

The MAES implementation at European and national scale - guidance and case studies

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What is MAES?

EU Biodiversity Strategy

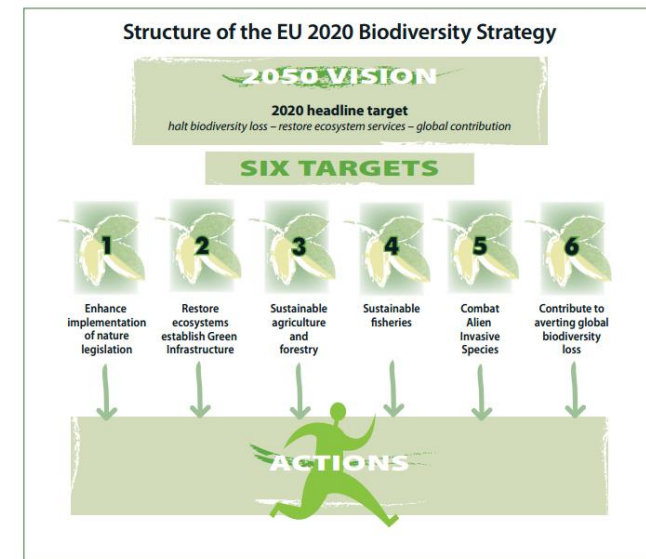
→ Halt the loss of biodiversity and ecosystem services in the EU and globally

Target 2

→ Maintain ecosystem services and restore ecosystems

Action 5

→ **M**ap and **A**ssess **E**cosystems and their **S**ervices in the entire EU territory; economic valuation; develop natural capital accounts



MAES working group oversees the implementation of Action 5

Research community
H2020 projects

www.esmeralda-project.eu

European Commission,
European Environment Agency

Cities and regions
Stakeholders

EU Member States
and other countries

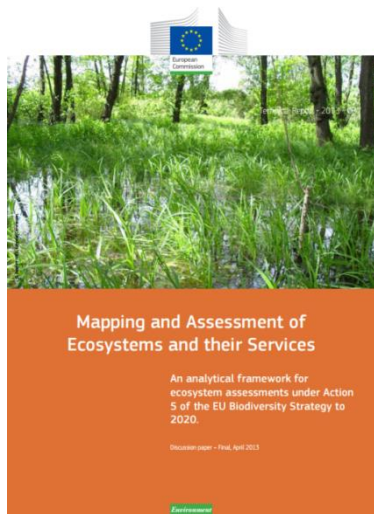


TASKS of the Working group

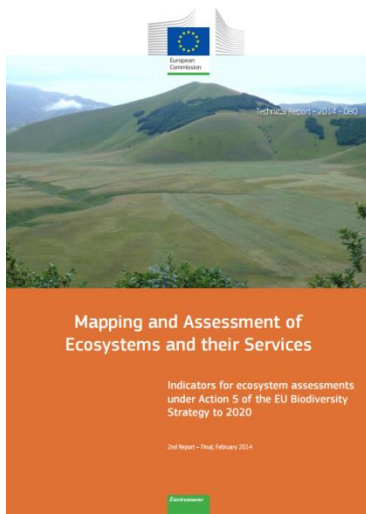
1. *Guidance for member states*
2. *Common ecosystem assessment pilots*
3. *EU wide assessment*

Guidance documents (MAES reports)

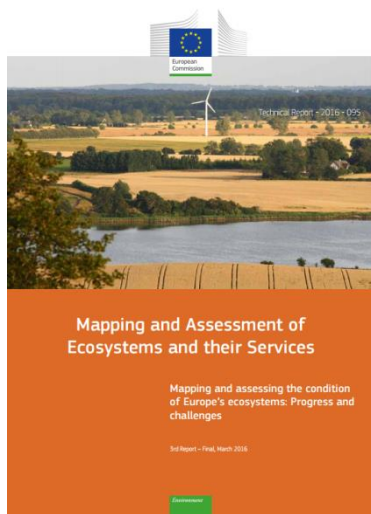
Conceptual
framework
and
typologies



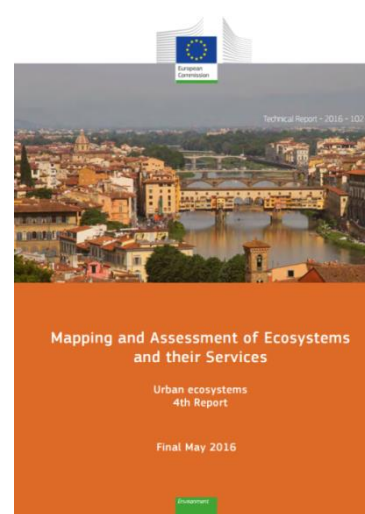
Indicators
for
ecosystem
services



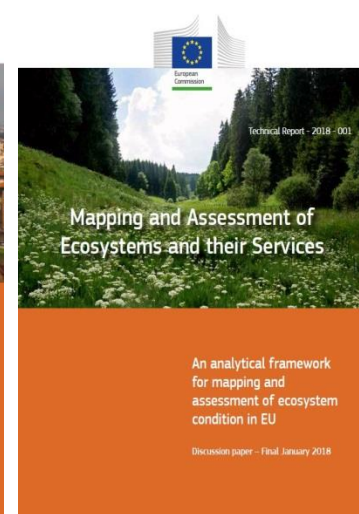
Ecosystem
condition
assessment



Urban
ecosystems



Indicators
for
ecosystem
condition



<http://biodiversity.europa.eu/maes>

Ecosystem condition: the physical, chemical and biological condition or quality of an ecosystem at a particular point in time

How do we measure ecosystem condition?

→ What (how much) are the pressures?

