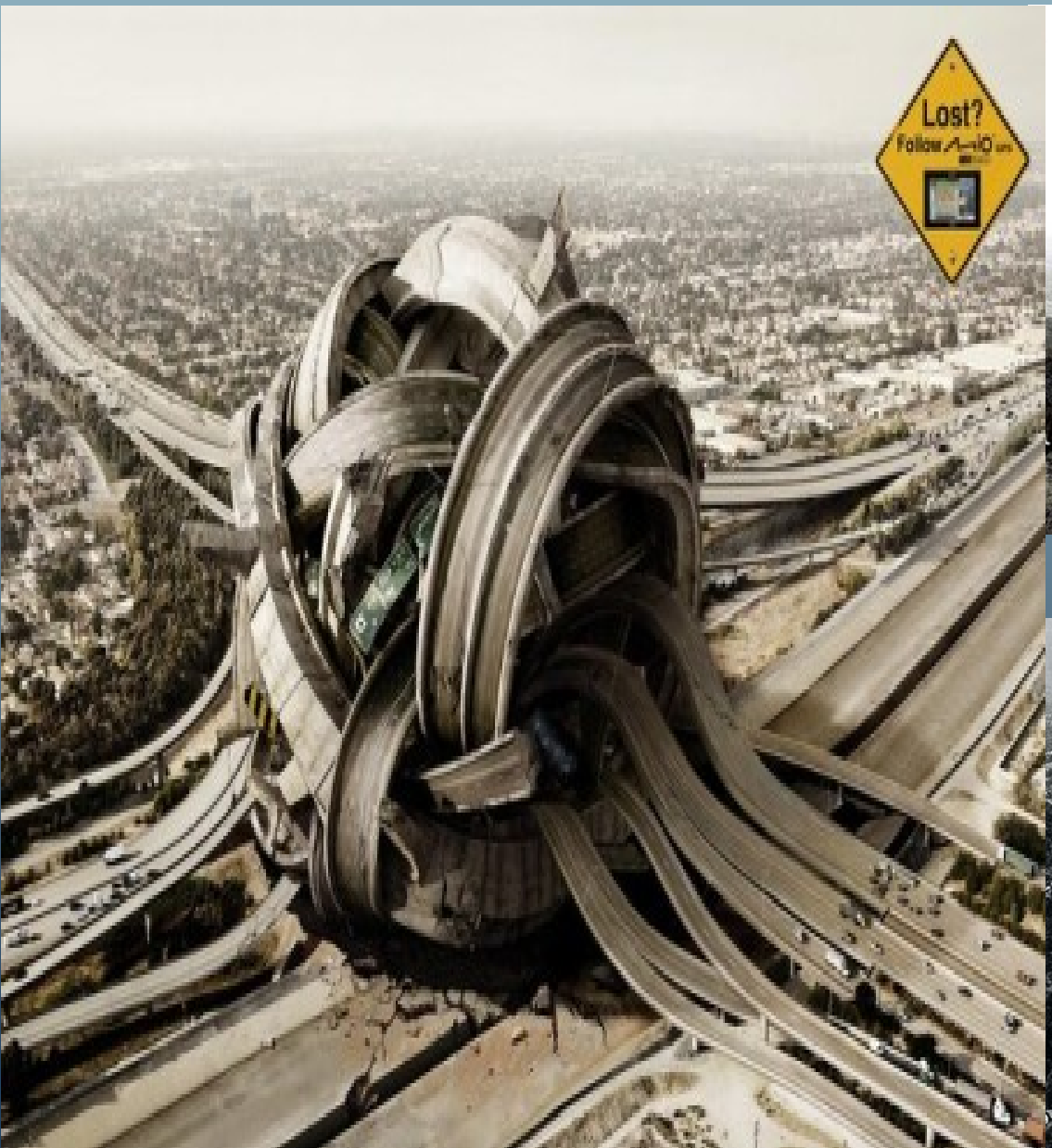
we just need to use them…

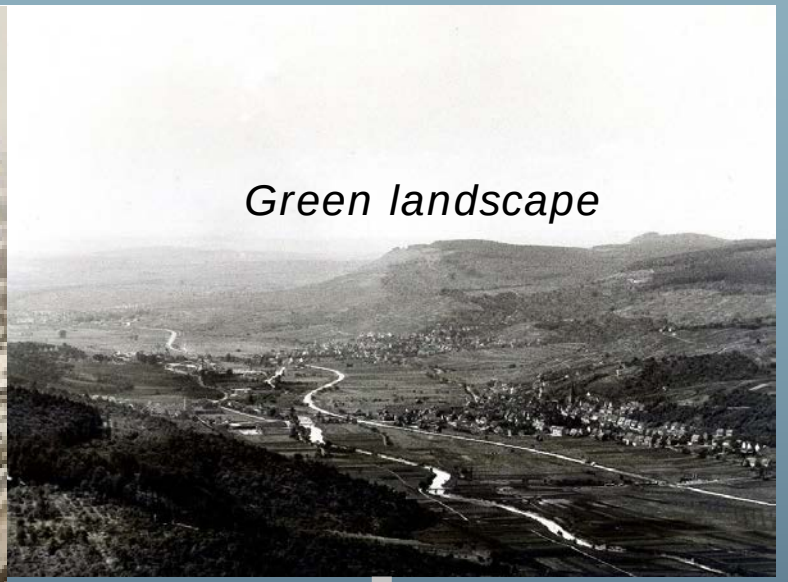


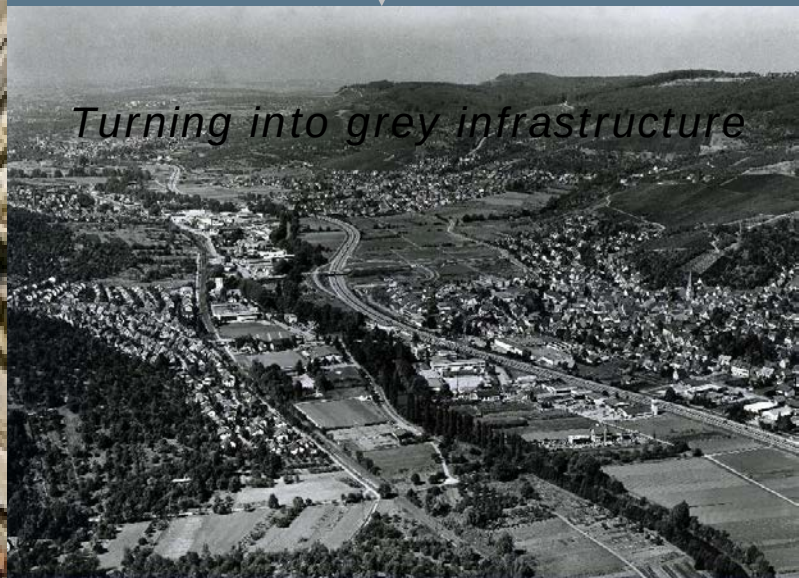
We **risk**
our **quality**
of **life**

Green infrastrukture is a key element

What green infrastructure is “not”…







Elements of grey infrastructure

Provides only single functions....

Utilities and communications

Roadways & other paved surfaces

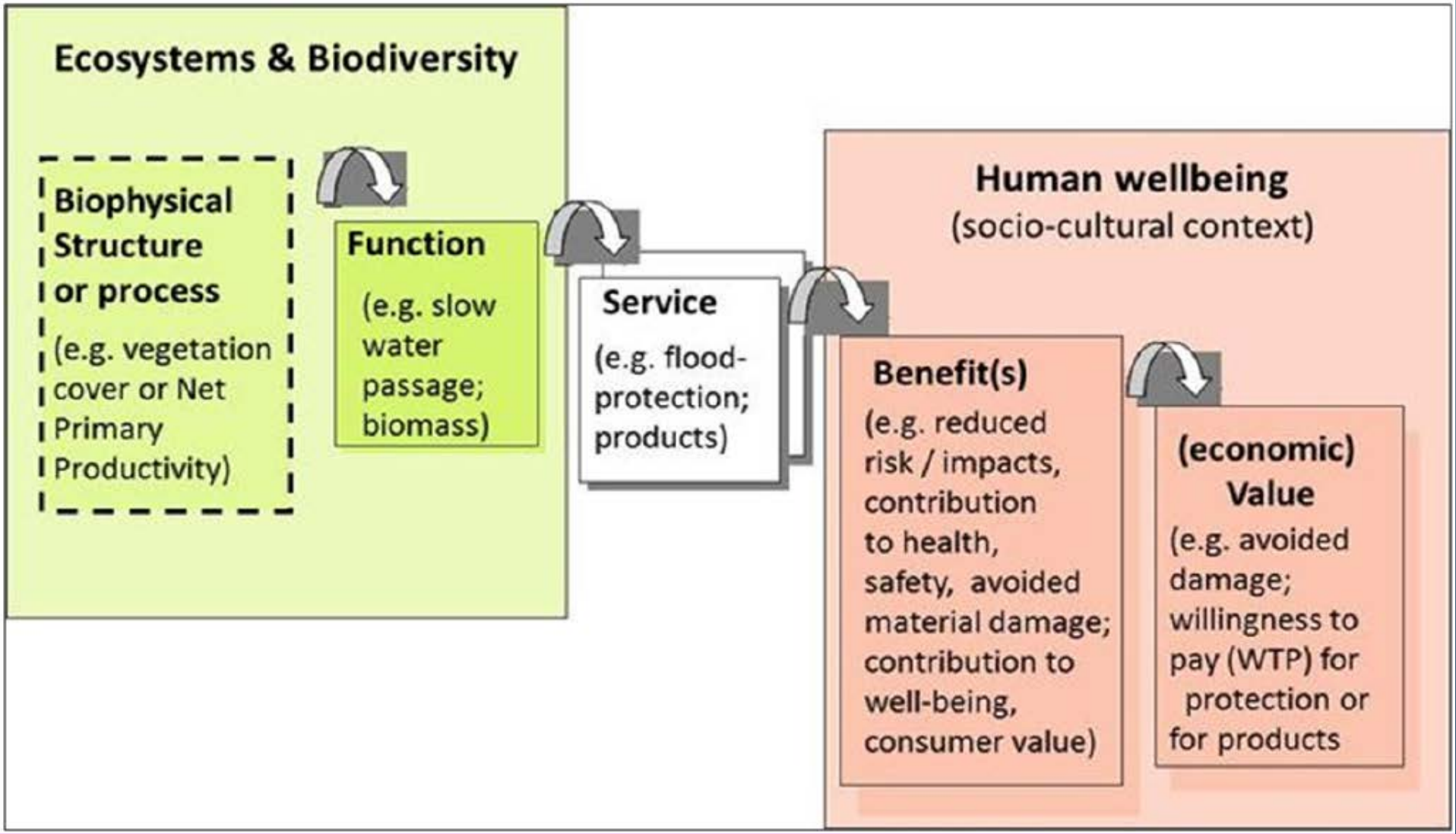
Water supply, treatment & disposal facilities

Green infrastructure provides multiple functions

No unique kind of GI - a multiscalar issue

Local, neighbourhood and village scale	Town, city and district scale	Regional and national scales
•Streets, verges and hedges •Green roofs and walls •Pocket parks •Private gardens •Urban plazas •Town and village greens and commons •Local rights of way •Pedestrian and cycle routes •Cemeteries, burial grounds and churchyards •Institutional open spaces •Ponds and streams •Small woodlands •Play areas •Local nature reserves •School grounds •Sports pitches •Swales, ditches •Allotments	•Business settings •City/district parks •Urban canals •Urban commons •Forest parks •Country parks •Continuous waterfront •Municipal plazas •Lakes •Major recreational spaces •Rivers and floodplains •Brownfield land •Community woodlands •(Former) mineral extraction sites •Agricultural land •Landfill	•Regional parks •Rivers and floodplains •Shoreline •Strategic and long distance trails •Forests, woodlands and community forests •Reservoirs •Road and railway networks •Designated greenbelt and strategic gaps •Agricultural land •National Parks •National, regional or local landscape designations •Canals •Common lands •Open countryside

GI has an important role in promoting societal health and wellbeing



We divide the services into….

