

# Ecosystem Services in the EU

Webinar Danish Network for Ecosystem Services

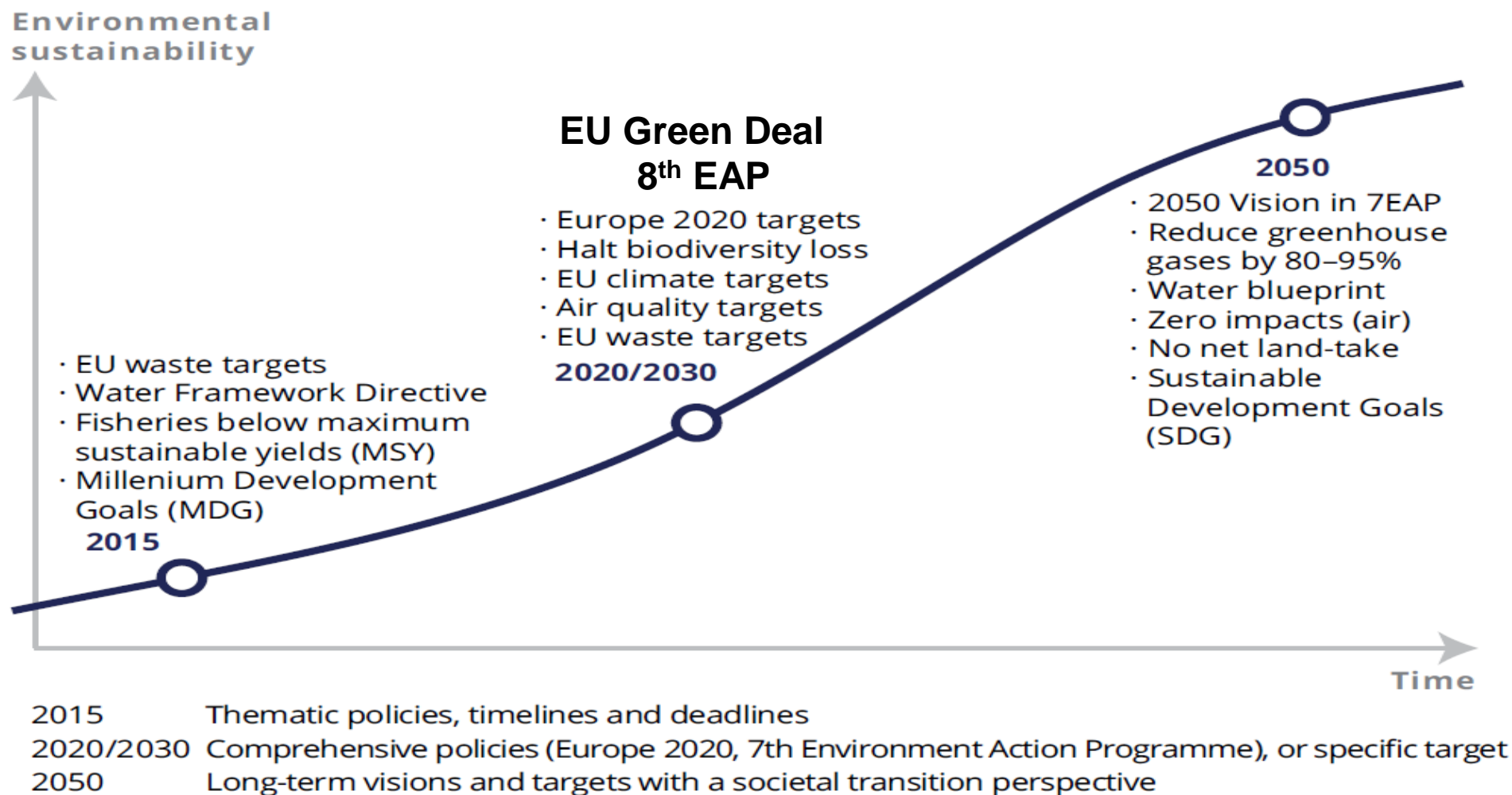
Thursday 28<sup>th</sup> January 14:00 – 15:00



Markus Erhard  
European Environment Agency, Copenhagen  
Markus.Erhard@eea.europa.eu



# Policy Evolution Over Time



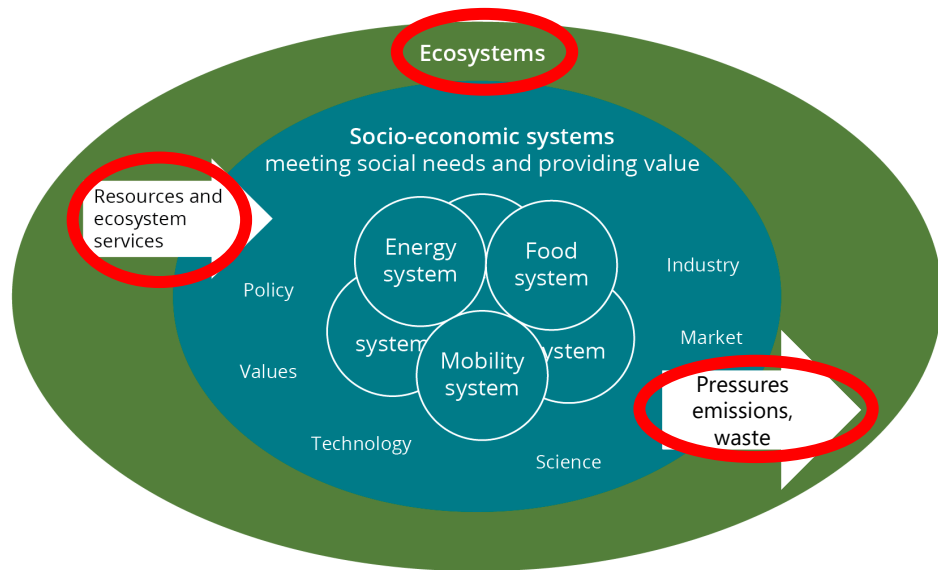
# Sustainability targets and natural capital



## The General Union Environment Action Programme to 2020 (7<sup>th</sup> EAP)

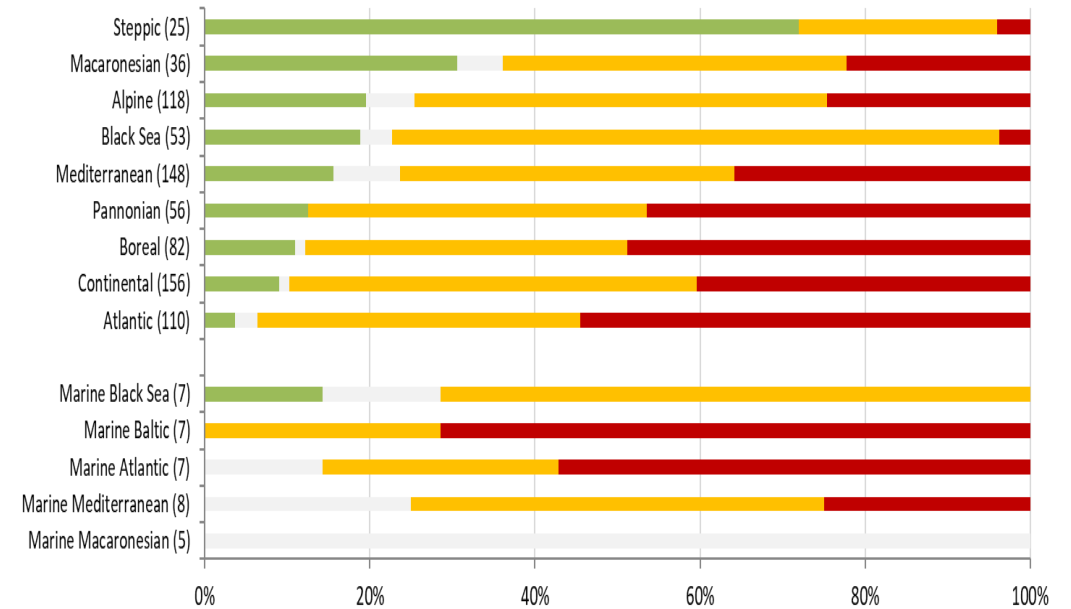
*Decision No 1386/2013/EU of the European Parliament and of the Council*

Strategic Target:  
Living well, within the limits of our planet



Headline Target:  
To protect, conserve and enhance the Union's natural capital

State of Nature Report (2020)  
Conservation status of habitats for each biogeographic and marine region at EU level



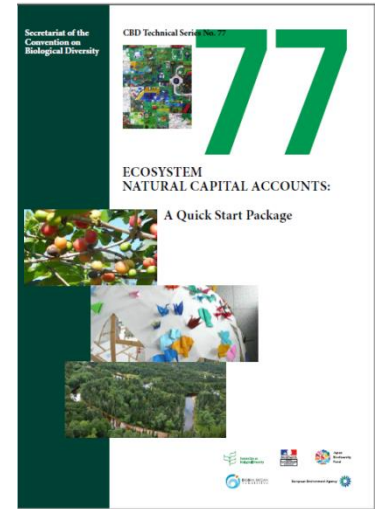
EEA, 2020, Article 17 reports and assessments

# EU Biodiversity Strategy to 2020

## Action 5 of the Biodiversity Strategy

- **Improve the knowledge of ecosystems and their services in the EU**
- “Member States, with the assistance of the Commission, to map and assess the state of ecosystems and their services in their national territory by 2014, assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020”
- The working group on Mapping and Assessment of Ecosystems and their Services (**MAES**) oversees the implementation of Action 5

# Implementing of International Agreements



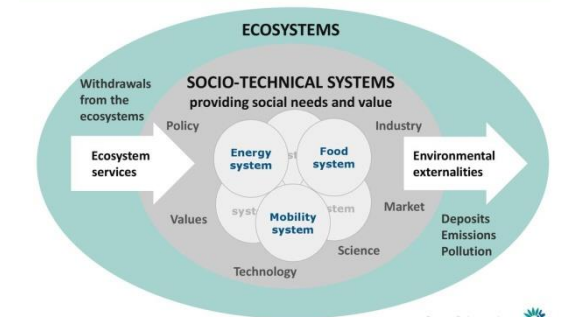
- Aichi Biodiversity Target 2 **Target 2** “ **By 2020**, at the latest, **biodiversity values** have been integrated into national and local development and poverty reduction strategies and planning processes and **are being incorporated into national accounting**, as appropriate, and reporting **systems.**”
- SDG 15.9 “By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts”.

