Mapping and Assessment of Ecosystems and their Services: Key achievements and roadmap for an EU wide ecosystem assessment

Joachim Maes
European Commission, Joint Research Centre, Ispra

Anne Teller
European Commission DG Environment, Brussels

Markus Erhard
European Environment Agency, Copenhagen

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
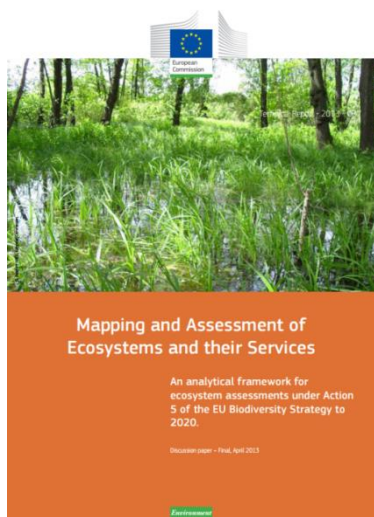Stakeholders

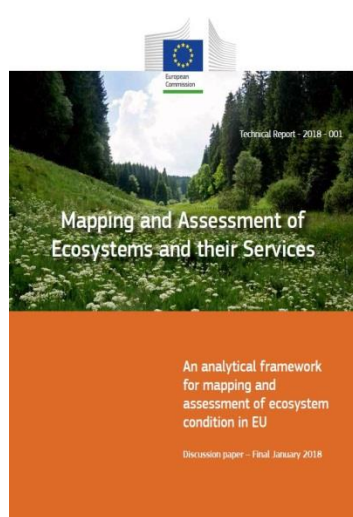EU Member States
and other countries

__TASKS of the Working group__
1. Guidance for member states
2. Common ecosystem assessment pilots
3. EU wide assessment

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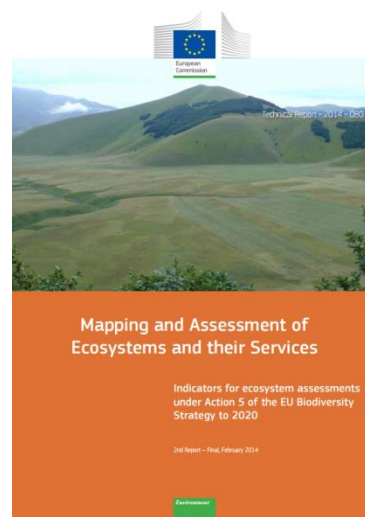
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Guidance documents (MAES reports)

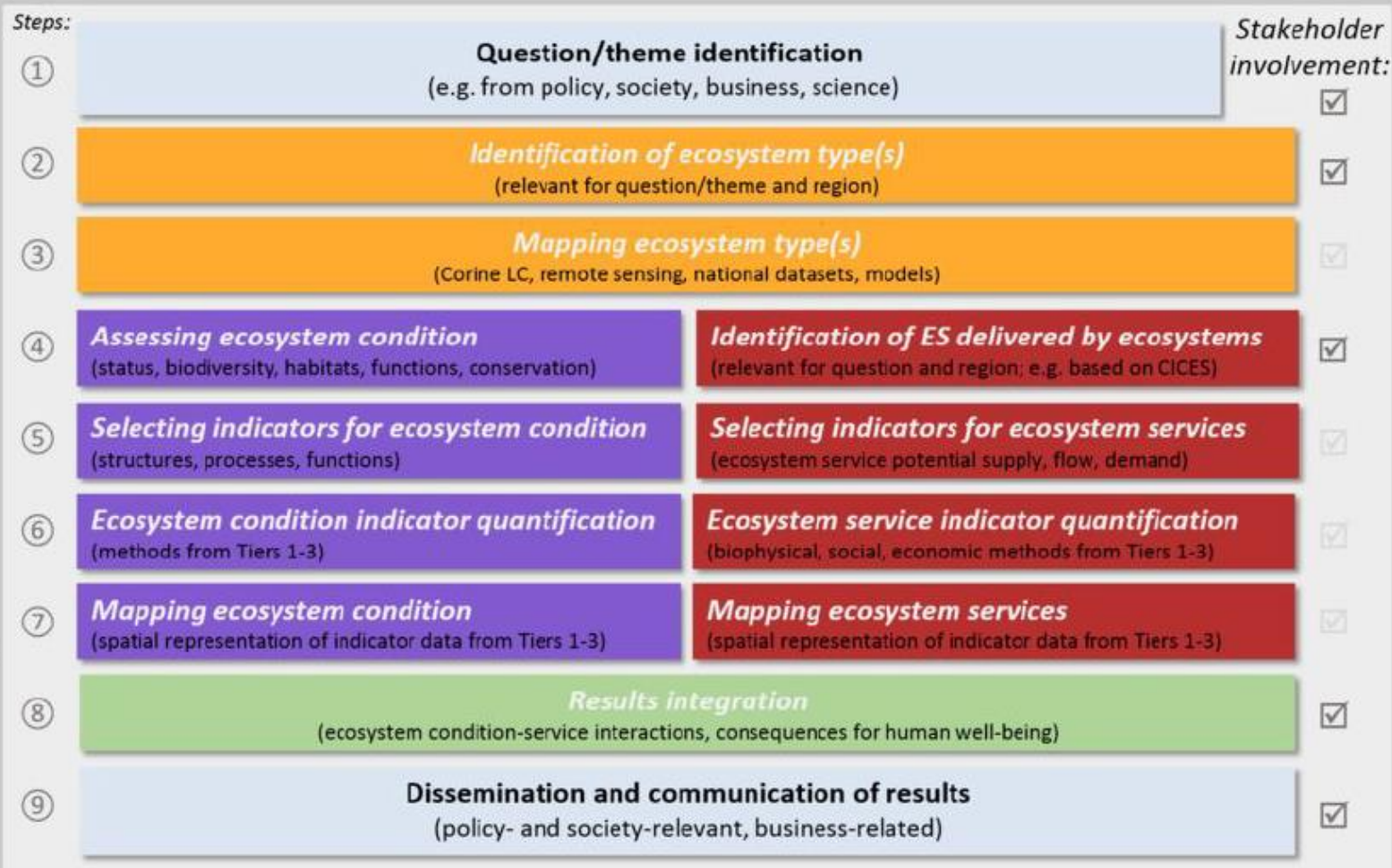| Conceptual framework and **typologies**	Indicators for **ecosystem condition**	Indicators for **ecosystem services**	**Urban** ecosystems