→ Structural measurements

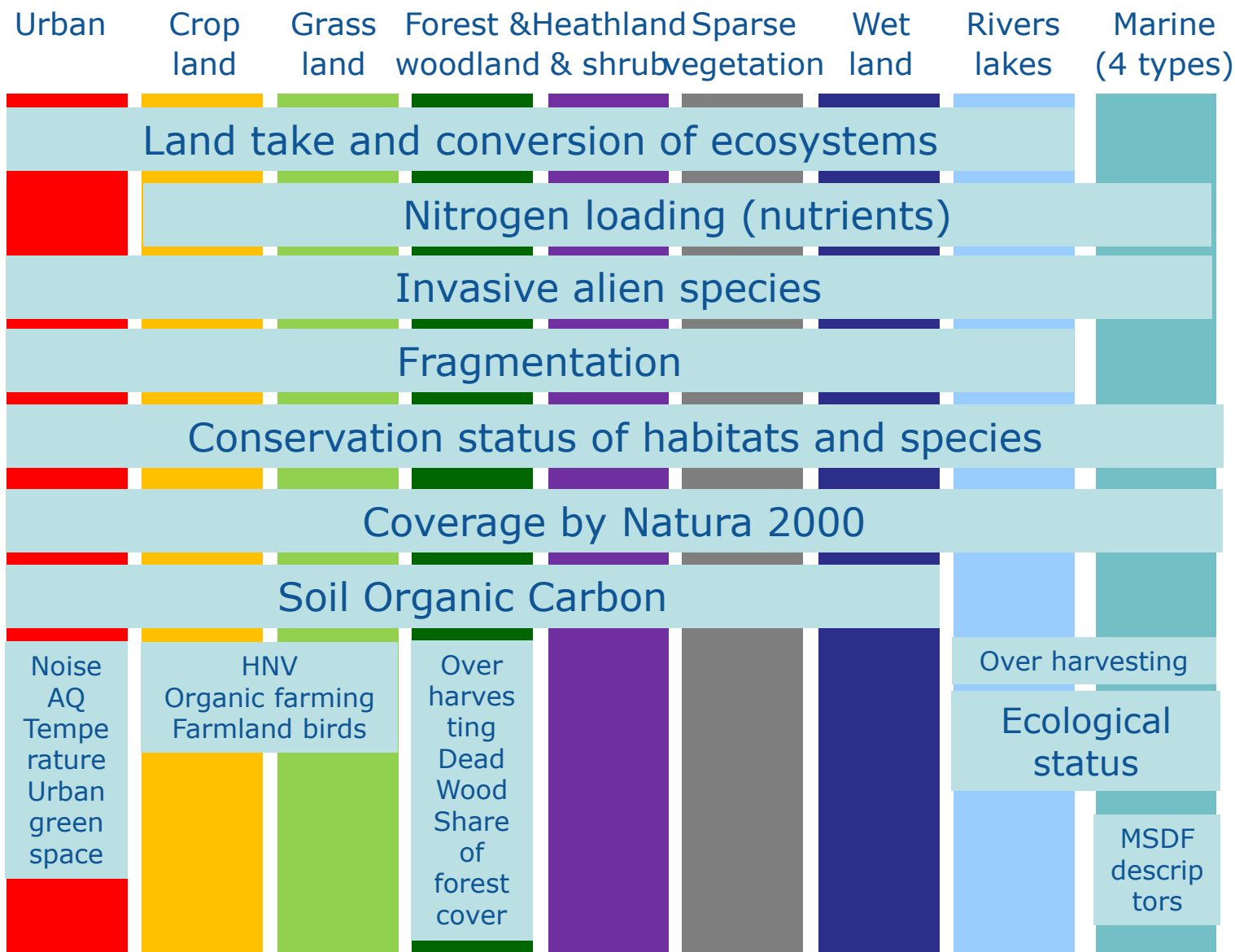
→ Functional measurements



5th MAES report on condition

- ➔ *Indicator tables per MAES ecosystem type (7 terrestrial types, 1 freshwater type and 4 marine types)*
- ➔ **Key indicators** (policy relevant + data available) per ecosystem type
- ➔ **Integration** across ecosystem types for integrated ecosystem assessment

Key indicators



How to use the MAES framework on ecosystems and their services?

Providing the knowledge on ecosystems, ecosystem condition and ecosystem services to support policy making and implementation at different levels of governance:

- *Pollination*
- *Urban ecosystems*
- *Green infrastructure development*
- *EU wide assessment (post 2020 strategy)*

EU initiative on pollinators

- *Action plan on pollinators and pollination to be adopted by end May 2018*
 - PRIORITY I: Improving knowledge on pollinator decline, its causes and consequences
 - PRIORITY II: Tackling the causes of pollinator decline
 - PRIORITY III: Raising awareness, engaging wider society and promoting collaboration







KIP INCA (EU project on natural capital accounts)

Crop pollination by wild insects

Wild insect pollinators



Pollination **POTENTIAL**

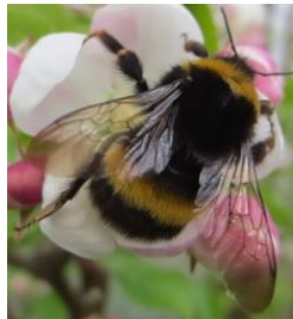
Pollinator-dependent crops



DEMAND for pollination

SEEA EEA
accounting
tables

USE of crop pollination



BENEFIT



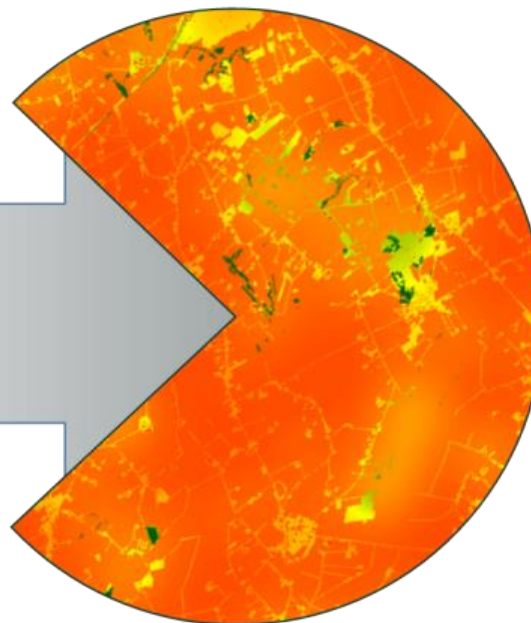
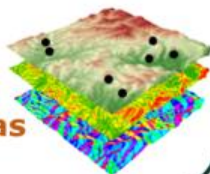
Expert-based model

- **Land Cover & roads**
(Food resources and nesting sites)
- **Irradiance & Temperature**
(Insect activity)
- **Distance to semi-natural areas**