# Natural Capital Accounting and Ecosystem Services in the broader context

- UN Sustainable Development Goals
- EU Biodiversity Strategy 2020 including Green Infrastructure - EU contribution to CBD Aichi Targets
- LIFE Programme/Pollinators initiative
- Climate change mitigation/adaptation/LULUCF
- SOER 2020 systemic changes and natural capital



Green Economy: Living well within ecological limits



Policy integration





# Green Deal - Europe's policy agenda for sustainability

A Union that strives for more

*'Europe must lead the transition to a healthy planet and a new digital world.'*

*By candidate for President of the European Commission*

**Ursula von der Leyen**



**POLITICAL GUIDELINES FOR THE NEXT  
EUROPEAN COMMISSION 2019-2024**

EEA 2019: State of Environment Report (SOER2020)  
<https://www.eea.europa.eu/soer>

- First **climate-neutral** continent
- **Biodiversity** Strategy for 2030
- New **Circular Economy** Action Plan
- **Zero pollution** strategy
- **Farm to fork** strategy
- **Just transition**
- **Sustainable European Investment Plan**
- Future ready economy – new **industrial strategy**

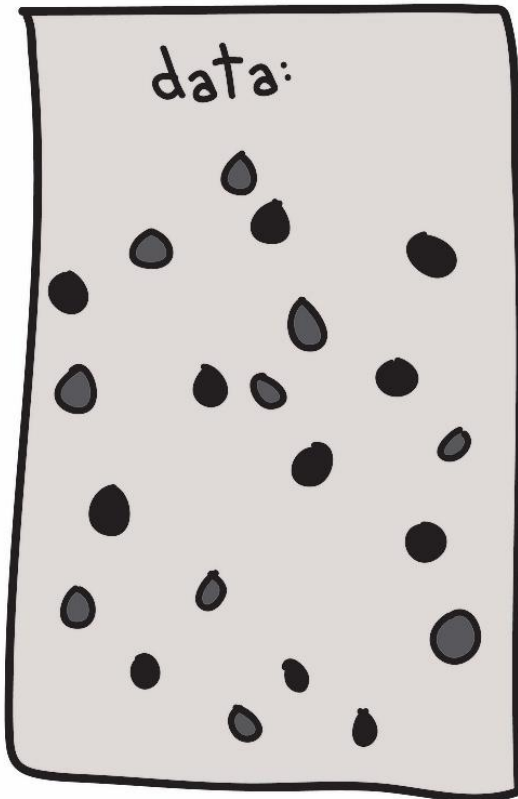


**8<sup>th</sup> EAP**

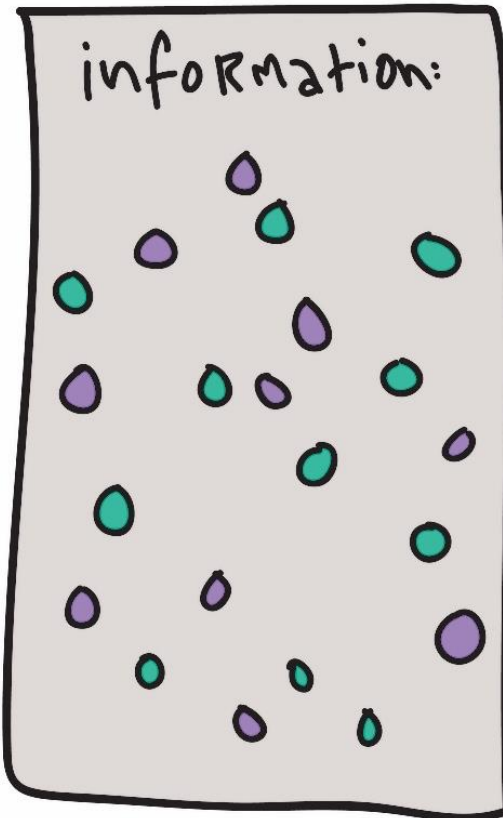
European Environment Agency



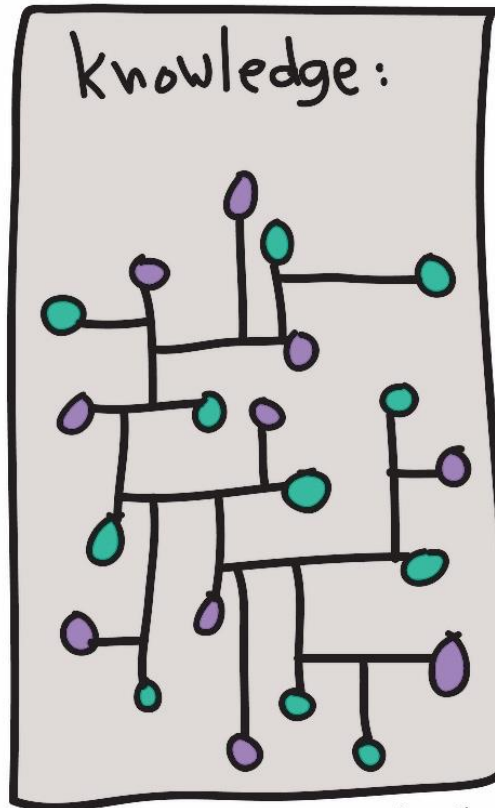
# From Data to Knowledge



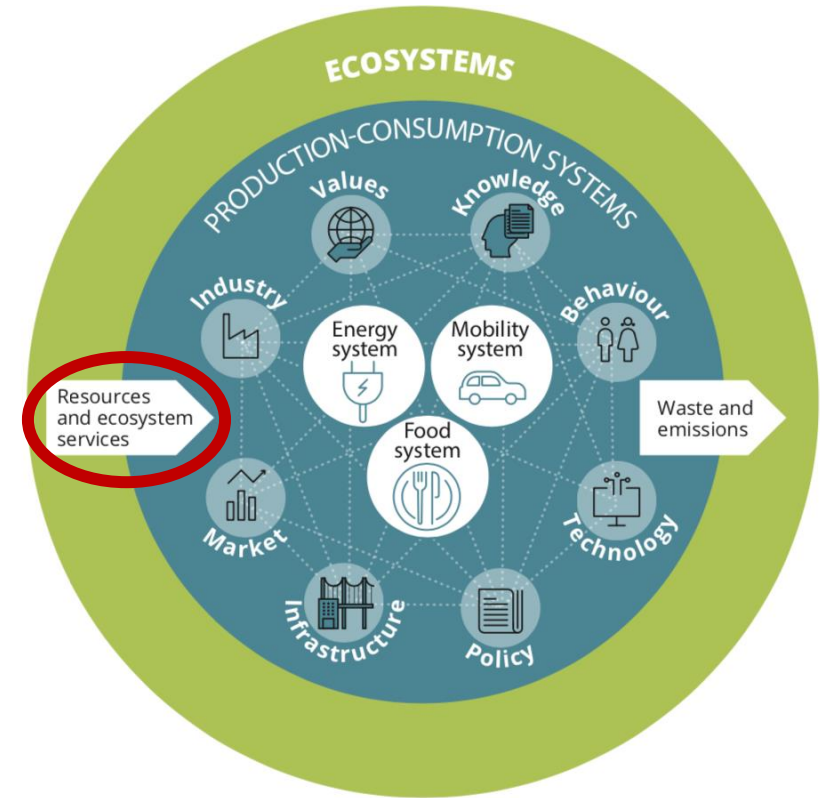
@bestqualitycrab



@gapingvoid



@gapingvoid



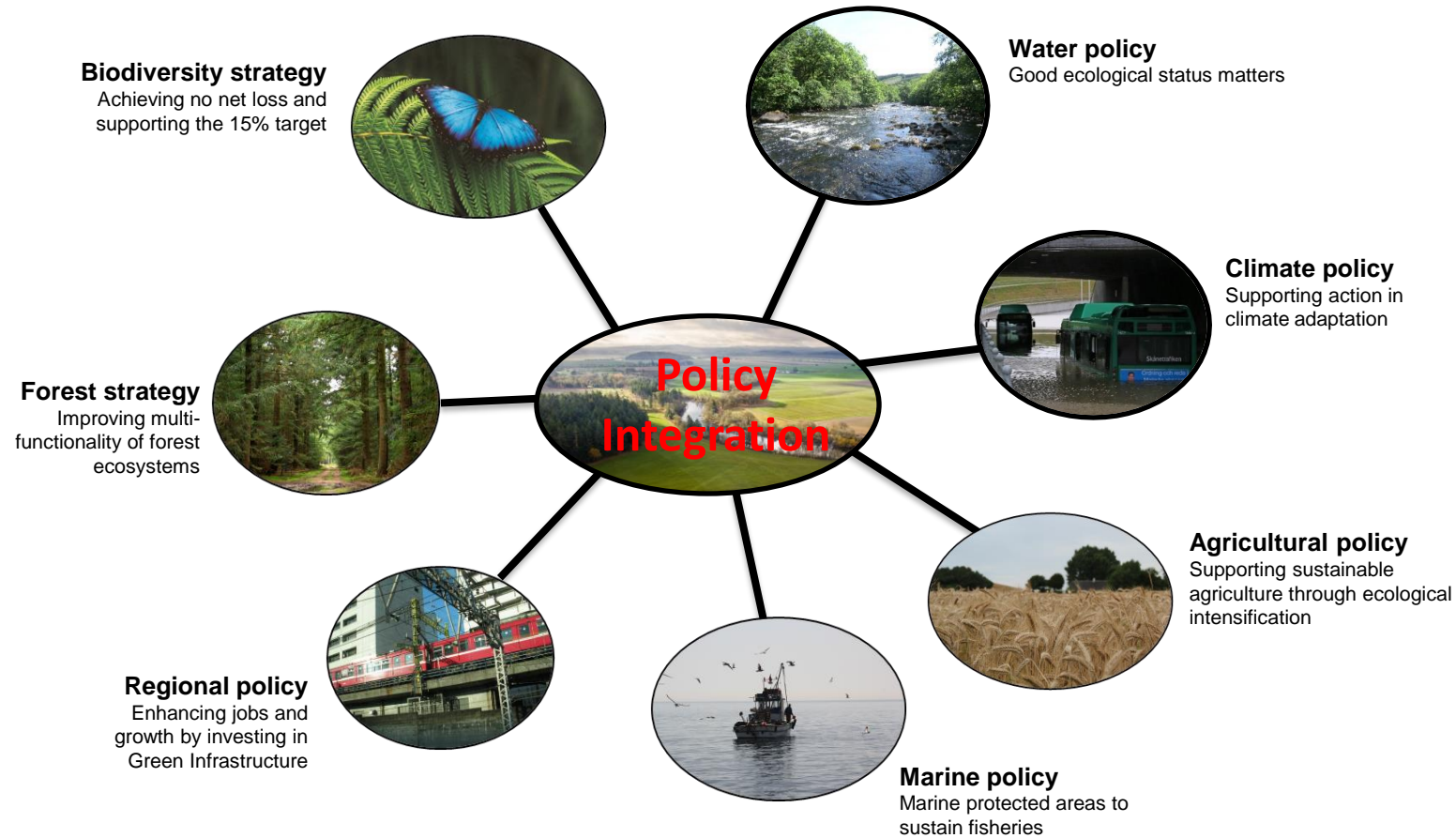
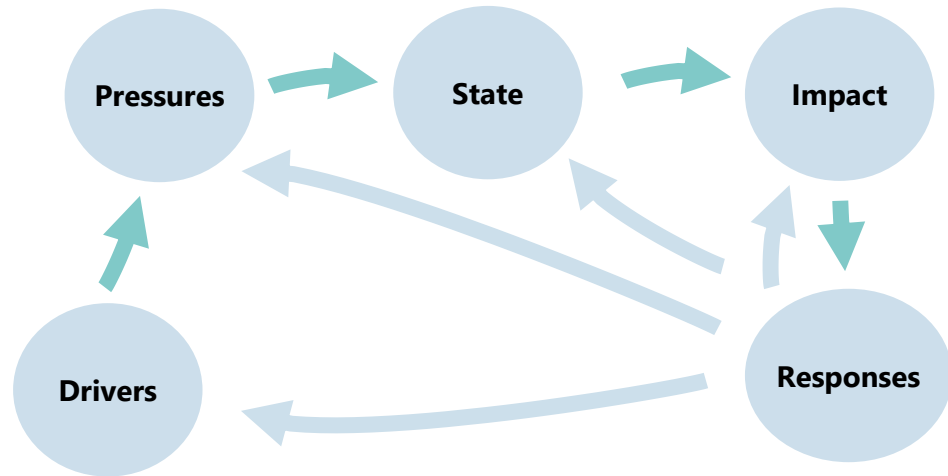
<https://www.youtube.com/watch?v=mUgEgkV16Bw>