http://biodiversity.europa.eu/maes

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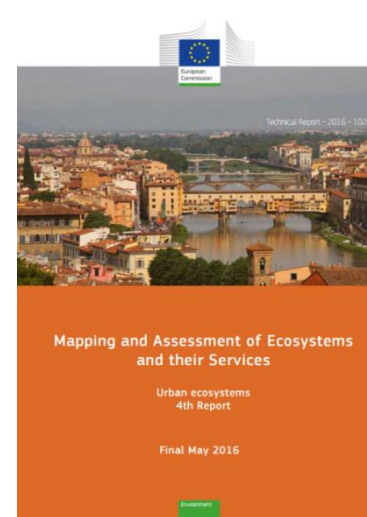
Guidance for ecosystems assessment

Framework for integrated Mapping and Assessment of Ecosystems and their Services (MAES)

Steps:		Stakeholder involvement:
①	**Question/theme identification** (e.g. from policy, society, business, science)	☑
②	*Identification of ecosystem type(s)* (relevant for question/theme and region)	☑
③	*Mapping ecosystem type(s)* (Corine LC, remote sensing, national datasets, models)	☑

| ④ | *Assessing ecosystem condition* (status, biodiversity, habitats, functions, conservation) | *Identification of ES delivered by ecosystems* (relevant for question and region; e.g. based on CICES) | ☑ |
⑤	*Selecting indicators for ecosystem condition* (structures, processes, functions)	*Selecting indicators for ecosystem services* (ecosystem service potential supply, flow, demand)	☑
⑥	*Ecosystem condition indicator quantification* (methods from Tiers 1-3)	*Ecosystem service indicator quantification* (biophysical, social, economic methods from Tiers 1-3)	☑
⑦	*Mapping ecosystem condition* (spatial representation of indicator data from Tiers 1-3)	*Mapping ecosystem services* (spatial representation of indicator data from Tiers 1-3)	☑
⑧	*Results integration* (ecosystem condition-service interactions, consequences for human well-being)		☑
⑨	**Dissemination and communication of results** (policy- and society-relevant, business-related)		☑

Ecosystem types
Ecosystem conditions
Ecosystem services
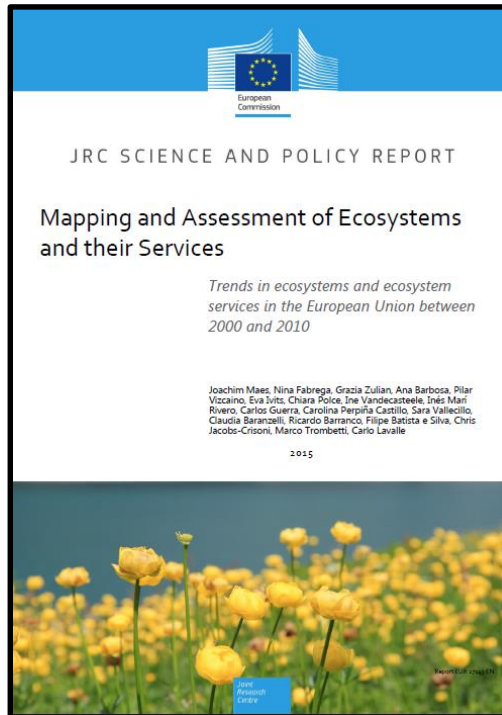Integration

(Colours refer to Figure 2 of the 2nd MAES report)

For respective definitions, See article text.