Species-distribution model

- **Species occurrences**
- **Land Cover (%)**
- **Climate**
- **Topography**
- **Distance to semi-natural areas**

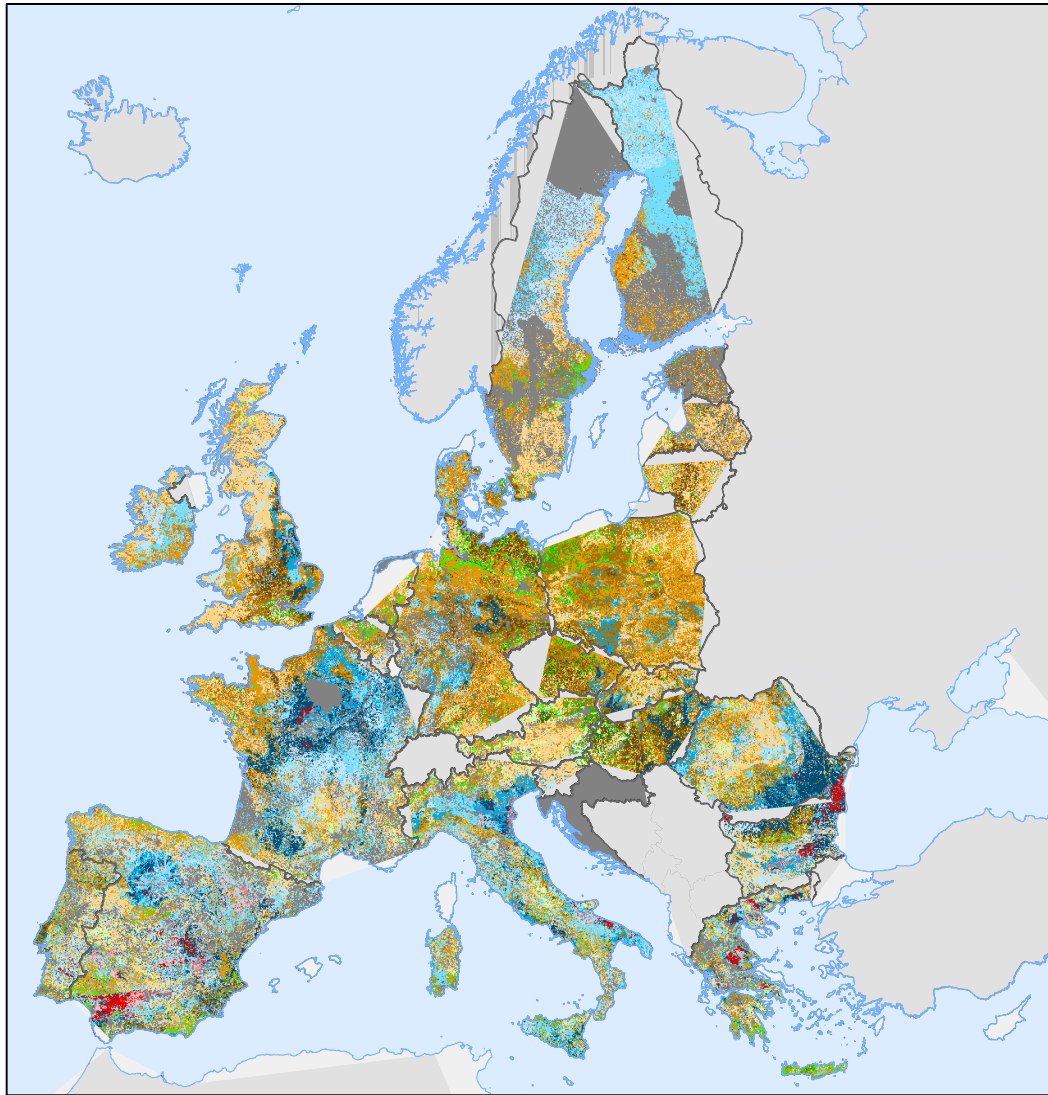


Pollination potential
approximated by
environmental
suitability:

unsuitable
suitable
highly suitable

JRC report on ecosystem services accounts:

<http://publications.jrc.ec.europa.eu/repository/handle/JRC110321>



Map intersecting
areas with high,
medium, low and no
pollination potential
with the demand set
by fruits and
vegetables

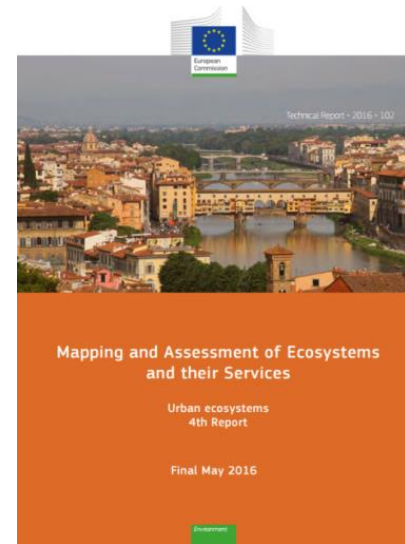
Total area of crops in
demand for
pollination services:
162,055 km² (2012)

51% of this area
cannot be served by
wild pollinators

Legend

High potential, high demand	Medium potential, high demand	Low potential, high demand
High potential, medium demand	Medium potential, medium demand	Low potential, medium demand
High potential, low demand	Medium potential, low demand	Low potential, low demand
High potential, no demand	Medium potential, no demand	Low potential, no demand
No potential, high demand	Non EU territories	
No potential, medium demand	No Data	
No potential, low demand		

Mapping and Assessment of Urban Ecosystems and their Services (2015-2016)