# Policy Streamlining and Integration

DPSIR Approach



# Ecosystem Multi-functionality – Multiple Services

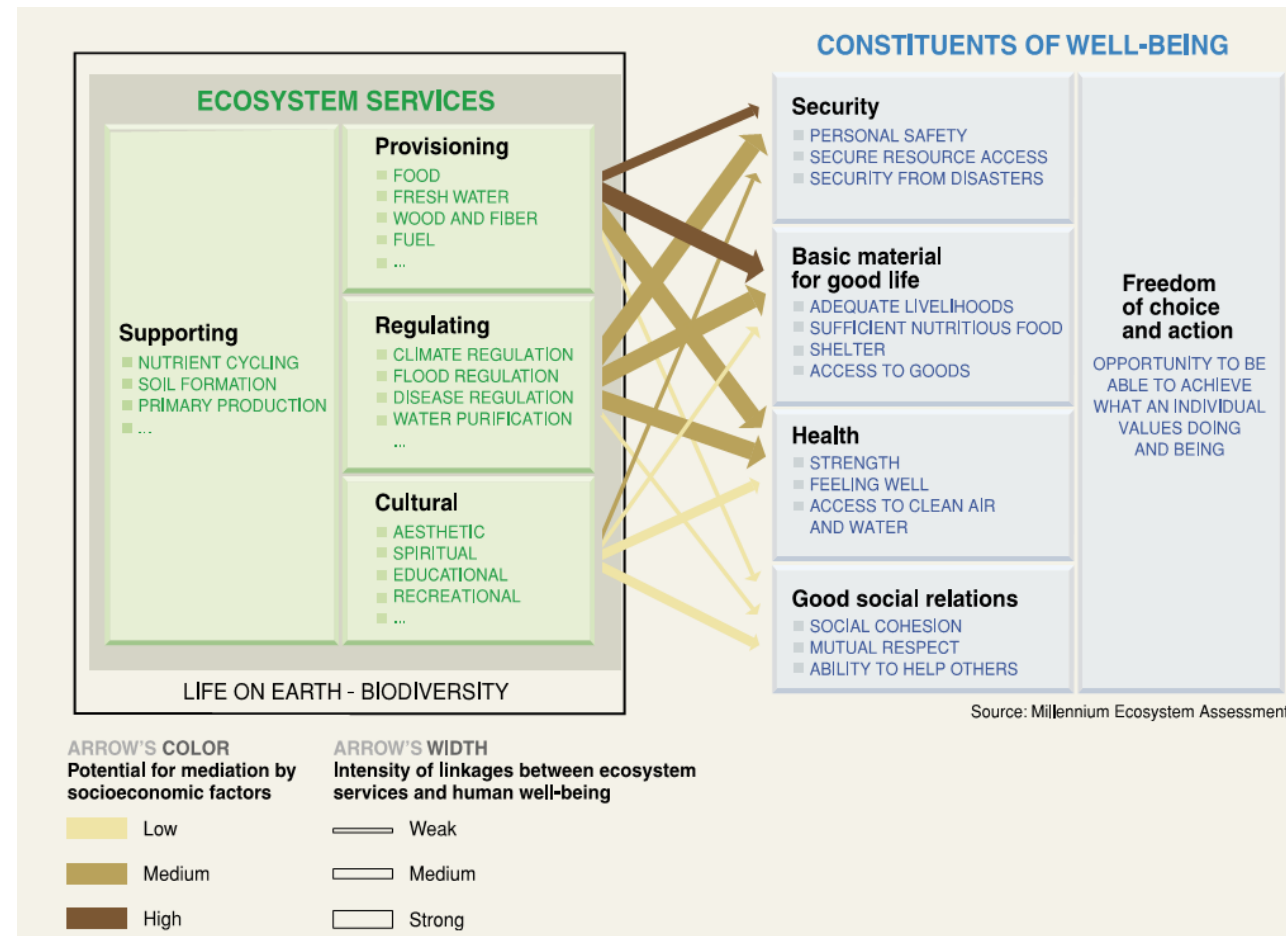
## Ecosystem services

- timber
- cropland soil productivity
- grassland soil productivity
- NO2 removal (air quality)
- Erosion control
- water retention
- pollination
- pest control by birds
- Net ecosystem productivity
- recreation
- maintaining habitat quality (forests)
- maintaining habitat quality (farmland)

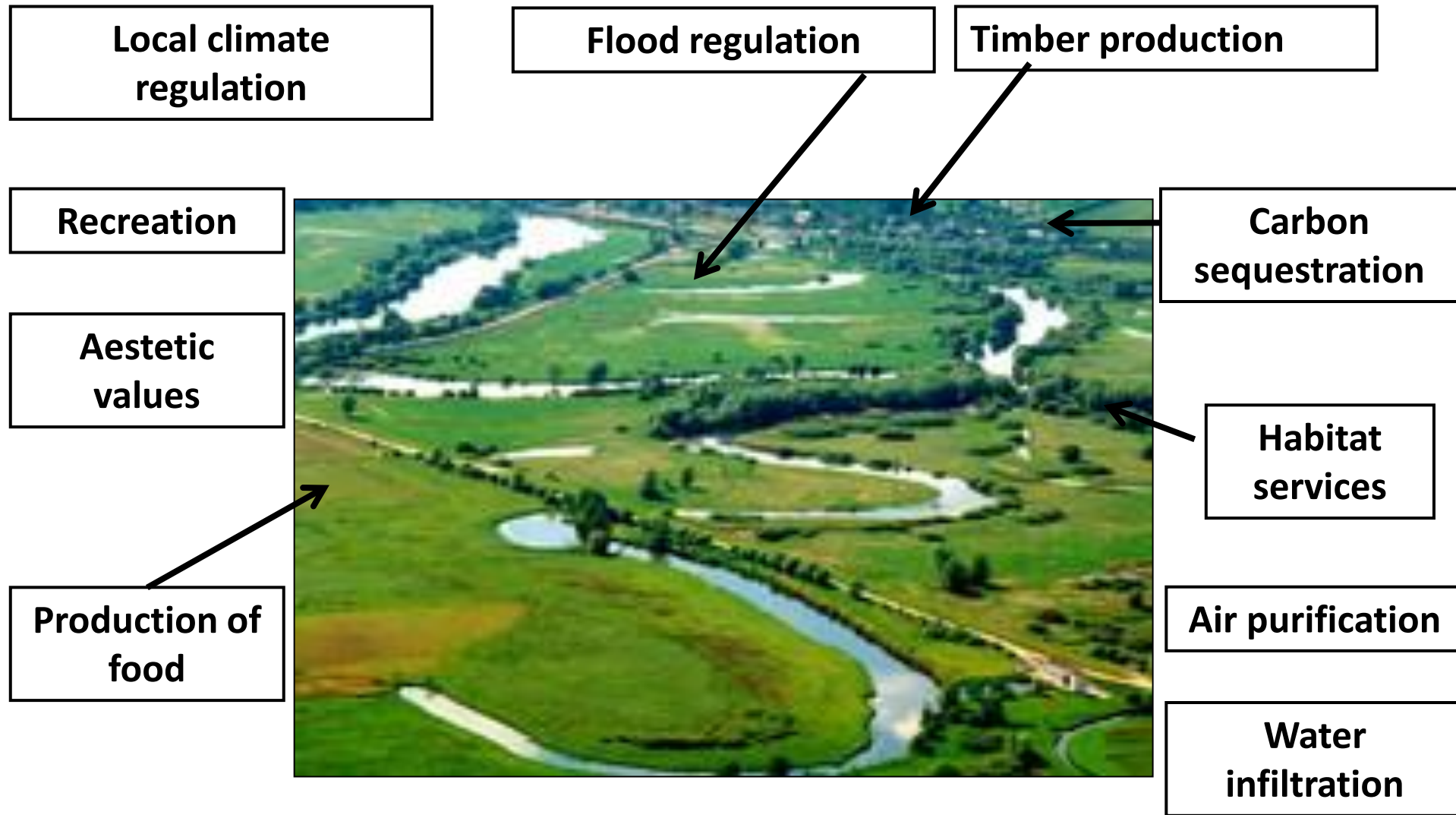
C  
o  
n  
d  
i  
t  
i  
o  
n

## Ecosystems

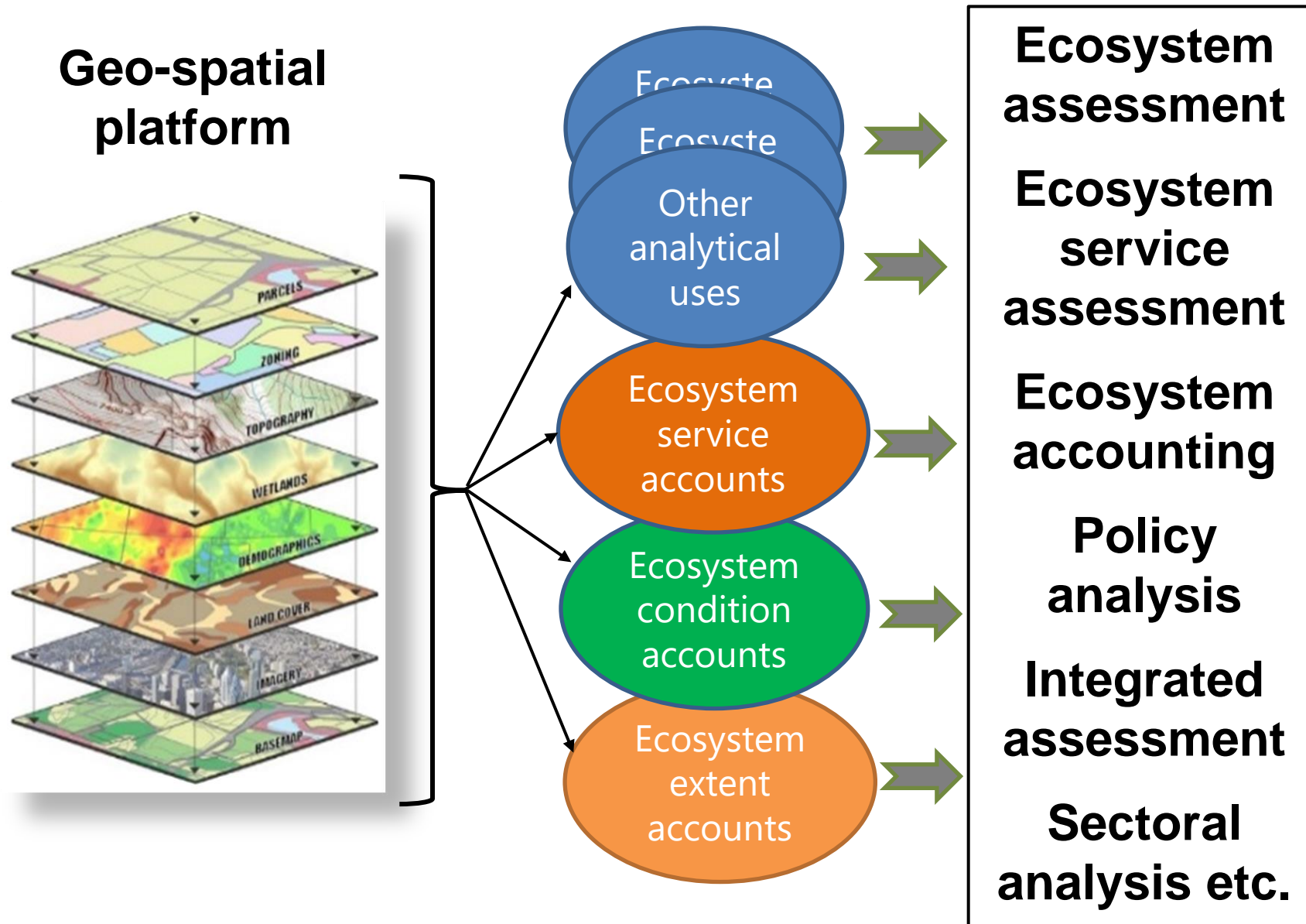
- urban
- forest
- cropland
- grassland
- heathland/shrub
- wetland
- mires, bogs and fens
- coastal beach



# Health and Well-being Depends on the Portfolio of Ecosystem Services



# Spatial explicit information for multiple uses





# MAES Final Report

- An analysis of trends in pressures, condition and services of marine, freshwater and land ecosystems of the EU+UK using 2010 as baseline year.
- An evaluation of the 2020 biodiversity and ecosystems targets.
- A baseline for the 2030 biodiversity policy and EU nature restoration plan.

## Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment

Joachim Maes, Anne Teller, Markus Erhard, Sophie Condé, Sara Vallecillo, José I. Barredo, Maria Luisa Paracchini, Dania Abdul Malak, Marco Trombetti, Olga Vigiak, Grazia Zulian, Anna M. Addamo, Bruna Grizzetti, Francesca Somma, Andrea Hagyo, Peter Vogt, Chiara Polce, Arwyn Jones, Ana I. Marin, Eva Ivits, Achille Mauri, Carlo Rega, Bálint Czúcz, Guido Ceccherini, Enrico Pisoni, Andrej Ceglar, Pierluca De Palma, Iacopo Cerrani, Michele Meroni, Giovanni Caudullo, Emanuele Lugato, Jürgen V. Vogt, Jonathan Spinoni, Carmelo Cammalleri, Annemarie Bastrup-Birk, Jesús San Miguel, Sonsoles San Román, Peter Kristensen, Trine Christiansen, Nihat Zai, Ad de Roo, Ana Cristina Cardoso, Alberto Pistocchi, Irene Del Barrio Alvarellos, Konstantinos Tsiamis, Eugenio Gervasini, Ivan Deriu, Alessandra La Notte, Raul Abad Viñas, Matteo Vizzarri, Andrea Camia, Nicolas Robert, Georgia Kakoulaki, Eduardo Garcia Bendito, Panos Panagos, Cristiano Ballabio, Simone Scarpa, Luca Montanarella, Alberto Orgiazzi, Oihane Fernandez Ugalde, Fernando Santos-Martín

Joint Research Centre, European Environment Agency, DG Environment, European Topic Centre on Biological Diversity, European Topic Centre on Urban, Land and Soil Systems

2020

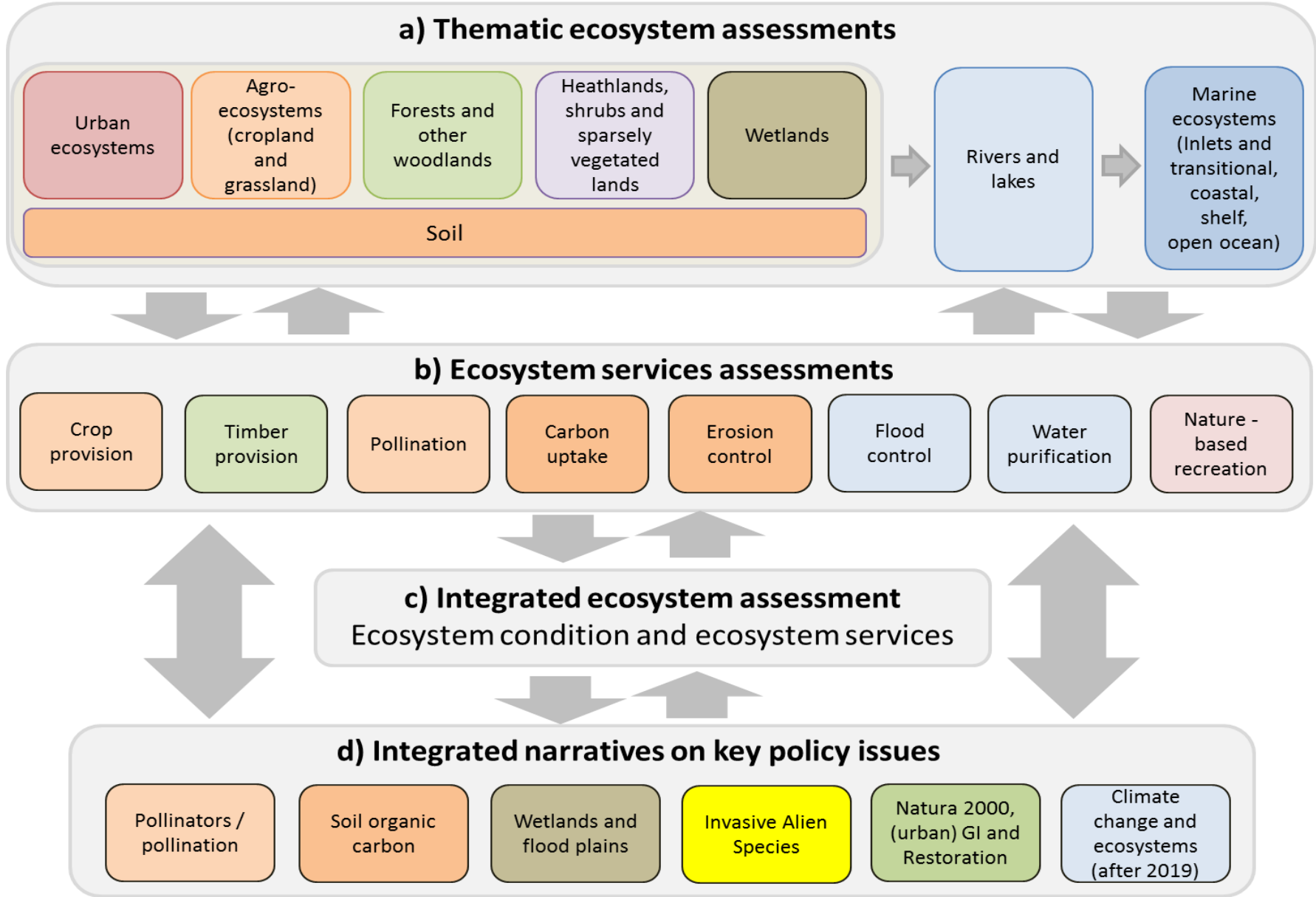


<https://publications.jrc.ec.europa.eu/repository/handle/JRC120383>





# Structure MAES assessment



## MAES Final Report



JRC SCIENCE FOR POLICY REPORT

Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment

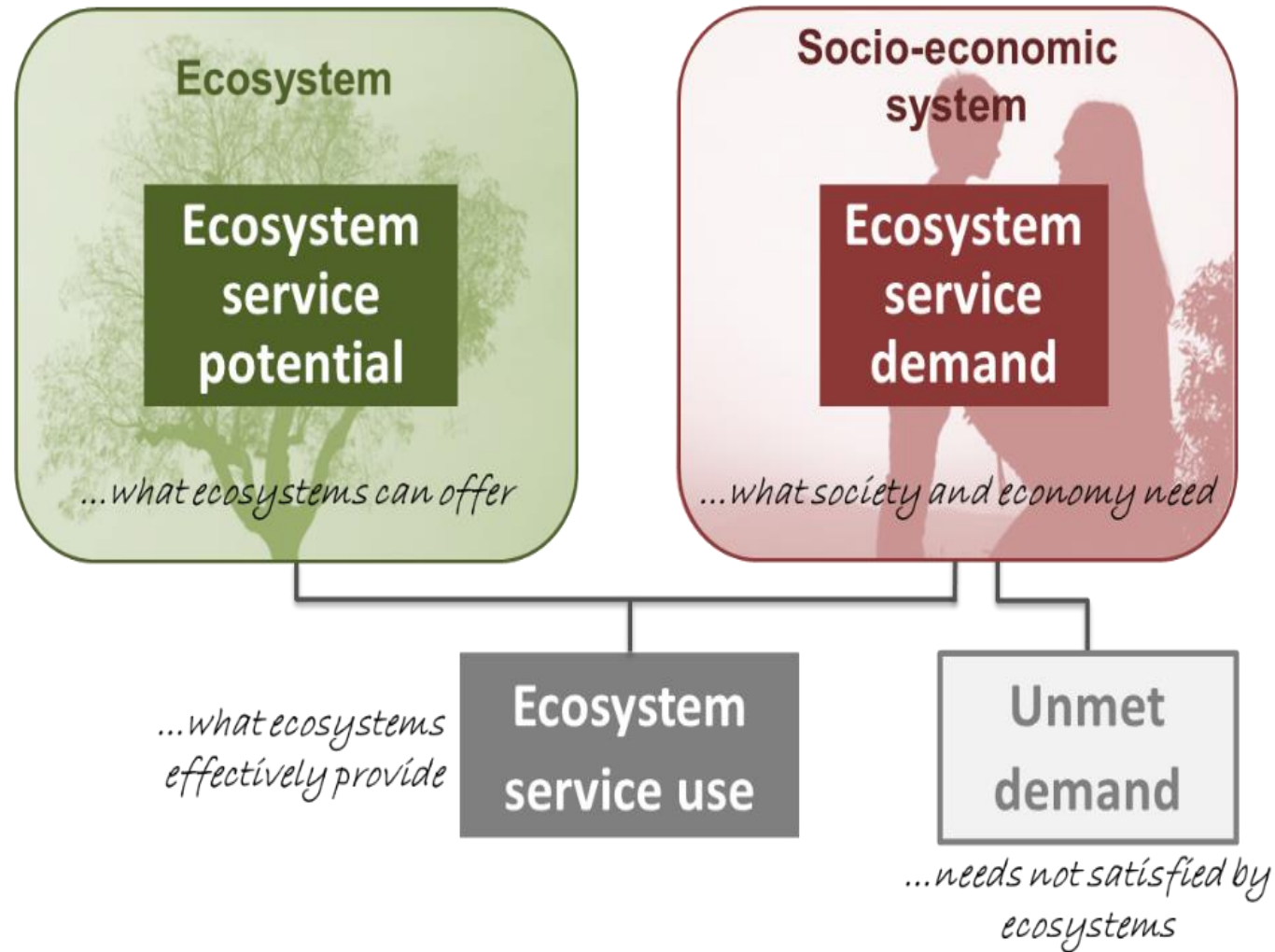
Joachim Maes, Anne Teller, Markus Ehhard, Sophie Condé, Sara Valleccillo, José I. Barredo, María Luisa Paracchini, Dania Abdul Malak, Marco Trombetti, Olga Vigiak, Grazia Zullian, Anna M. Addamo, Bruna Grizzetti, Francesco Sanna, Andrea Haggo, Peter Vogt, Chiara Polce, Arwyn Jones, Ana I. Mañá, Eva Iltis, Achille Mauri, Carlo Rega, Balint Czucz, Guido Ceccherini, Enrico Pisoni, Andrej Ceglar, Pierluca De Palma, Jacopo Cervari, Michele Meroni, Giovanni Caudullo, Emanuele Lugato, Jürgen V. Vogt, Jonathan Spinoni, Carmelo Cammalleri, Annemarie Bazzup-Birk, Jesús San Miguel, González San Román, Peter Kristensen, Trine Christiansen, Nhat Zal, Ad de Roo, Ana Cristina Cardozo, Alberto Pistocchi, Irene Del Barrio Álvarez, Konstantinos Tsilimis, Eugenio Gevasini, Ivan Denri, Alessandra La Notte, Raul Abad Vilas, Matteo Vizzari, Andrea Camia, Nicolas Robert, Georgia Kakoulaki, Eduardo Garcia Benito, Panceo Panagos, Cristiano Ballabio, Simone Scarpa, Luca Montanarella, Alberto Orziacci, Oihane Fernandez Ugaldes, Fernando Santos-Martín