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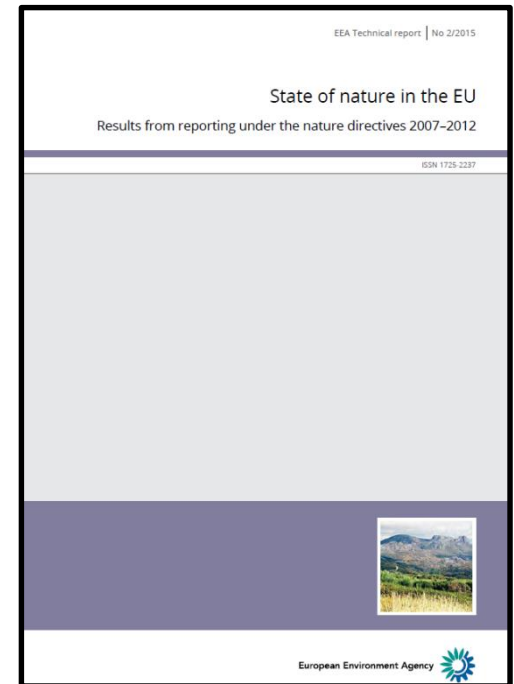
Assessment reports

Ecosystem condition Assessment
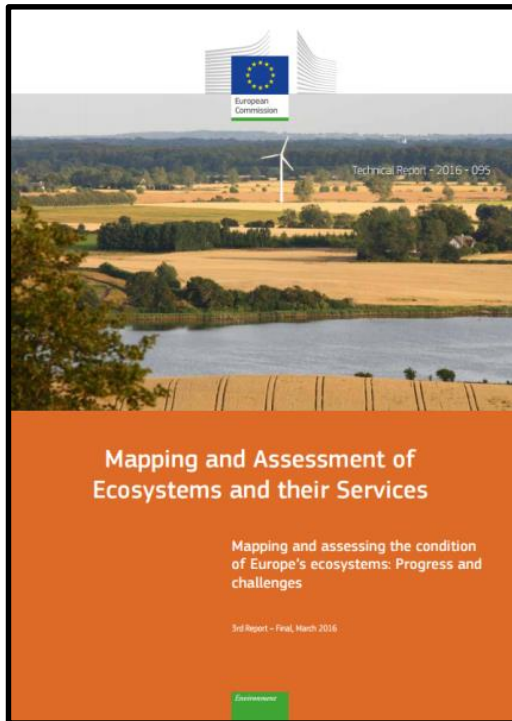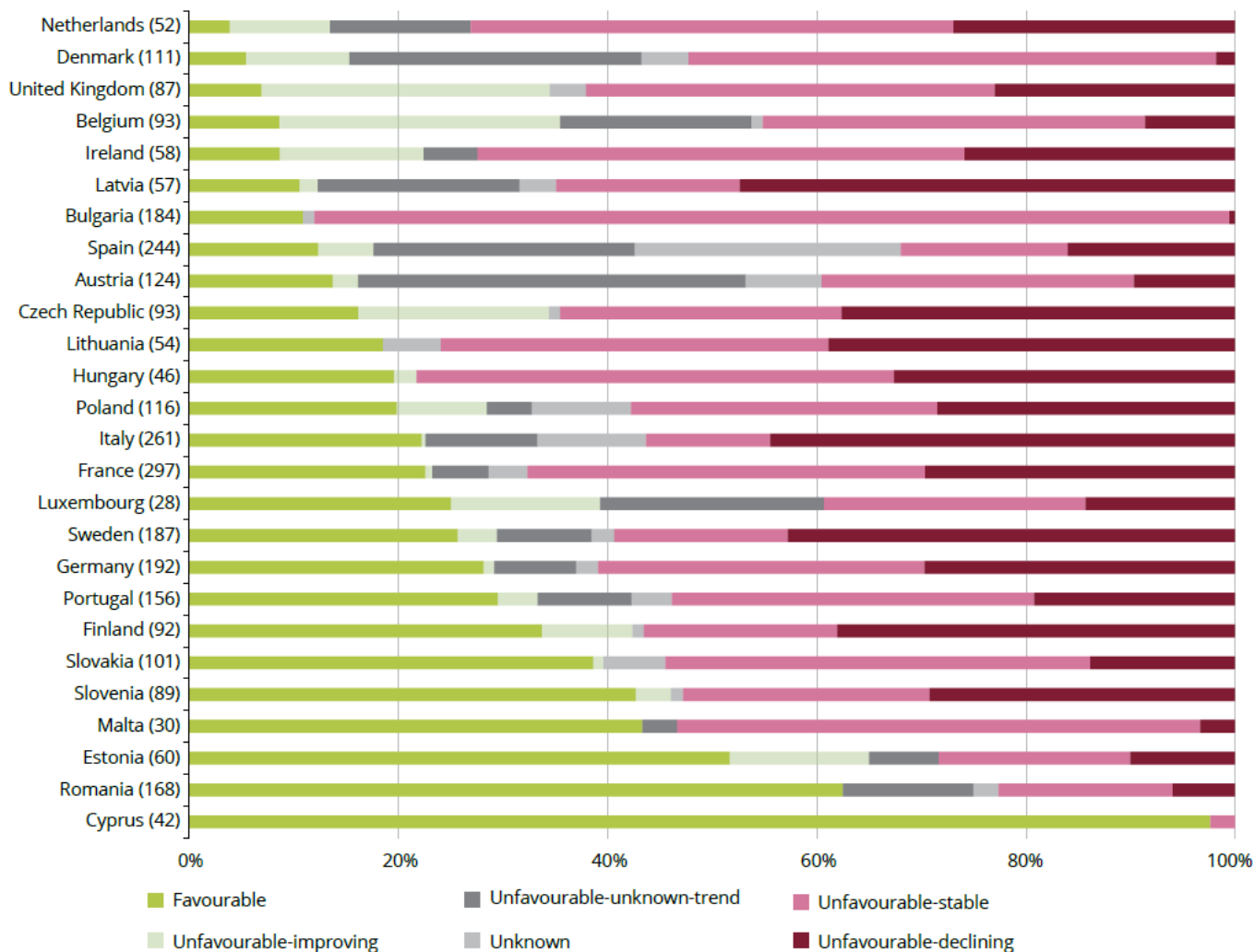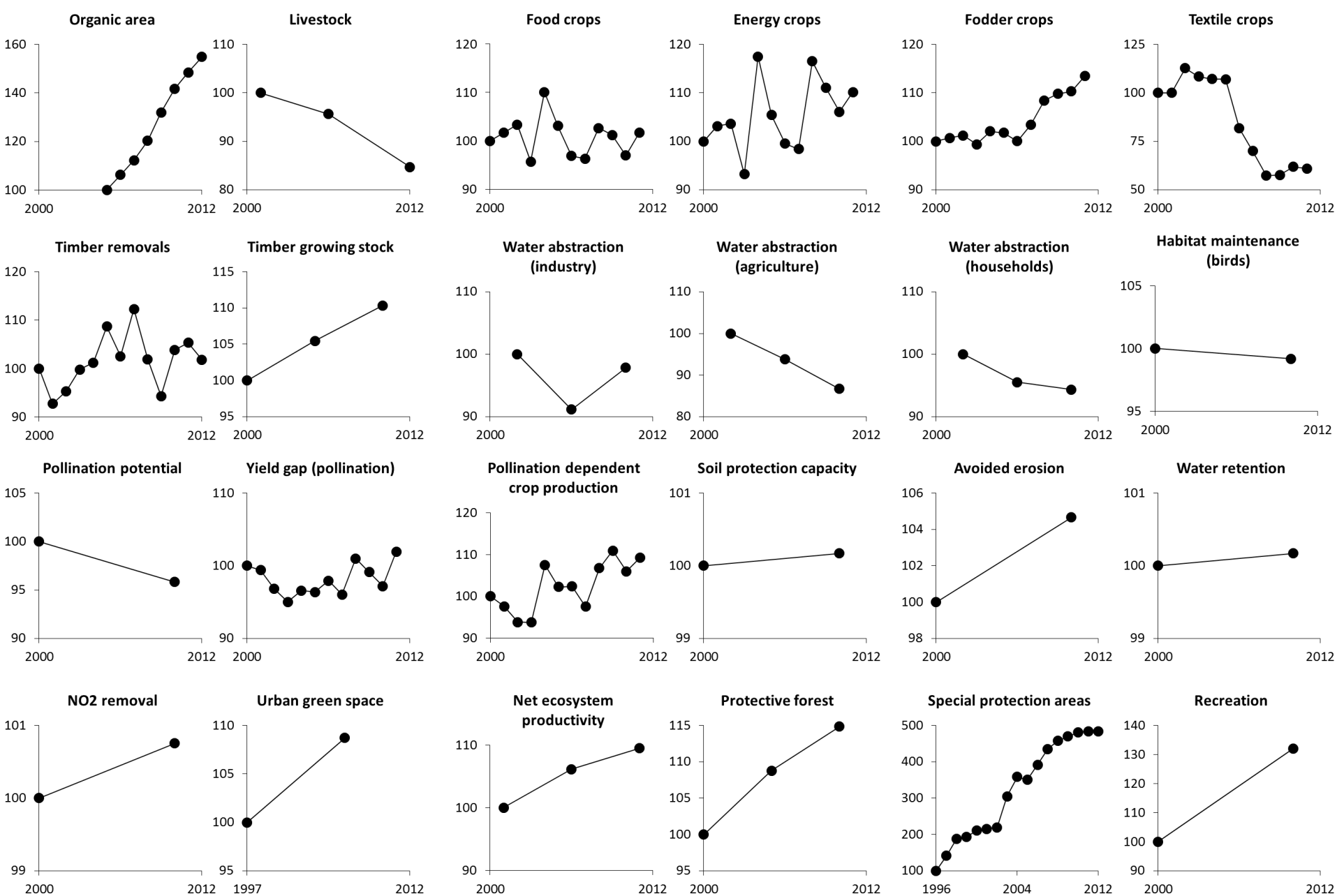
Ecosystem services Assessment