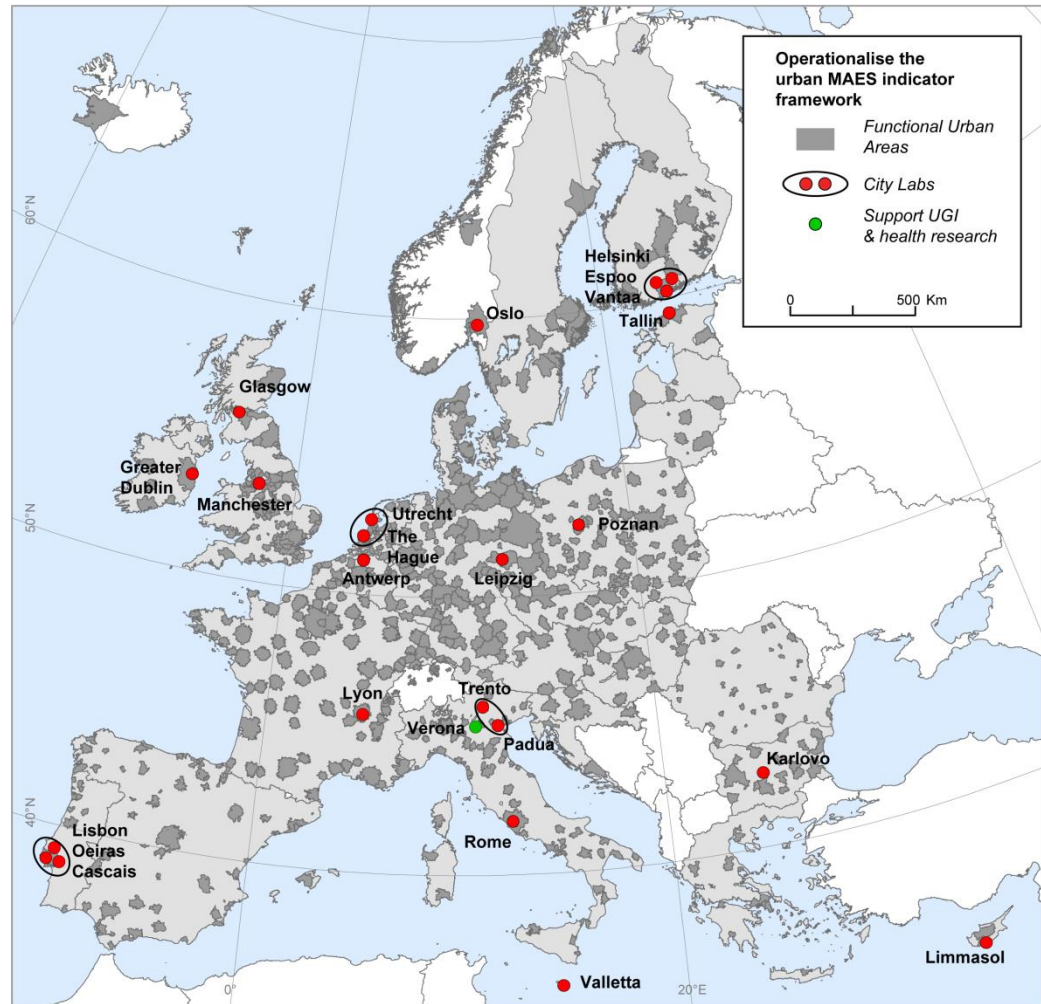
Key outcome 1: Cities are more likely to have a policy on green space if there is such a policy at higher governance level

Key outcome 2. 17% of the Natura 2000 network falls inside Europe's functional urban areas.

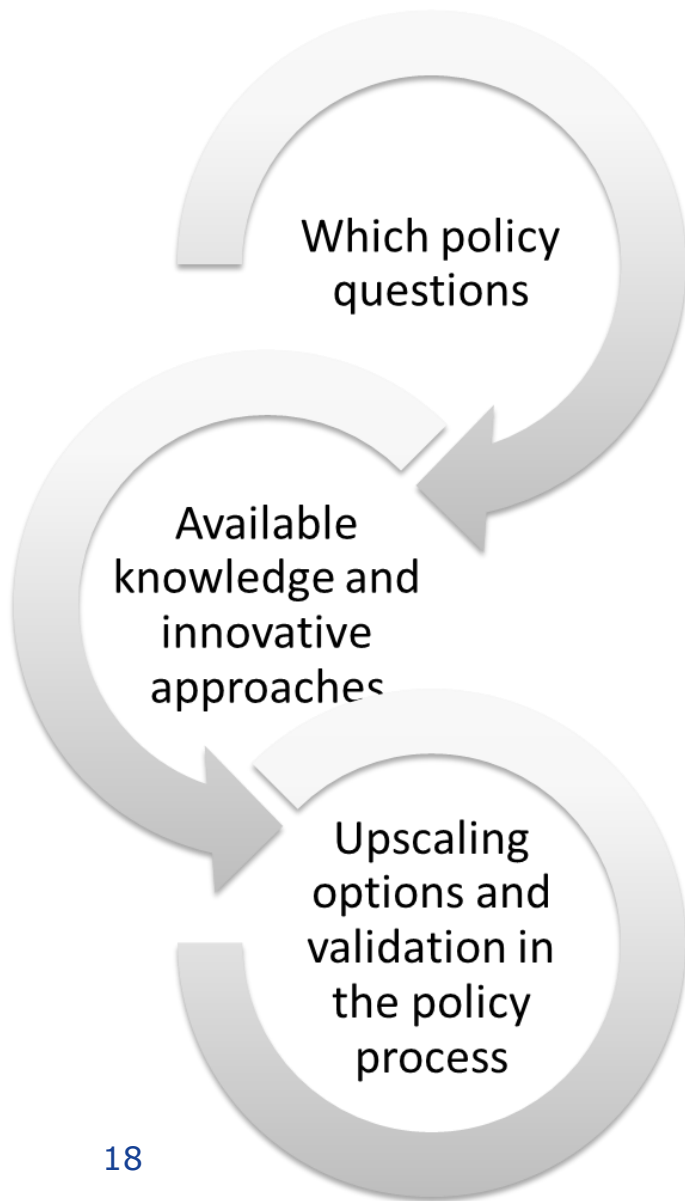
Key outcome 3: Scientists and cities created jointly a framework for assessing the condition and ecosystem services of urban green space

Increasing attention on urban biodiversity and the role of urban green space

EnRoute
tests the
MAES urban
ecosystem
assessment
framework



EnRoute approach



EnRoute cities formulate key policy questions

EnRoute scientists map and assess indicators of urban green space and ecosystem services

Comparing outcomes between cities and across scales



Enhancing Resilience Of Urban Ecosystems through Green Infrastructure (EnRoute)