Ecosystem services

The benefits people get from ecosystems

Provisioning services

Crops, Livestock, Game, Fisheries, Water supply, Wild species diversity (genetic resources)

Regulating services

Climate, Hazards, Detoxification & Purification, Disease/pest control, Pollination

Cultural services

Aesthetic, Spiritual, Inspirational, Educational, Recreation, Tourism, Wild species diversity

Supporting services

Necessary for the delivery of other ecosystem services

Soil formation, Nutrient cycling, Water cycling, Primary production


But why is the Europe acting?

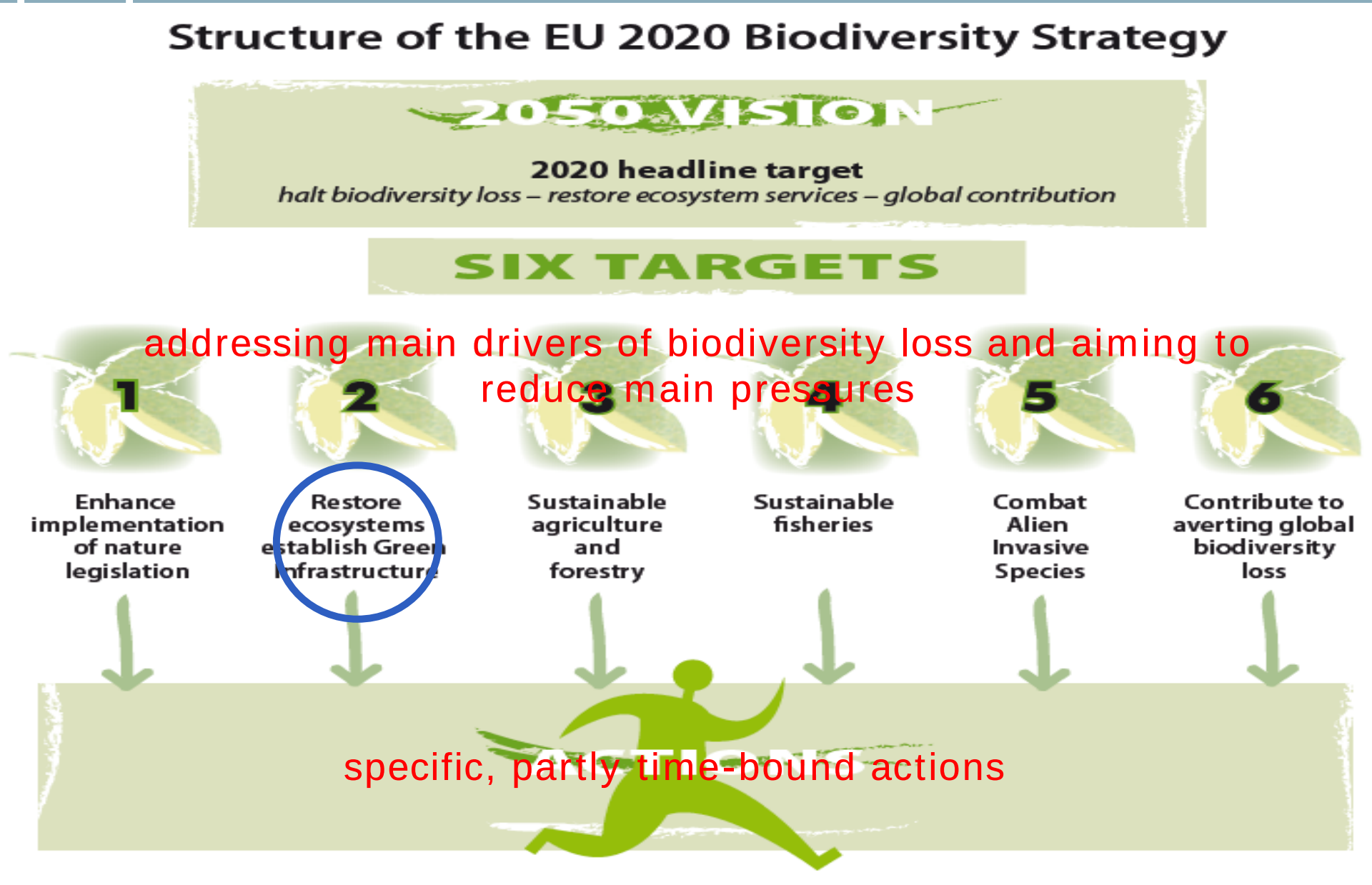
Commitments.....

EU 2020 Biodiversity Strategy and the Roadmap to Resource Efficiency to come forward with a Strategy on Green Infrastructure (GI).