Joint Research Centre, European Environment Agency, DG Environment, European Topic Centre on Biological Diversity, European Topic Centre on Urban, Land and Soil Systems

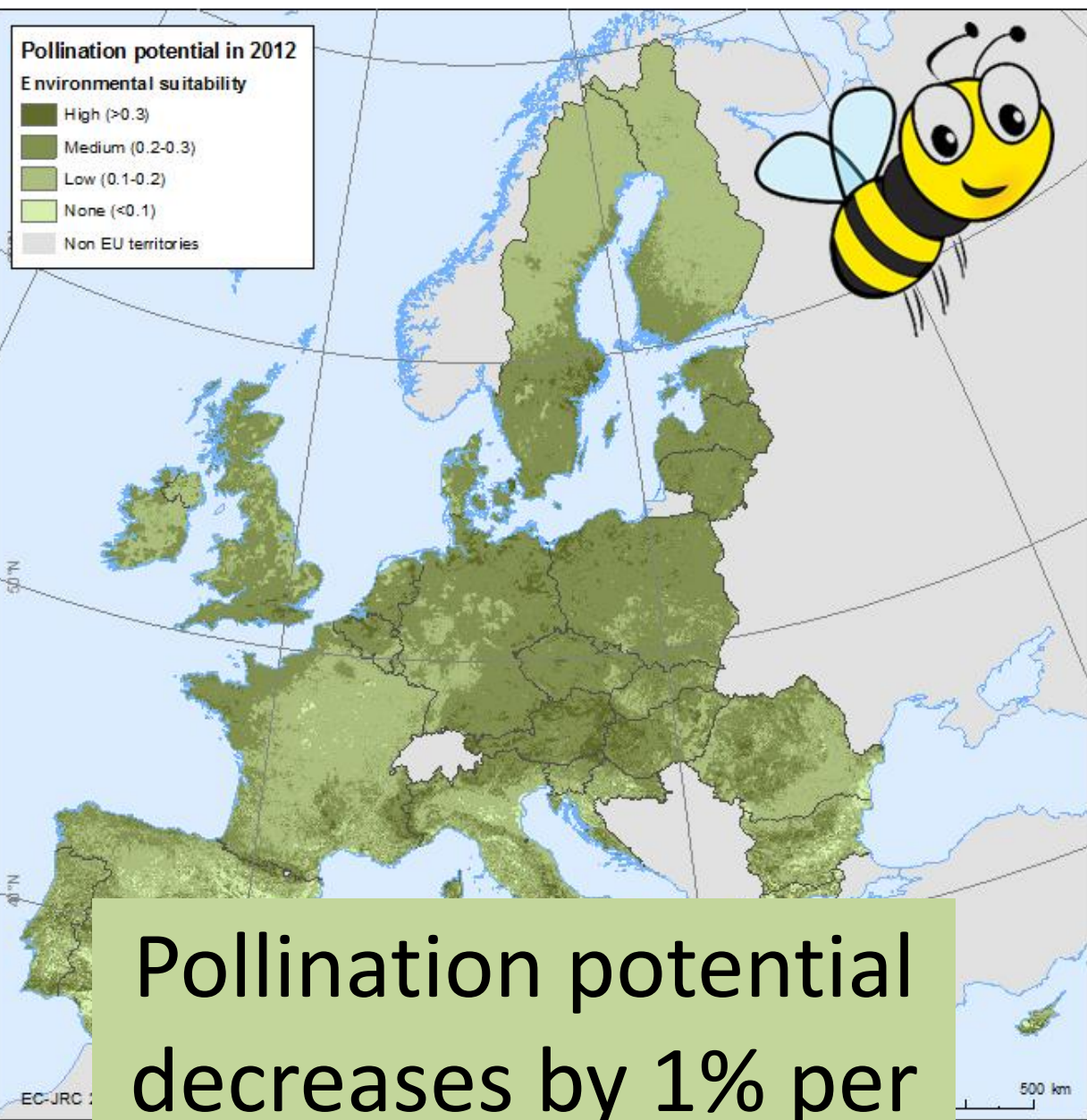
2020



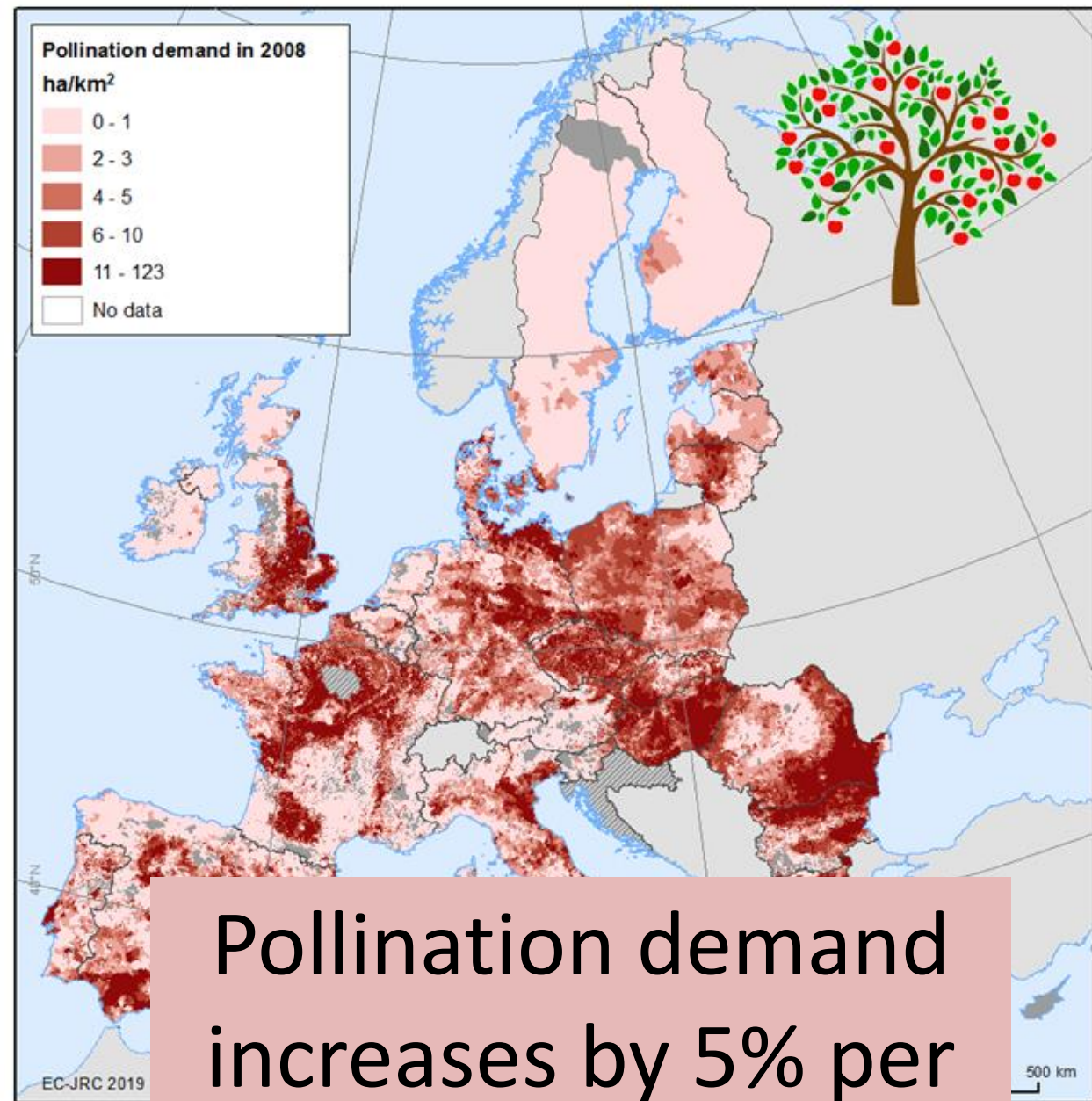
# Ecosystems and Human Well-being





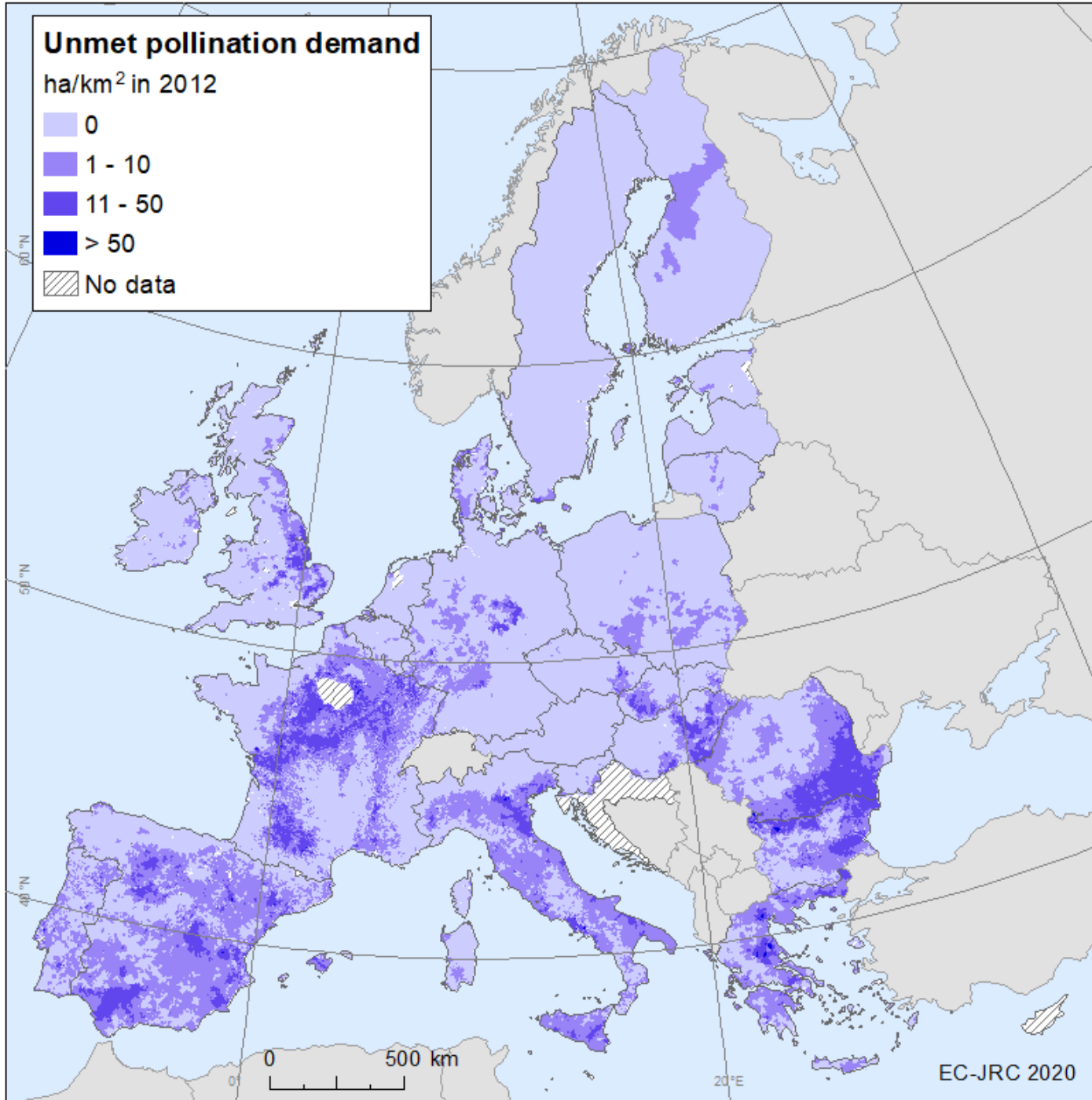


Pollination potential decreases by 1% per decade



Pollination demand increases by 5% per decade

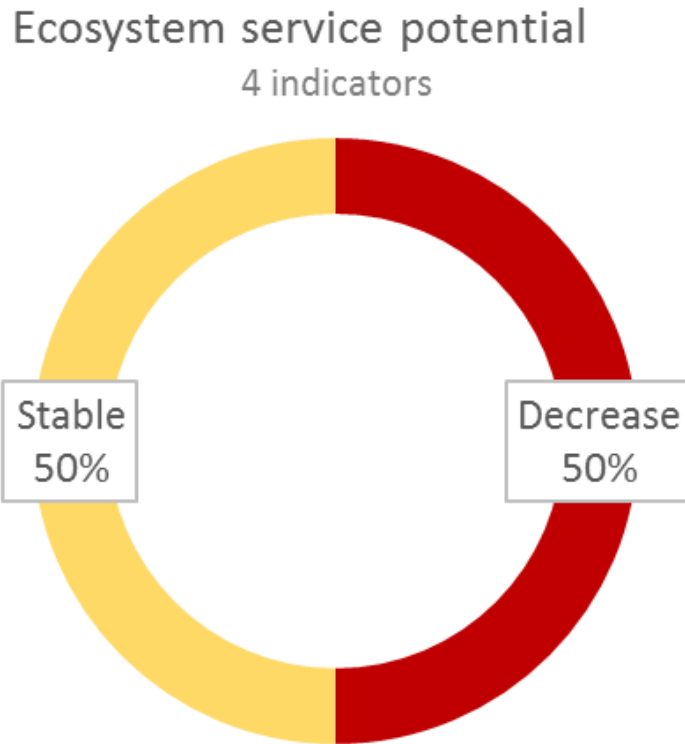




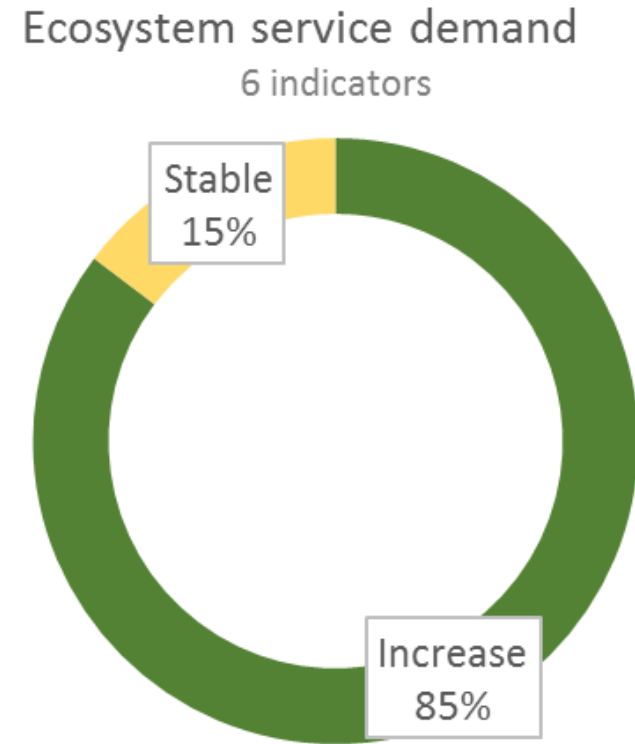
**51%** of the pollinator dependent crops in the EU are grown in areas with low suitability to support pollinators



# Main Trends in Ecosystem Services



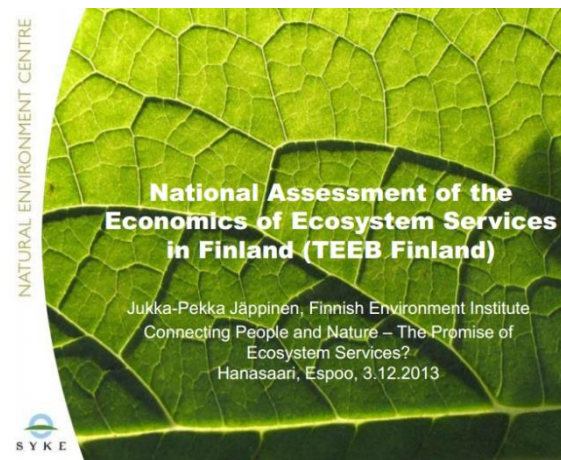
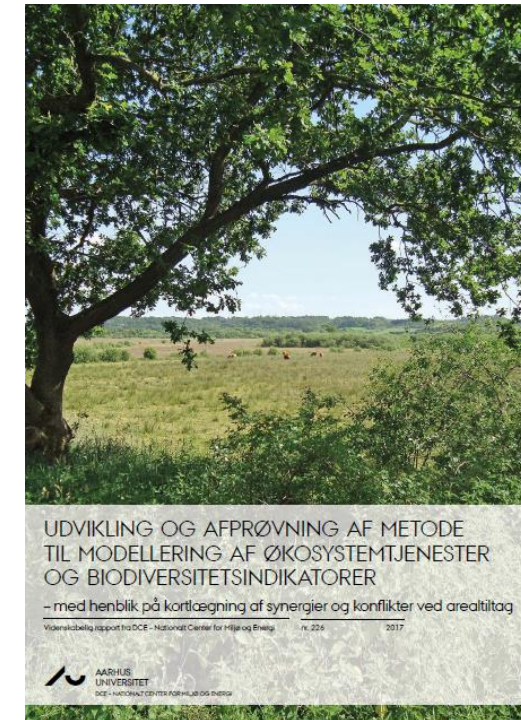
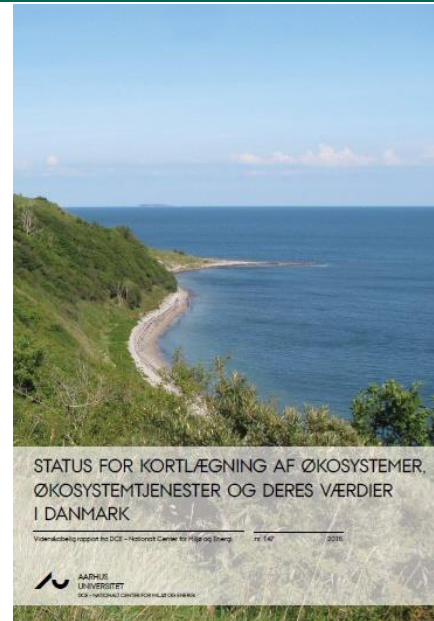
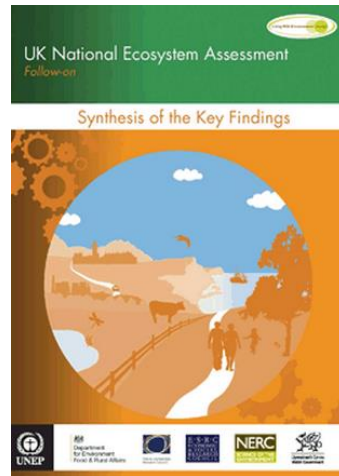
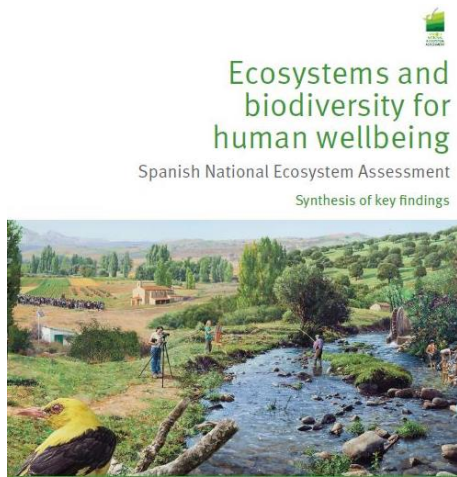
How much ecosystems  
can provide to people



How much people take  
from ecosystems



# Ecosystem / Ecosystem Service Assessments Member States



<https://biodiversity.europa.eu/countries>





# Research Projects ESMERALDA, MAIA, MOVE,...

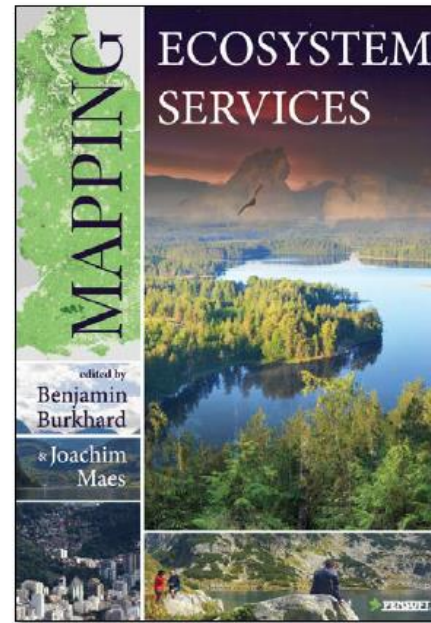


ESMERALDA “flexible methodology”

## ESMERALDA “flexible methodology” will consist of many components

Key parts could for example be:

- ★ **Guidance documents** on how to map and assess ES on different scales, using various tiers and addressing diverse policy, societal and business questions (based on various ESMERALDA Deliverables, e.g. D3.4, D4.4, D5.4)



<http://ab.pensoft.net/articles.php?id=12837>

ESMERALDA Midterm Project Meeting Plovdiv 02.10. - 05.10.2017

# Assessing Ecosystems and their Services in LIFE Projects

## AVAILABLE ONLINE ALSO FOR NEW APPLICANTS

[HOME](#) | [ABOUT LIFE](#) | [NEWS](#) | [FUNDING](#) | [PUBLICATIONS](#) | [TOOLKIT](#) | [CONTACT](#) | [SITE MAP](#)



### Projects by theme

- [Nature, Biodiversity](#)
- [Environment](#)
- [Climate Action](#)
- [Info, Governance](#)

### Projects search

- [Project database](#)
- [Project publications](#)

### More

- [Best projects](#)
- [Integrated projects](#)
- [Other projects](#)
- [By country](#)



[Home](#) | [Toolkit](#) | [Project administration LIFE 2014-2020](#) | [EcoSystem services](#)

## EcoSystem services

### Assessing ecosystems and their services: a guide for LIFE projects

The assessment of ecosystems and their services is an added value of LIFE projects. The assessment results helps explaining better to the general public and stakeholders the multiple benefits of LIFE projects in connection to society and the economy with which they interface. This understanding also supports the importance to society of investing in LIFE projects.