Poznań City Lab

Iwona Zwierzchowska & Marta Kaźmierska

The Urban Regeneration Policy

Restoration of the continuity of urban structures and the aesthetics of urban space

Improving the acoustic climate and air quality

Stopping the process of depopulation

Objective related to greenery and recreation

Development of sports and recreation infrastructure and revalorization of public green areas



Restoration Programme of the City of Poznań

1. How to identify areas in need for transformation toward nature-based solutions in a systemic manner?

2. How to identify priority areas for improvement that emerge from areas with the highest demand?



Recreation opportunity spectrum

Recreation potential scenarios

Recreation opportunity scenarios

Scenarios of new green spaces location

Scenarios of different recreation opportunity

Land ownership

- Land ownership

Population distribution

Population distribution

Outdoor leisure facilities

Outdoor sport facilities

Supporting amenities

Public
transport stops

Pedestrian network

Bicycle roads

Parking places

Road network

Recreation potential

Land use

Green spaces

Other land
use classes

Protected areas

Natura 2000 sites

Nature reserves

Areas of
protected
landscape

Ecological grounds

Natural
monuments

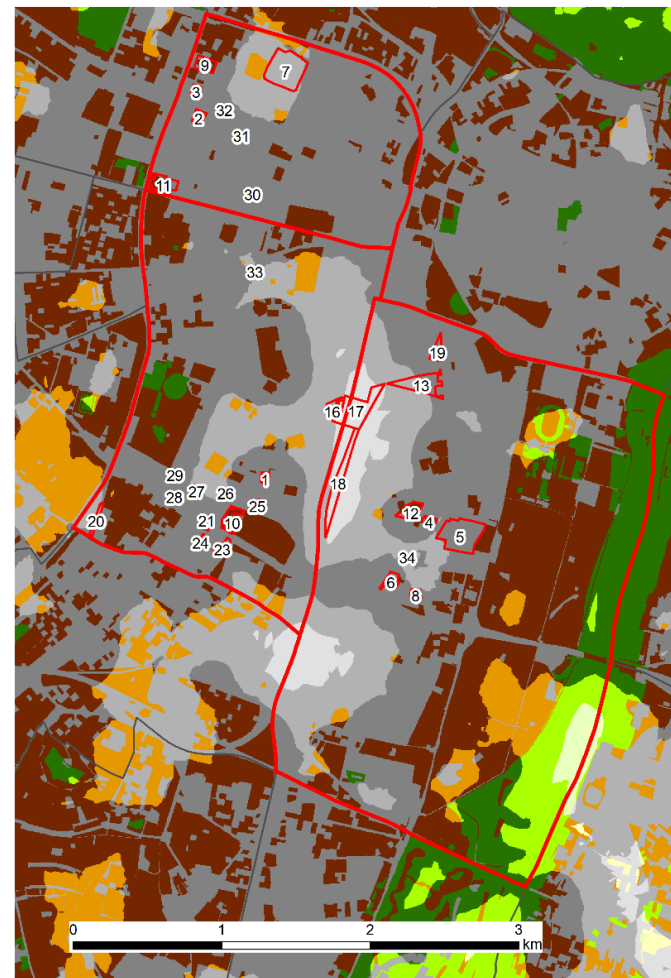
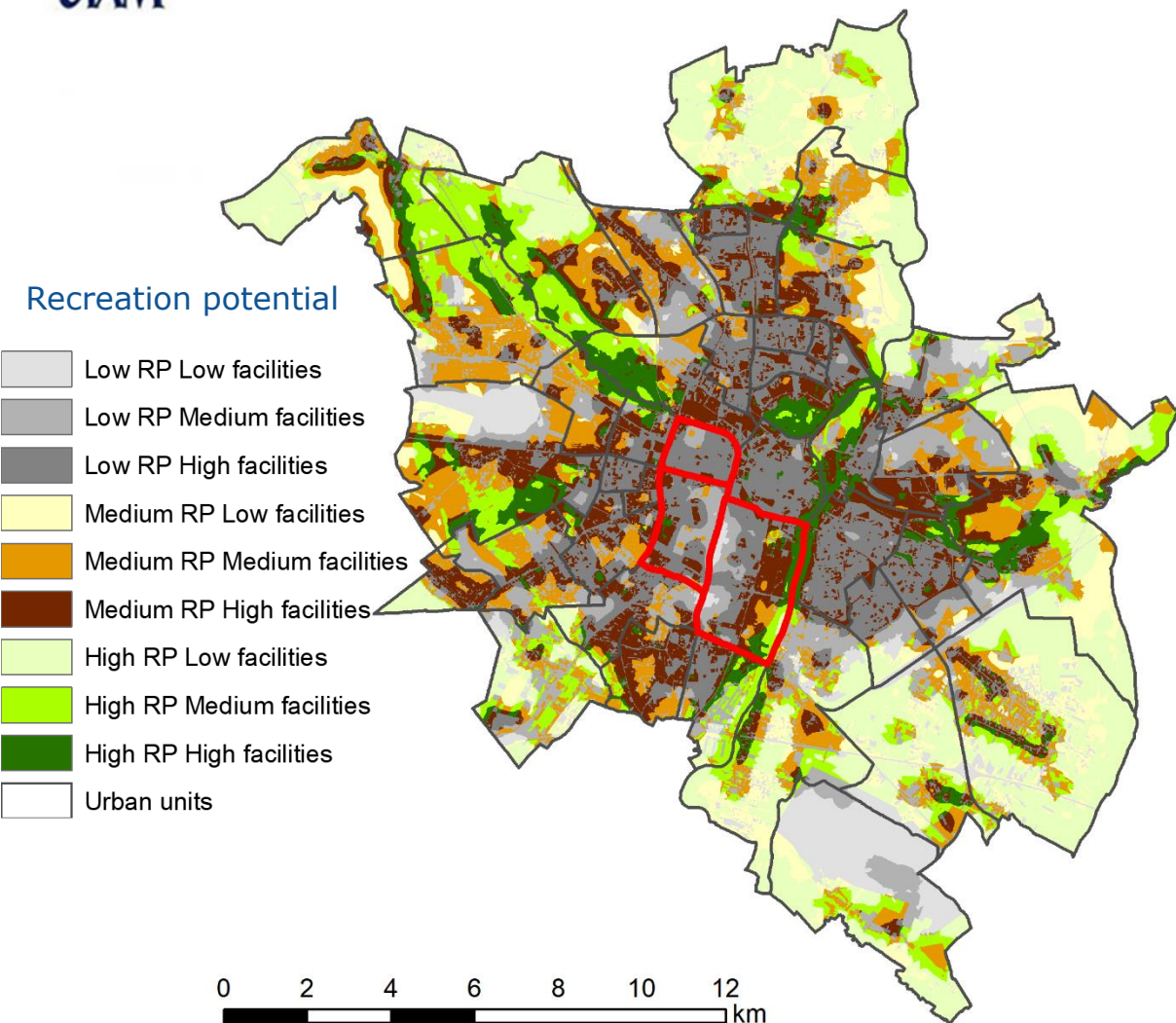
Surface water