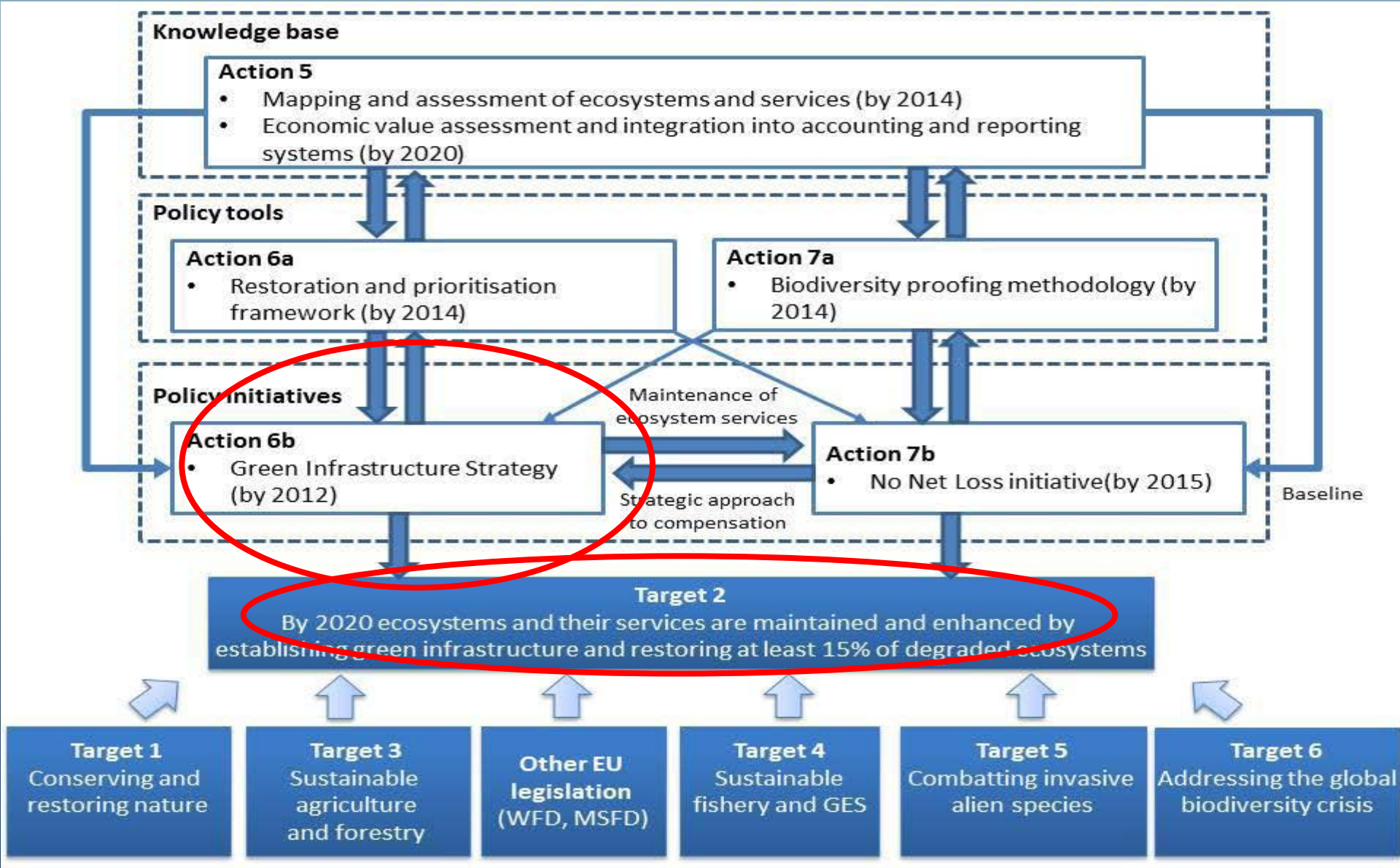
Communication on *"Green Infrastructure (GI) – Enhancing Europe's Natural Capital"* adopted by College on 6 May 2013

>> policy signal towards decision makers, planners and promoters to invest in GI projects at local, regional, national and cross-boundary level.

Green infrastructure started from the biodiversity perspective….



Common Implementation Framework of the Biodiversity Strategy 2020



What is the Green Infrastructure Strategy about?

1. Description of what GI is…

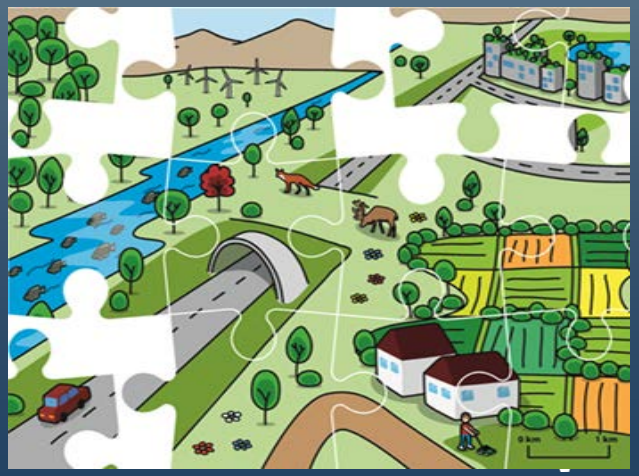
2. Contribution of GI to a number of key policy areas:
   - regional development
   - climate change
   - disaster prevention and resilience
   - agriculture and forestry,
   - urban
   - water
   - biodiversity protection and enhancement

3. To:
   - Promote the deployment of GI in main policy areas and their funding mechanisms (integrate into implementation + guidance, awareness raising, best practices)
   - Improve knowledge base and promote innovation
   - Better access to finance (including innovative mechanisms)

What is green infrastructure?