State of nature (Birds and Habitats)

Conservation status (based on Art. 17)

Figure 3.2   Conservation status and trends of habitats assessed as unfavourable at Member State level
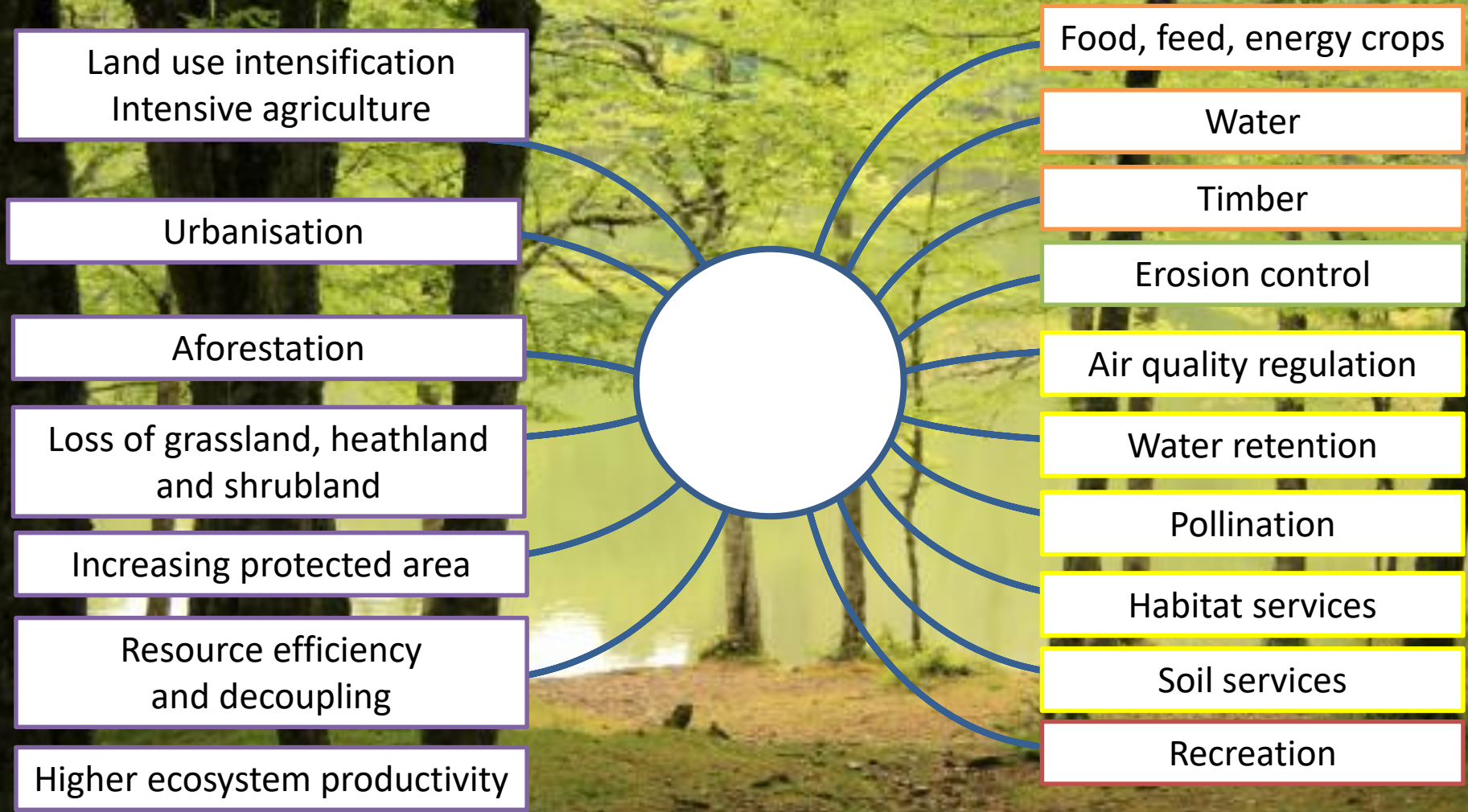
Legend:
- Favourable
- Unfavourable-improving
- Unfavourable-unknown-trend
- Unknown
- Unfavourable-stable
- Unfavourable-declining