Lakes bathing quality

Lakes fishing availability

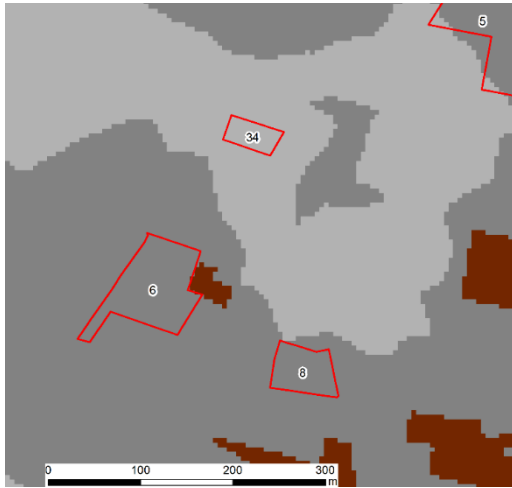
Rivers sailing availability

Focus areas in Poznań city center

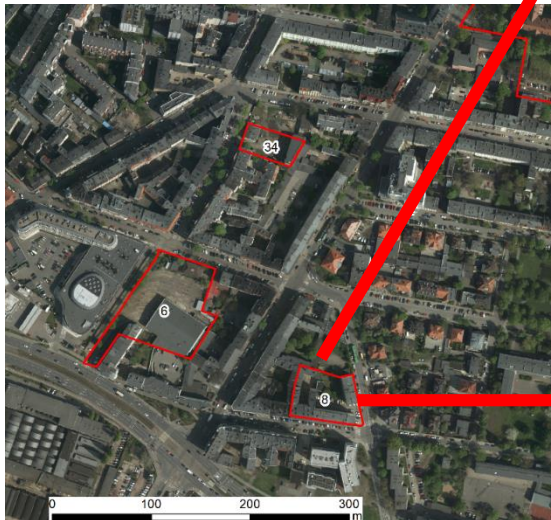


Objective of the Urban Regeneration Policy

„Development of sports and recreation infrastructure and revalorization of public green areas”



- ESTIMAP Recreation Opportunity Model can highlight areas with the lowest recreation potential or limited recreation facilities

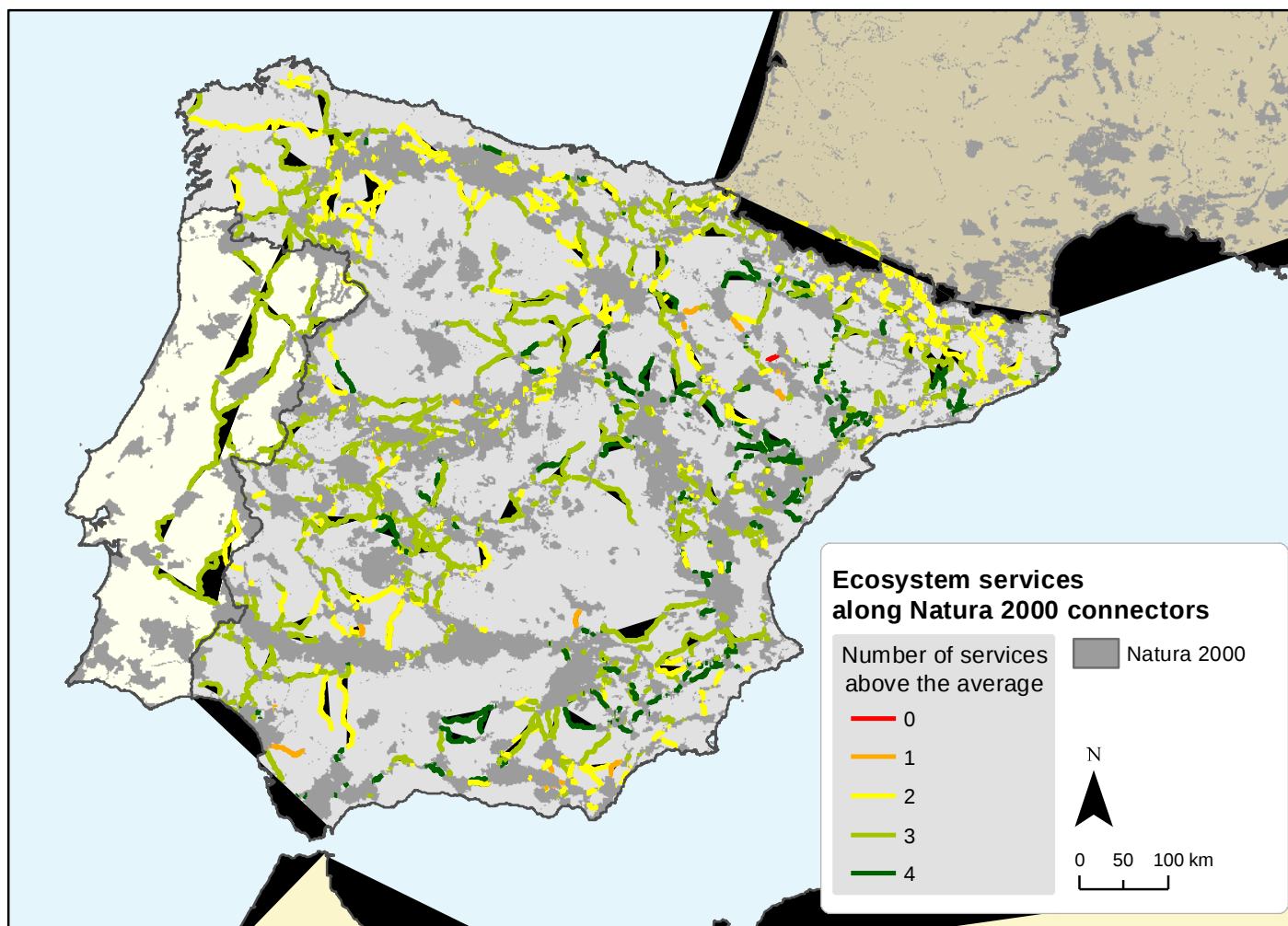


- The ESTIMAP is useful for supporting city in preselection of areas for new green spaces or improvement in recreational facilities