Green Infrastructure: a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services (in terrestrial, aquatic, coastal, marine environments). In short, the structure enabling healthy ecosystems to deliver their multiple services to people. On land, GI is present in rural and urban settings, and in protected (such as Natura 2000) and non-protected areas

Spatial structure delivering nature benefits to people



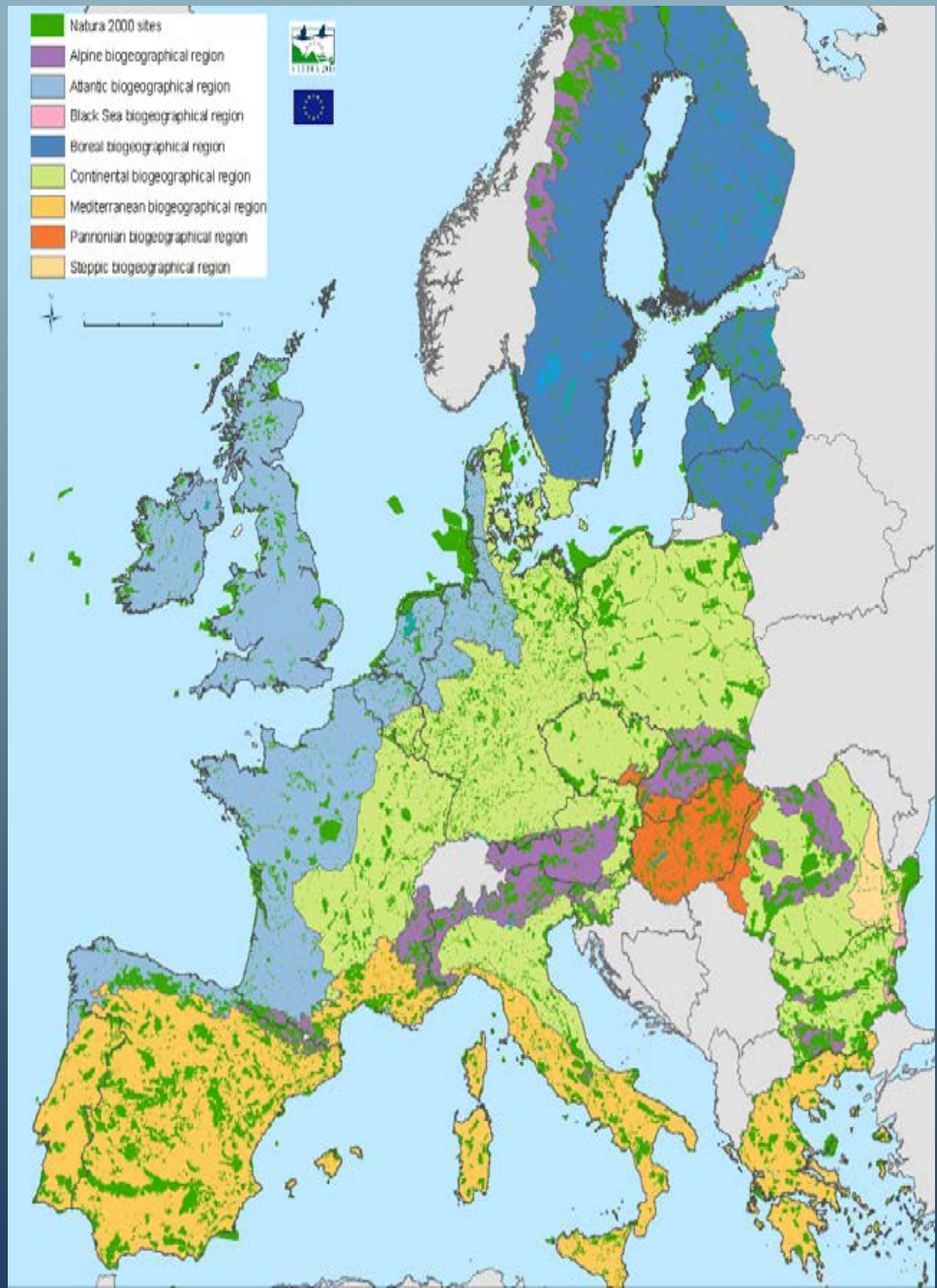
...the backbone of Europe's green infrastructure is already in place...

Habitats (1991) / Birds Directive (1979)

- Cornerstone of Europe's conservation policy
- Protects over 1.000 animals and plant species and over 200 so-called "habitat types"