Organic area · Livestock · Food crops · Energy crops · Fodder crops · Textile crops · Timber removals · Timber growing stock · Water abstraction (industry) · Water abstraction (agriculture) · Water abstraction (households) · Habitat maintenance (birds) · Pollination potential · Yield gap (pollination) · Pollination dependent crop production · Soil protection capacity · Avoided erosion · Water retention · NO2 removal · Urban green space · Net ecosystem productivity · Protective forest · Special protection areas · Recreation

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
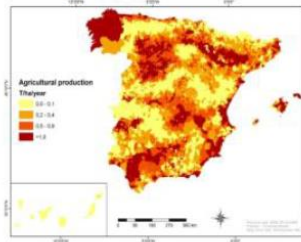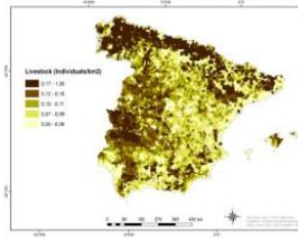
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Contrasting patterns at work at EU scale?

Land use intensification
Intensive agriculture

Urbanisation

Aforestation

Loss of grassland, heathland and shrubland

Increasing protected area

Resource efficiency and decoupling

Higher ecosystem productivity

Food, feed, energy crops

Water

Timber

Erosion control

Air quality regulation

Water retention

Pollination

Habitat services

Soil services

Recreation

Land use intensity versus ecosystem services in Spain (Spanish NEA, national scale data)