For many LIFE projects, carrying out an ecosystem services assessment is a novelty and a challenge. During a LIFE platform meeting on ecosystem services, organised in Estonia in May 2017 and attended by LIFE projects financed in all strands, it became evident that there is a great level of heterogeneity in the way in which LIFE projects were assessing ecosystem services. The need for guidance on this task was therefore considered.

This document responds to that need. It clarifies key concepts and offers an easy method to implement ecosystem services assessments according to the analytical framework developed under the EU Mapping and Assessment of Ecosystems and their Services (MAES) initiative. Some guidance on how to complete the relevant sections in the [KPI Webtool](#) is also given.

#### → [Project administration LIFE 2014-2020](#)

- [Model LIFE Grant Agreement](#)
- [Model technical report](#)
- [Model financial statement](#)
- [Model terms of reference for the certificate on the financial statements](#)
- [Financial and Administrative Guidelines](#)
- [Guidelines for applicants](#)
- [Amendments](#)
- [Partnership agreements](#)
- [Key Project-level Indicators \(KPI\)](#)
- [Timesheets](#)
- [European Solidarity Corps \(ESC\)](#)
- [Ecosystems services](#)



# The Ecosystem Service Matrix in LIFE Beneficiaries



Map with geospatial units

Not relevant	0
Very low	1
Low	2
Medium	3
High	4
Very high	5

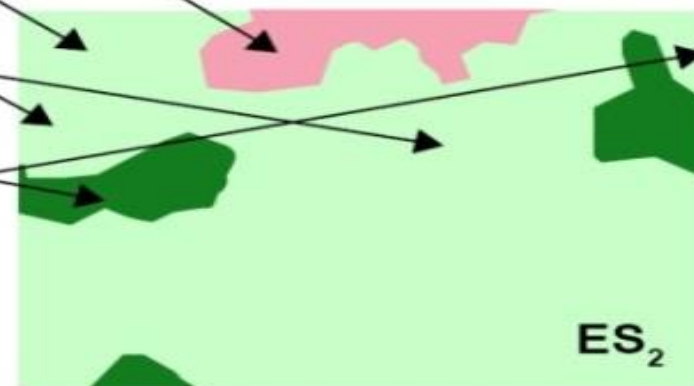
Scale for ranking ES supply, flow or demand

	ES <sub>1</sub>	ES <sub>2</sub>	ES <sub>N</sub>
U <sub>1</sub>	0	0	X
U <sub>2</sub>	2	1	X
U <sub>3</sub>	2	1	X
U <sub>4</sub>	1	1	X
U <sub>5</sub>	5	5	X
U <sub>6</sub>	2	1	X