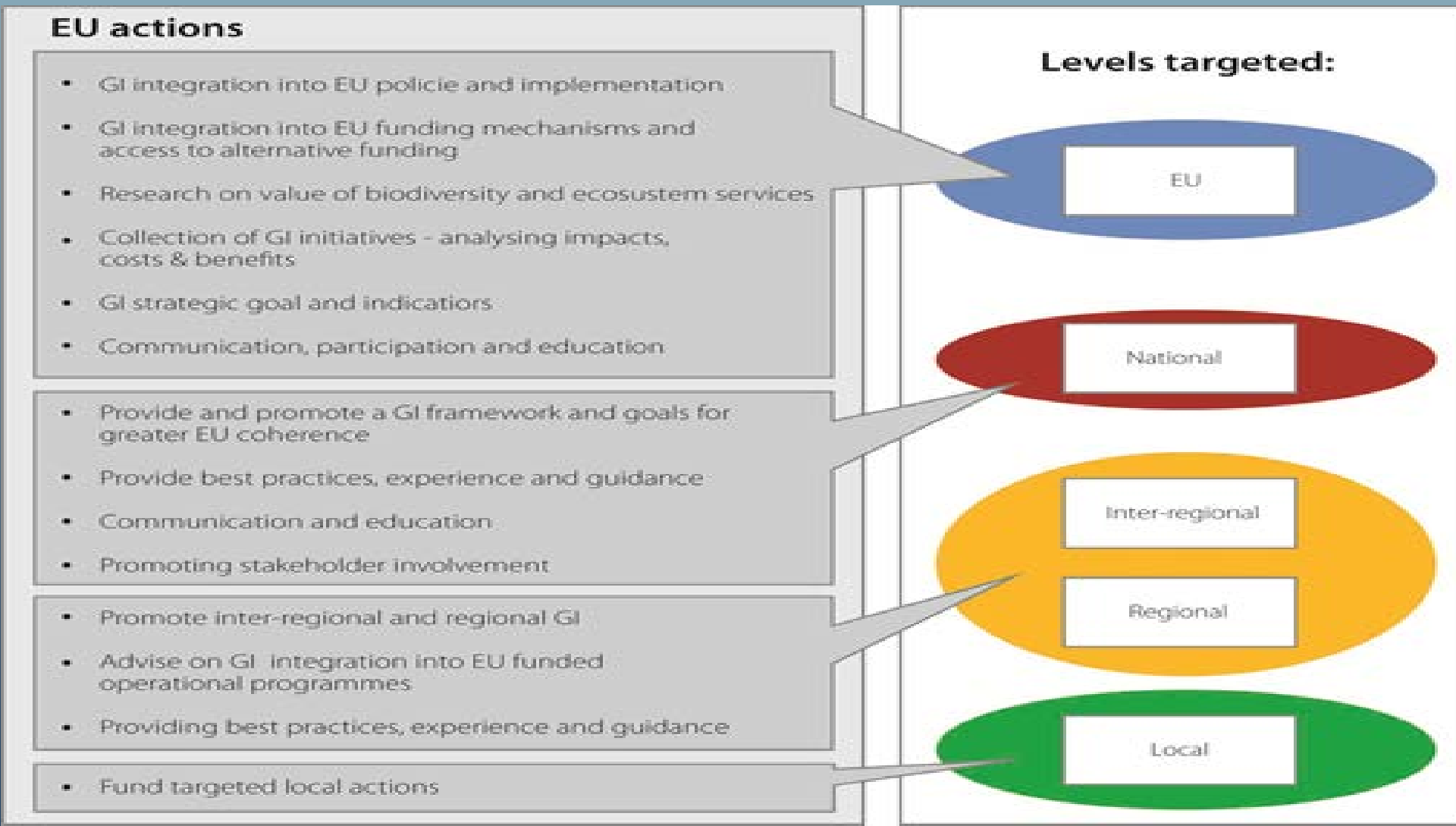
Natura 2000 (ecological network)

- A reservoir of biodiversity and GI – safeguards ecosystem services and natural capital
- Occupies 18% of EU's land territory and 4% of marine waters
- Comprises more than 26 000 sites



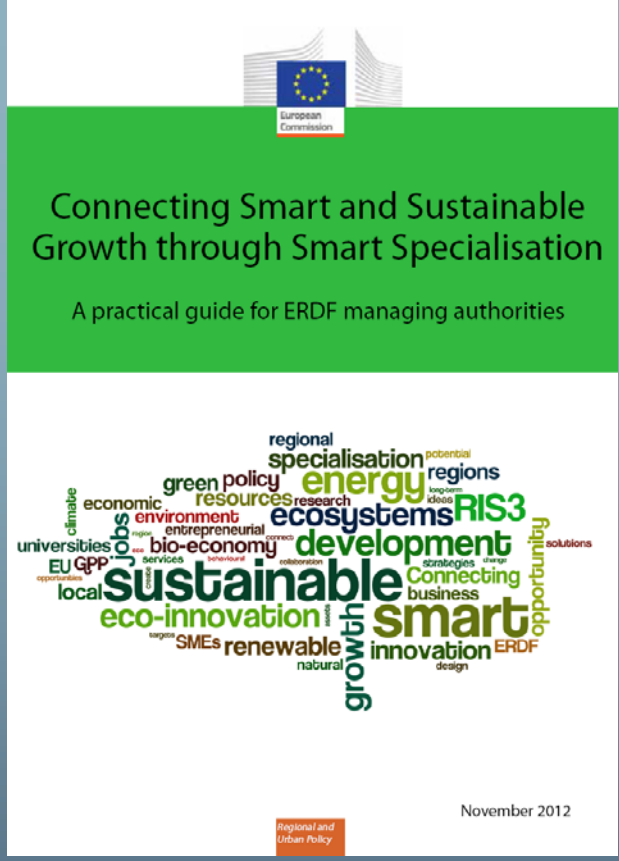
BUT we need action on all levels

To ensure GI does fulfil its many functions, the relevant stakeholders need to be involved in its planning, implementation and evaluation



Green infrastructure guidance

The European Commission will develop technical guidance setting out how Green Infrastructure will be integrated into the implementation of the main policies and their associated funding mechanisms from 2014 to 2020



Already available:

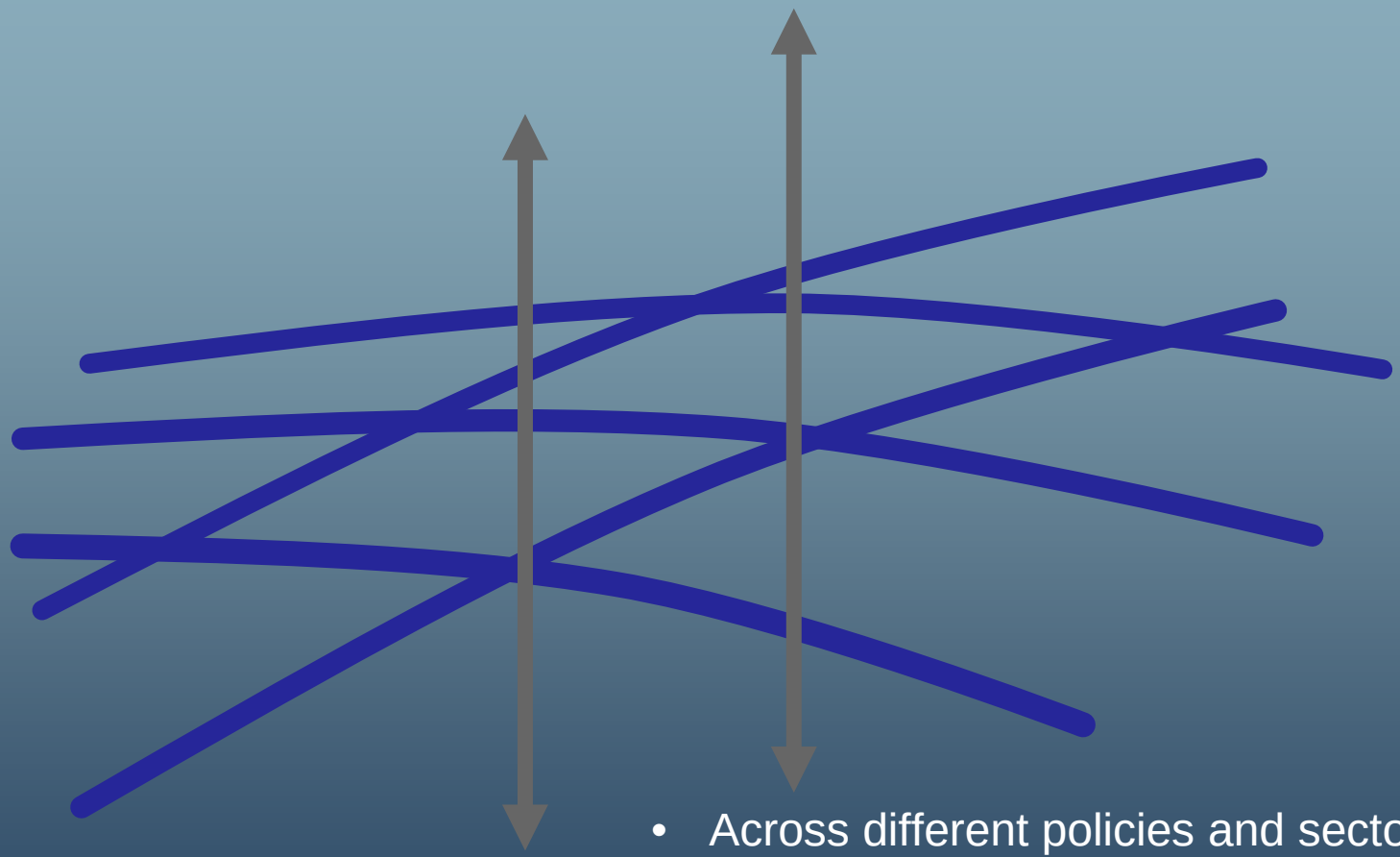
- Better environmental options for flood risk management
- Natural water retention measures (link to adaptation)
- Integration of biodiversity and climate change into SEA and EIA
- Connecting Smart and Sustainable Growth through Smart Specialisation

Examples on green infrastructure and its contribution to EU policies


Regions are connected across
the European continent


Budapest, Hungary, June 2013

What approach do we need ?



- Across different policies and sectors
- Across different administrative levels

Denmark and Copenhagen adaptation actions through green infrastructure

Priorities for action:

- Areas with high risk
- Planning across sectors (road infrastructure, water framework directive)
- Aiming for a green and blue city

A spatial plan for a green Copenhagen.....

Multiple functions:

A place for animals and plants

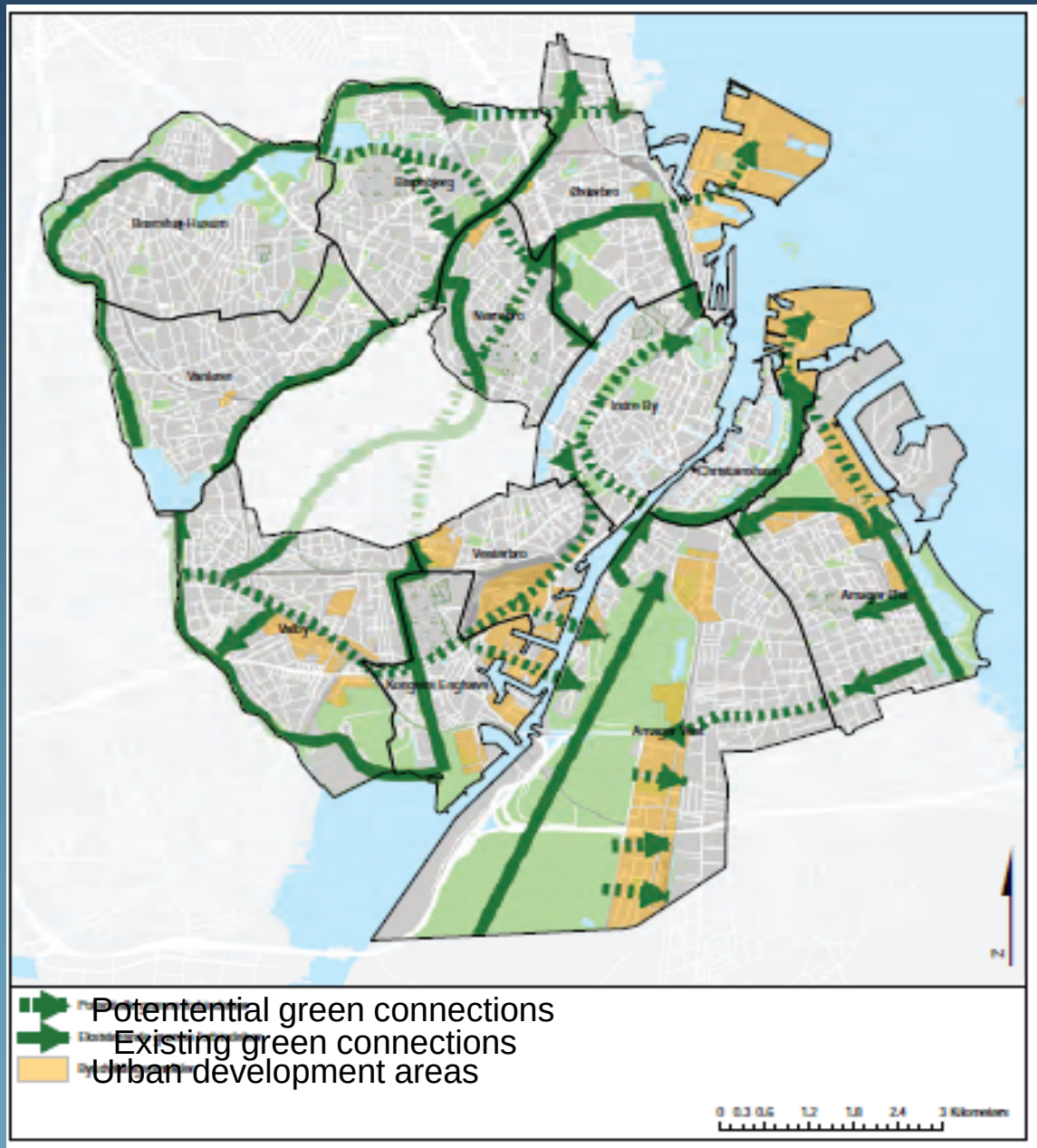
Recreation

Climate proofing

Noise reduction

Social interaction

Etc.



Skt. Kjelds Plads, Copenhagen

Greeen Climate Resilient Neighborhood

8000 m2,

Will become the ”green heart” of the district with accessible green landscape supported with water basins to compensate for the trafic noise and become a green reservoir for rain water....

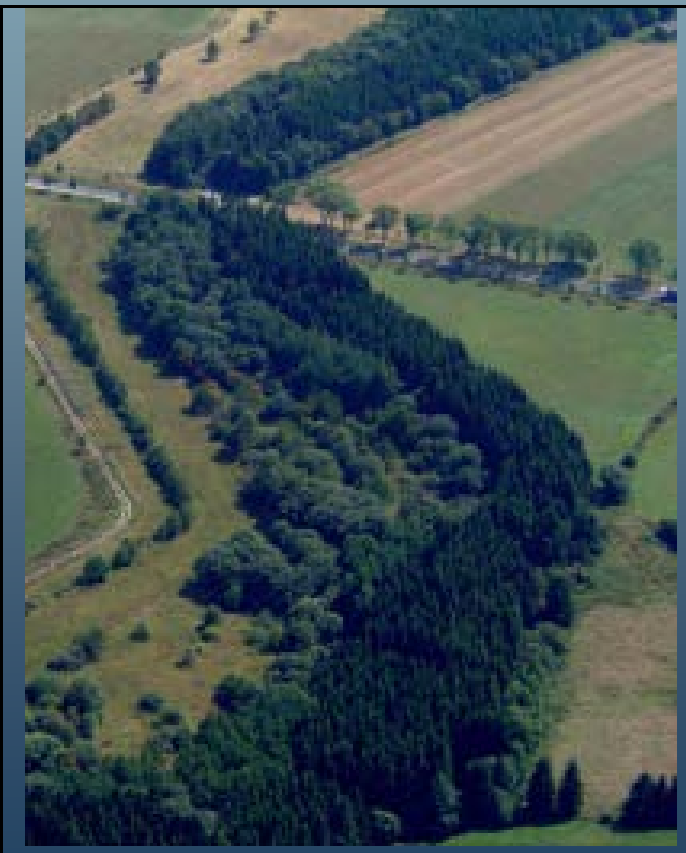
http://www.klimakvarter.dk/english/

The solutions are being developed in cooperation with local residents and target both public (streets) and private areas (inner courtyards)

European Green Belt (Includes Croatia, Bulgaria, Czech Republic, Slovakia, Hungary, Austria, Slovenia and Germany)

In 2003 the idea of the ´European Green Belt´ was born and today the backbone of an ecological network running 8500 km from the northern tip of Europe to the Black Sea

Is a global symbol for transboundary cooperation in nature conservation and sustainable development



Green Belt Germany, Rhoen (Photo: K. Leidorf)

The Route of the Green Belt (www.europeangreenbelt.org)

Educational project in the Green Belt Slovakia (Photo: R. Slovakia)

Neighbourhood regeneration - Ekostaden Augustenborg Malmö (Sweden)

A 32-hectare district of the city of Malmö was built in the 1950s

Initially highly successful mixture of housing, employment and social facilities - falling into decline by the 1970s

The reasons: lack of insulation and a sewage system which regularly became overwhelmed during annual flooding - accordingly more people moved out

In 1990s the city council launched an urban regeneration project focusing on flooding, waste management and biodiversity

The approach taken to water-management and climate adaptation was to create an open, surface level storm water system, green rooftops and green walls and improvements to green spaces

In the new storm water system, 70% of all rainwater from rooftops and other impervious surfaces is collected from gutters and channelled through canals, ditches, ponds and wetlands before finally draining into a traditional closed sub-surface storm water system. (Photo: John Dolocek, City of Malmö)

All new, and some existing buildings in the neighbourhood, have green roofs, including the largest green roof (9,500 m²) in Scandinavia. They create valuable habitats and intercept half of the total rainfall. (Photo: Scandinavian Green Roof Institute)


Work with nature!
Remember the traditional and local knowledge !

Thank you!