Provisioning Services
Crop production | Livestock production | Timber production | Freshwater supply
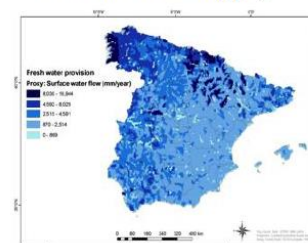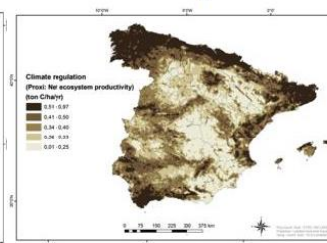
Regulating Services
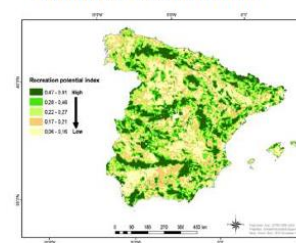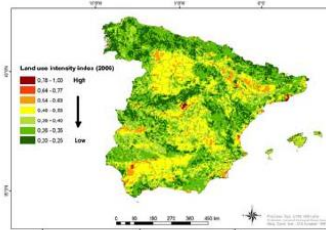Water infiltration | Soil fertility | Carbon storage
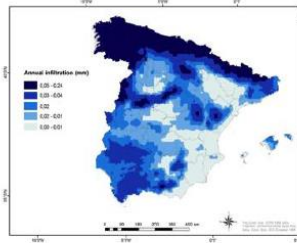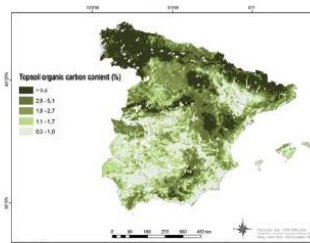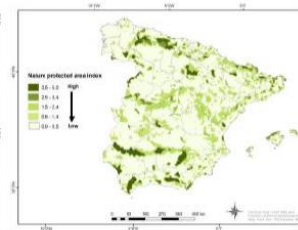
Cultural Services
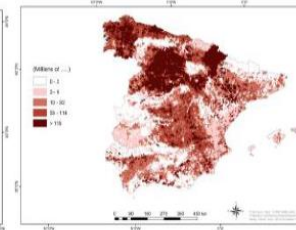Nature recreation
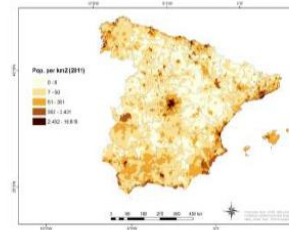
Drivers of change
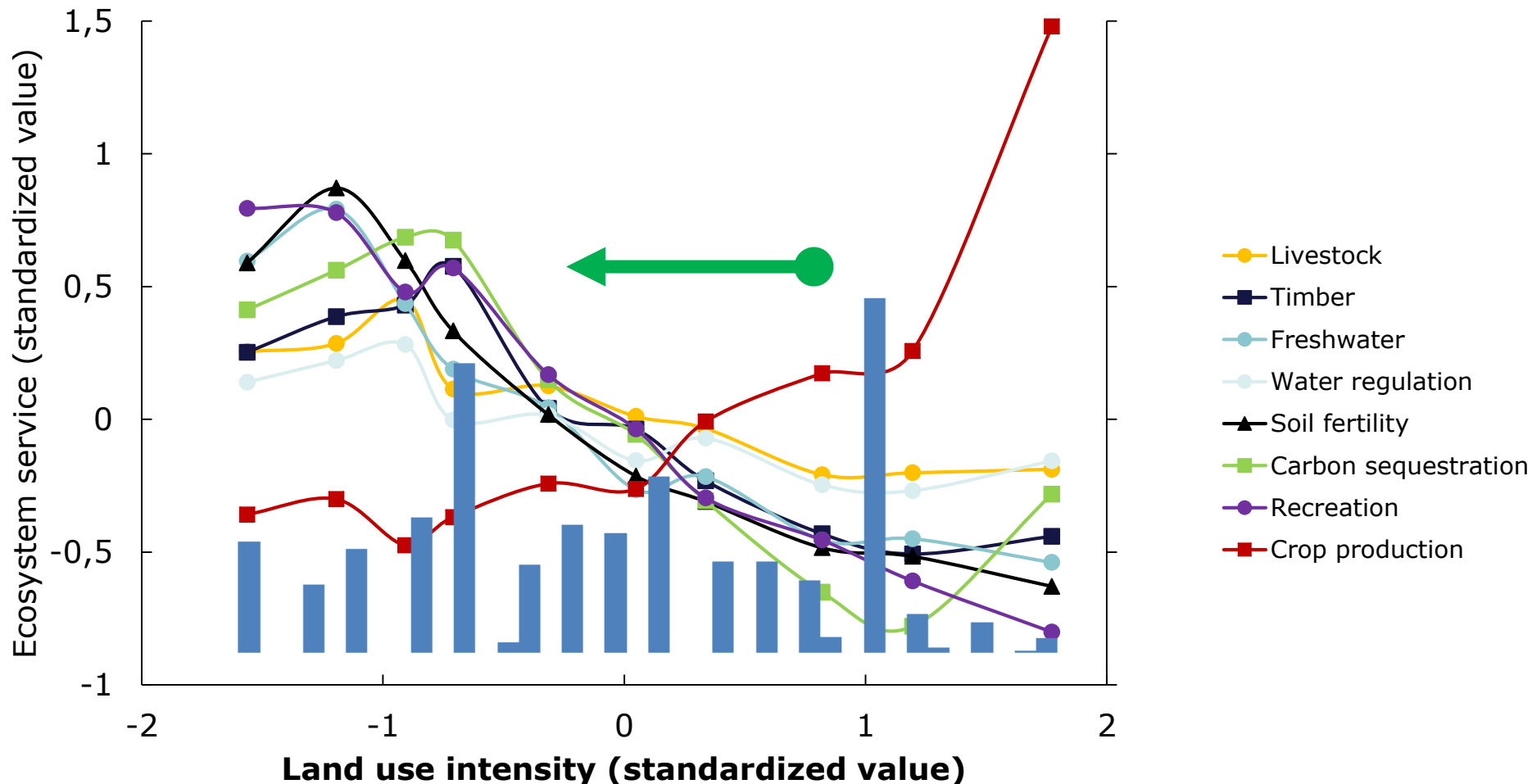Land use intensity | Protected areas | Pollution | Human population