Support the EU's policy on Green infrastructure

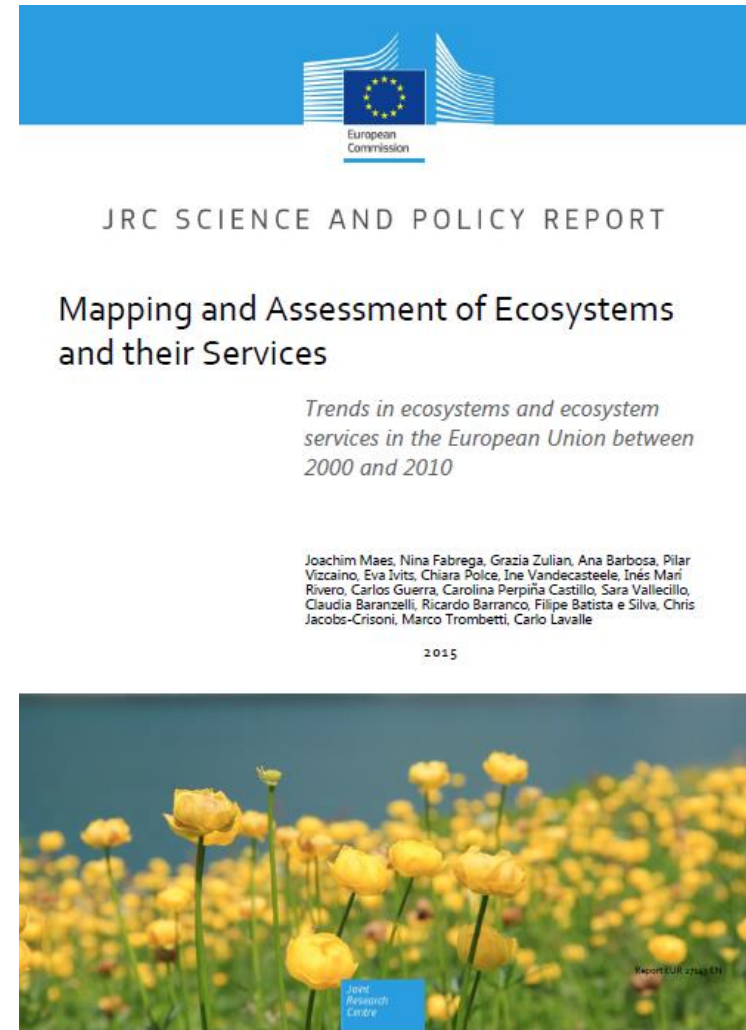
- **EU biodiversity strategy action 6:** Develop GI to maintain and enhance ecosystem services
- **EU strategy on green infrastructure**
- **Action plan for nature, people and the economy (Action 12).** Criteria for EU level projects on green infrastructure. Guidance on GI (to be adopted in summer 2018)

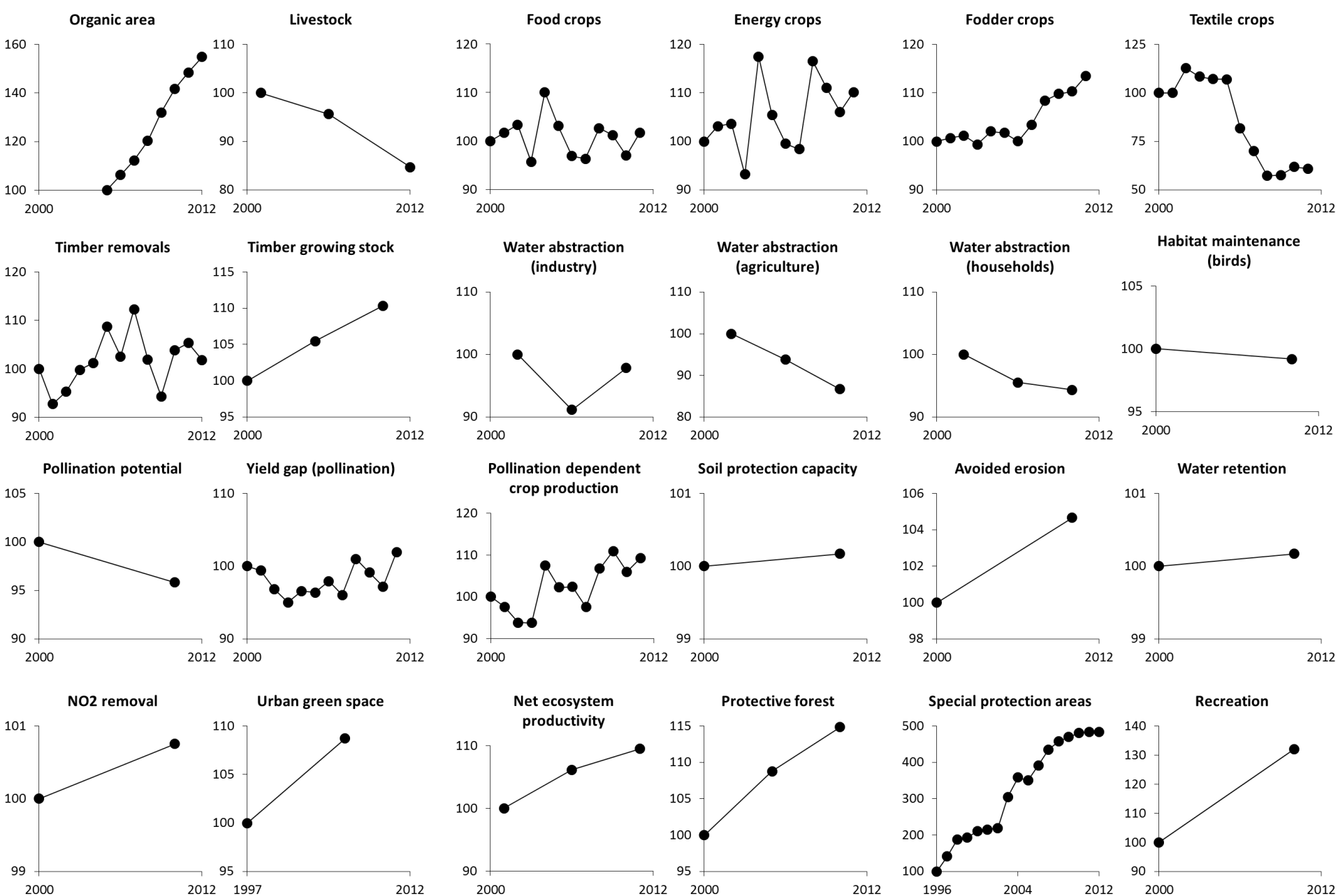
How to connect Natura 2000 sites with delivery of ecosystem services and EU added value (Action 12 of the Nature Action plan)?