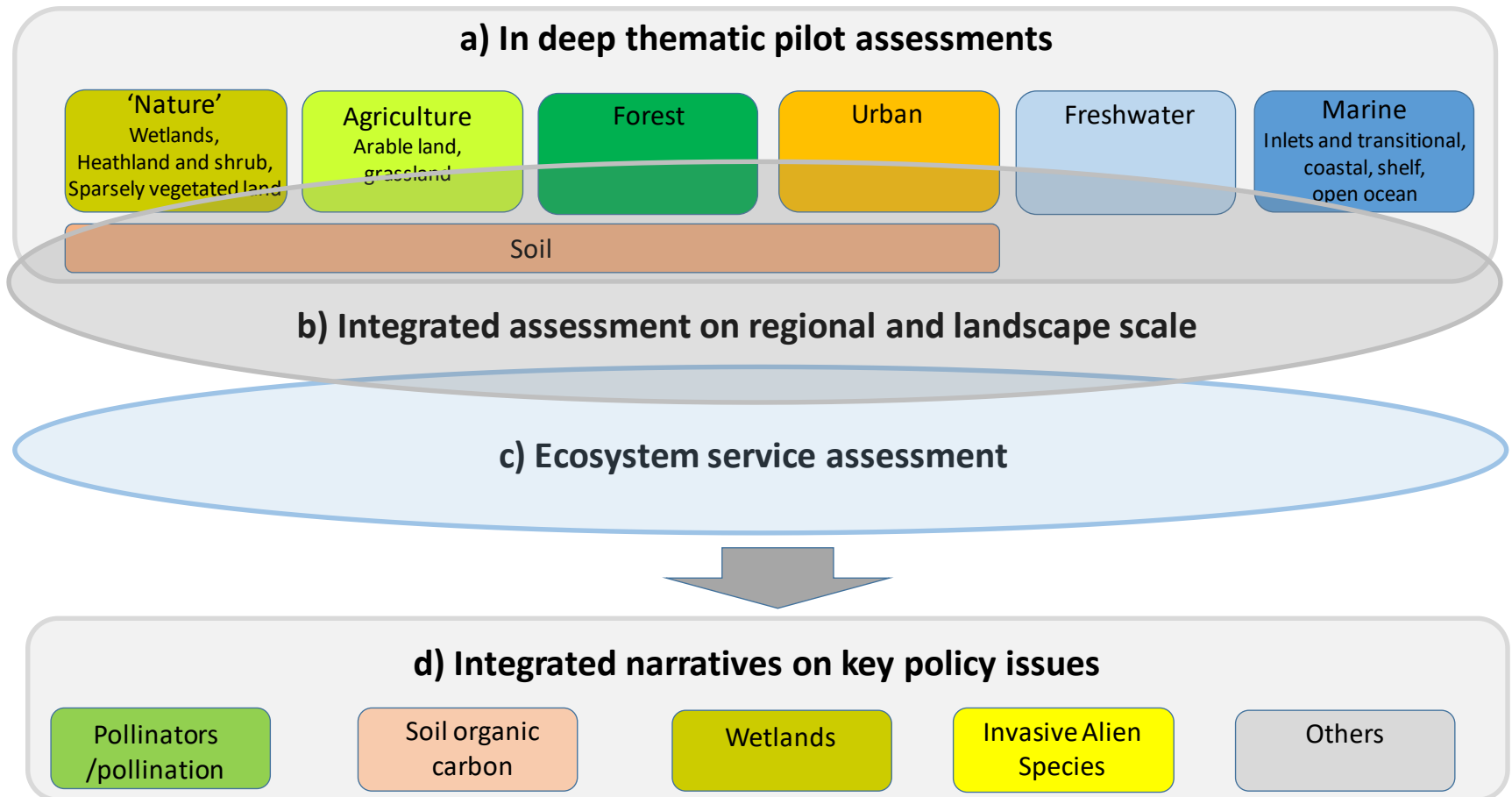# Land use intensity versus ecosystem services in Spain (Spanish NEA, national scale data)

Source: Santos-Martín, F. et al. (submitted to Ecosystem Services). Mapping ecosystem services synergies and trade-offs along a gradient of land-use intensity

MAES 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

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MAES EU wide ecosystem assessment

a) In deep thematic pilot assessments

| 'Nature' Wetlands, Heathland and shrub, Sparsely vegetated land | Agriculture Arable land, grassland | Forest | Urban | Freshwater | Marine Inlets and transitional, coastal, shelf, open ocean |

Soil

b) Integrated assessment on regional and landscape scale

c) Ecosystem service assessment

d) Integrated narratives on key policy issues

| Pollinators /pollination | Soil organic carbon | Wetlands | Invasive Alien Species | Others |

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