EU wide ecosystem assessment

- EEA + JRC + ENV:
Analysis of trends,
causes, needs for
policy and actions
- EU wide assessment
planned for 2019
- Basis for the post 2020
policy framework

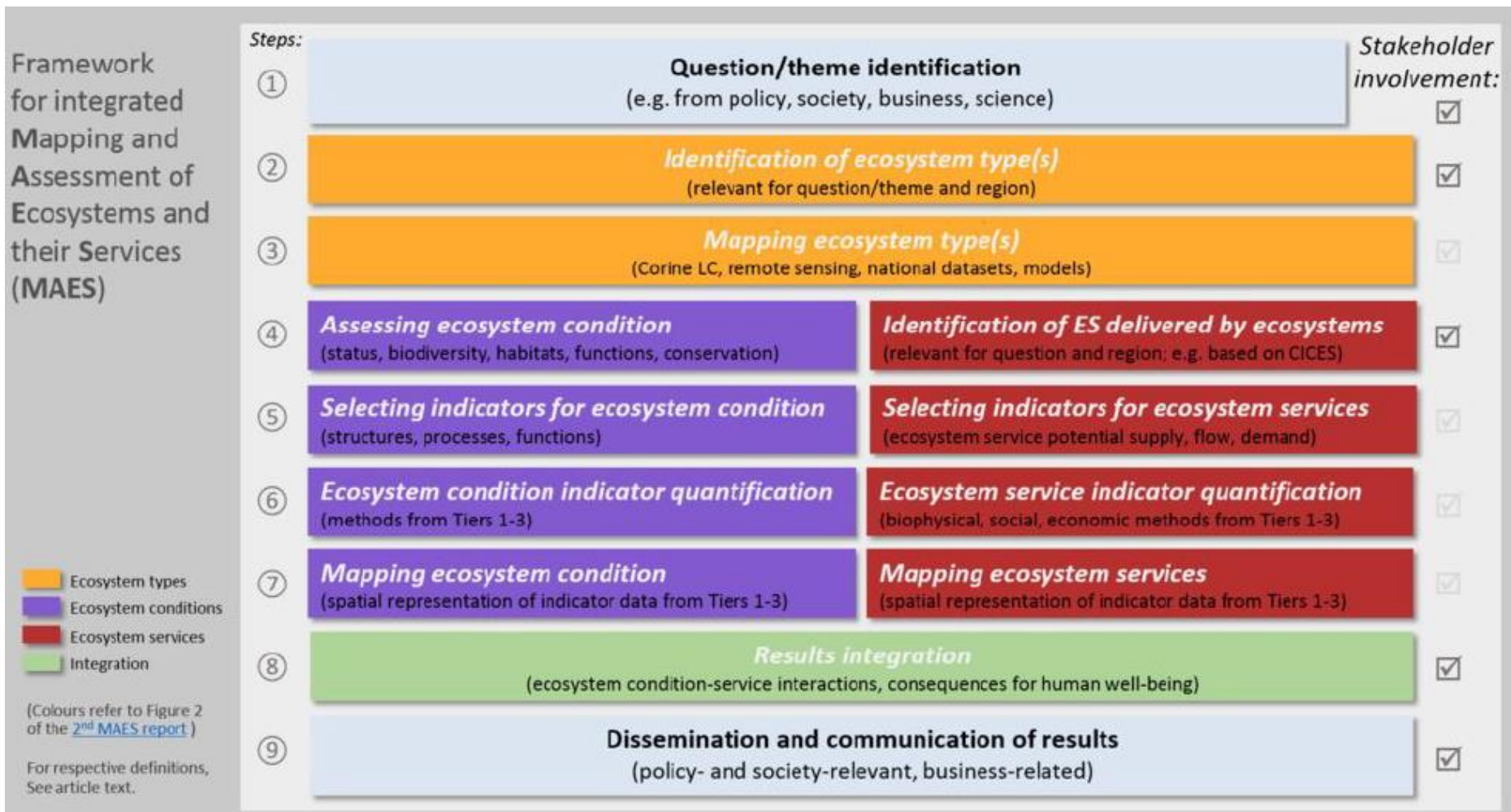




Source: Maes et al. (2015) Mapping and Assessment of Ecosystems and their Services: Trends in ecosystems and ecosystem services in the European Union between 2000 and 2010. Report EU 27143 EN.

<http://publications.jrc.ec.europa.eu/repository/bitstream/JRC94889/lbna27143enn.pdf>

Guidance for ecosystems assessment



Synthesis

MAES: Translating findings from research into useful applications and conclusions for policy making and implementation.

Methods:

- Working groups and stakeholder consultation
- Upscaling research results and experiences
- Developing indicators and monitoring
- Assessments with policy relevant messages
- Guidance documents (mainstreaming)

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