ES matrix linking geospatial units with ES rankings



ES<sub>1</sub>

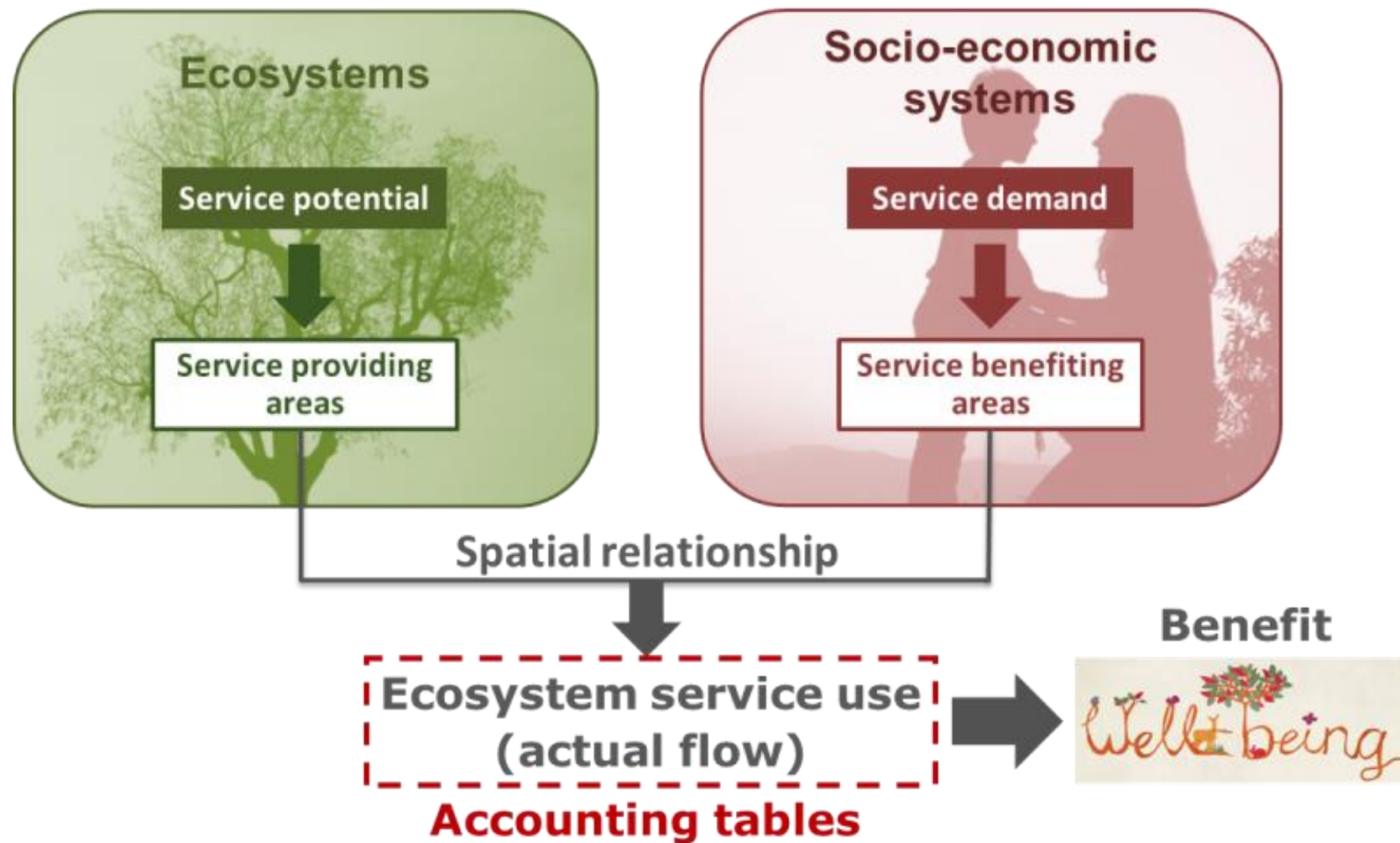


ES<sub>2</sub>

ES ranking based on different ES quantification methods



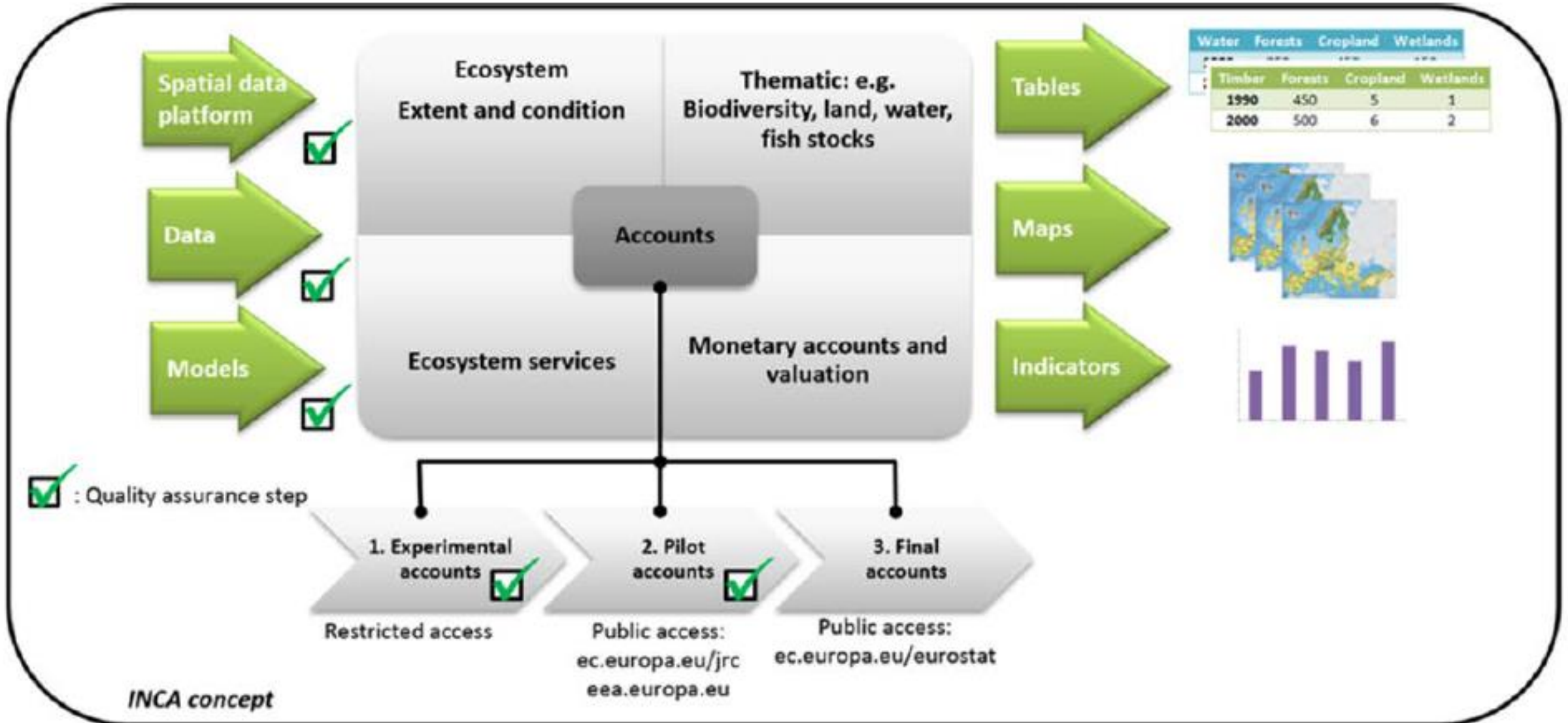
# Ecosystems and Human Well-being



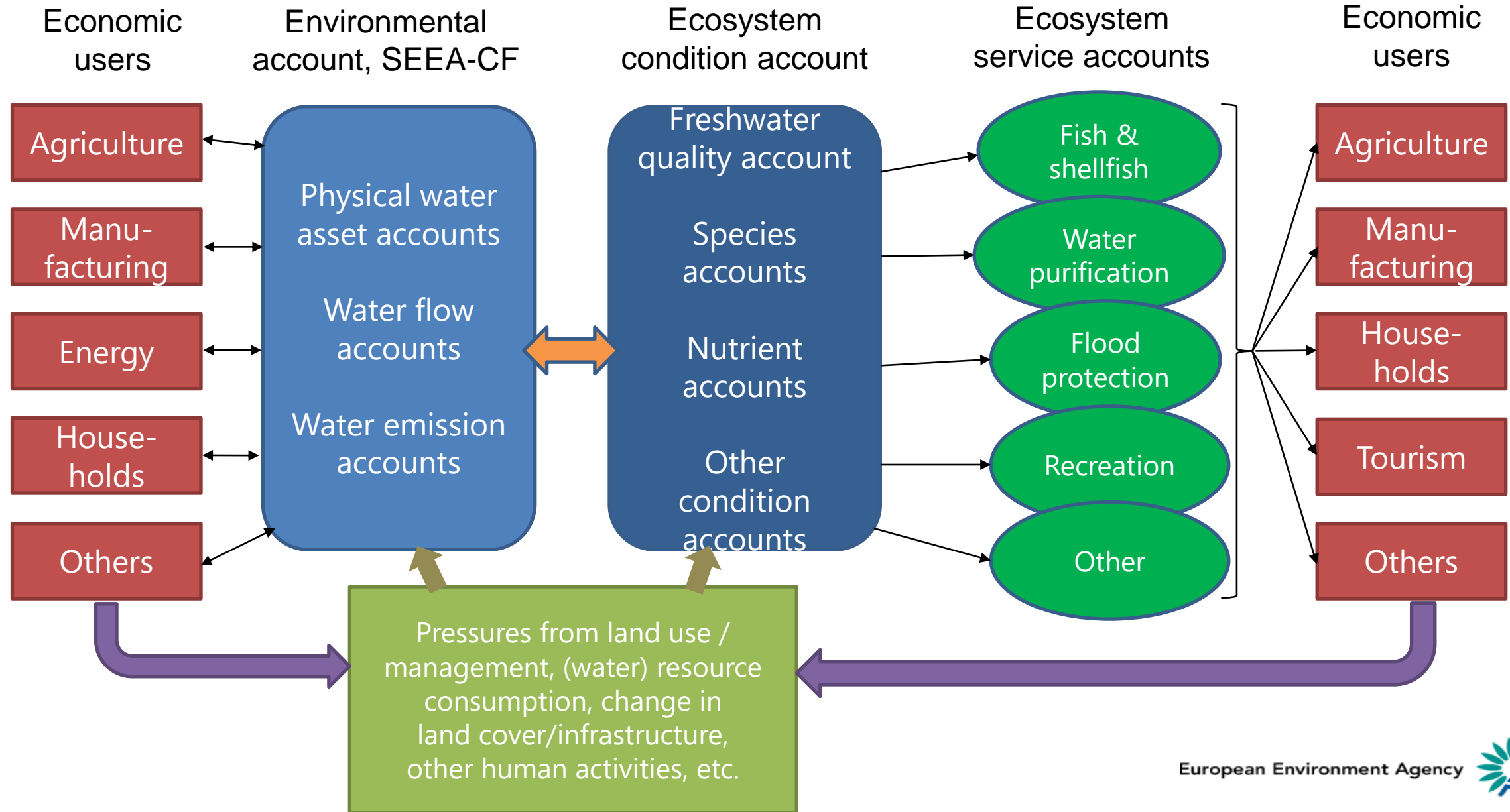
Conceptual approach for developing ecosystem services accounts used in INCA (Vallecillo et al. 2018)



# KIP INCA : Knowledge & Information Partnership for Integrated Natural Capital Accounting in 2020

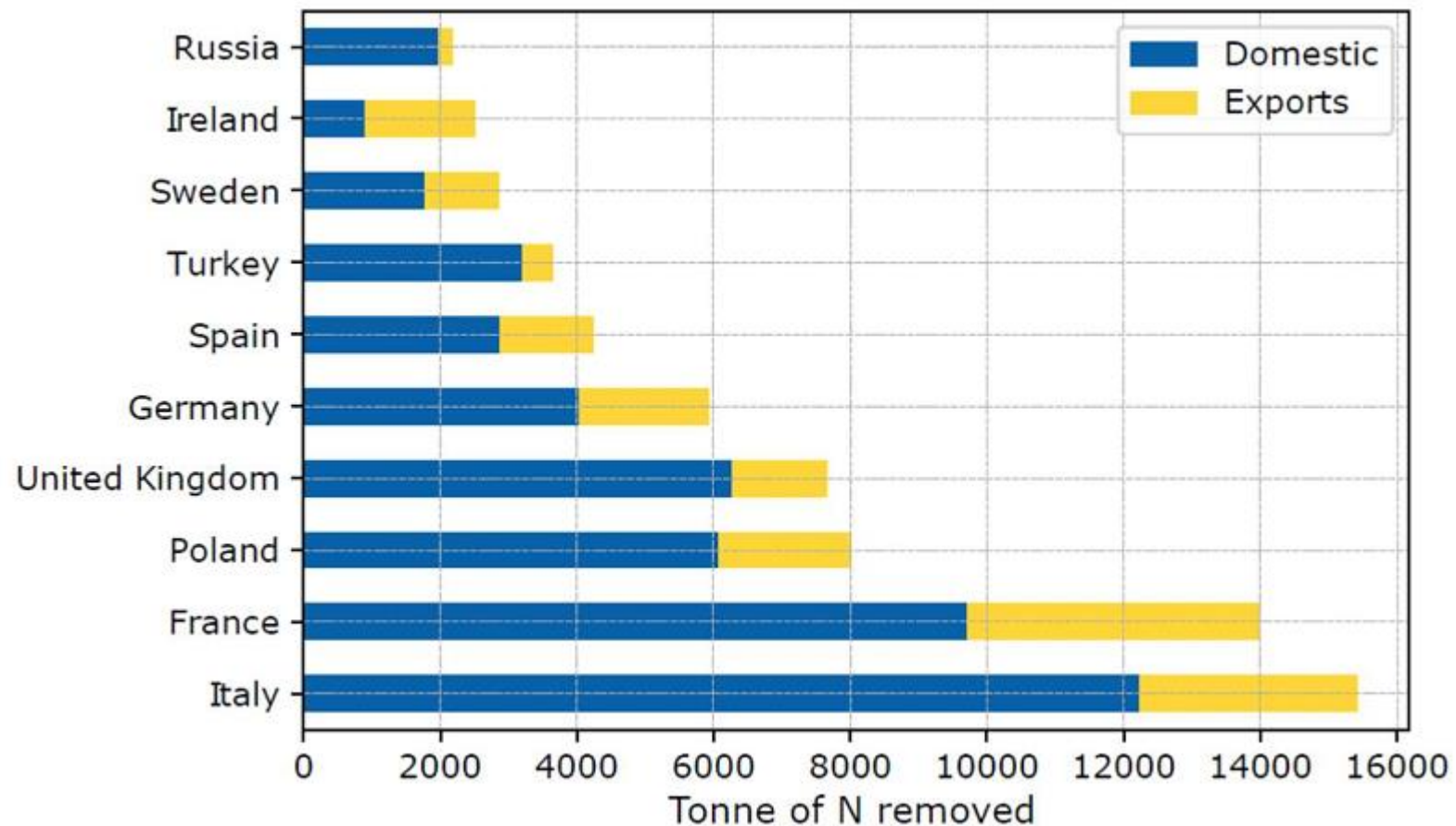


# Integrated analysis based on accounts e.g. freshwater system



# Ecosystem Services and the Economic Dimension

The 10 Member States and non-EU countries with the greatest flows of water purification ecosystem service embodied in agricultural goods in 2005



# The Case for an EU Taxonomy

## Current market practice

**Different taxonomies** among different **Member States** and **financial institutions**

 **Costly to raise capital for real economy**

 **Burdensome to check and compare information for investors**

 **Costly for financial institutions to provide clarity on a voluntary basis**

**Hampering investments into a low-carbon economy**








**Establish an EU Sustainable Taxonomy**

Bridging the gap by developing

**a harmonized list of economic activities that can be considered “environmentally sustainable”**

for investment purposes.

## Value-add of the taxonomy for the market practice

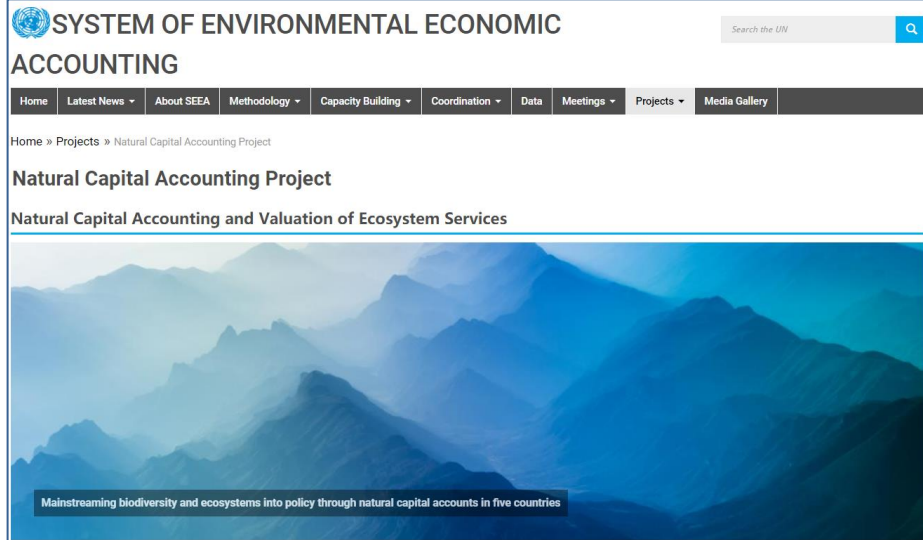
-  Provide appropriate signals and more certainty to economic actors.
-  **Protect private investors** and mitigate the risk of greenwashing.
-  Make it **easier to raise capital**.
-  Address and avoid **market fragmentation and** barriers to cross border capital flows.
-  Provide the **basis for further policy action** in the area of sustainable finance.

**Reorienting capital flows towards sustainable investment**



# Out of the EU: projects funded by the European Union

## NCA&VES project, Brazil, China, India, Mexico and South Africa, 2018 (by UNSD with UNEP, CBD and countries)



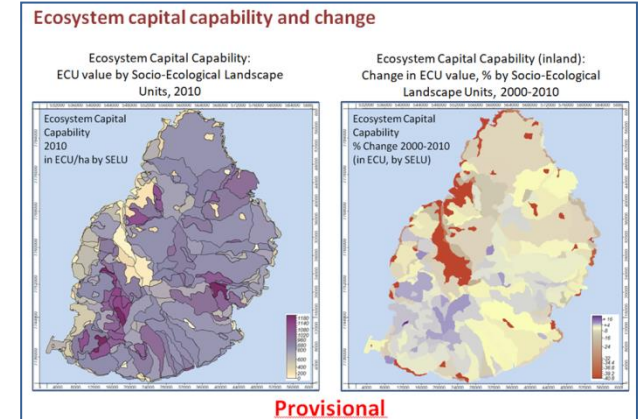
“The United Nations Statistics Division, the United Nations Environment Programme, the Secretariat of the Convention on Biological Diversity, and the European Union have launched the project “**Natural Capital Accounting and Valuation of Ecosystem Services**” (NCAVES). ... to assist the five participating partner countries, namely Brazil, China, India, Mexico and South Africa, to advance the knowledge agenda on environmental-economic accounting, in particular ecosystem accounting.”



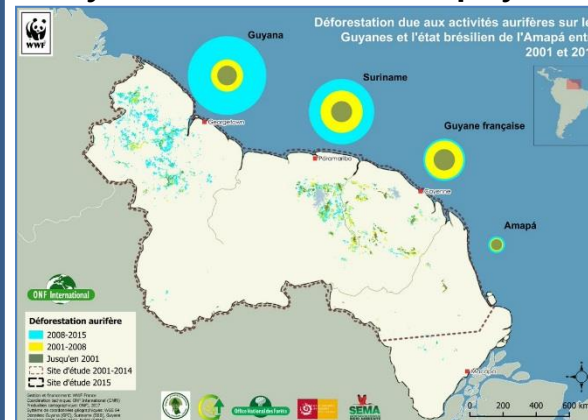
## WAVES, the World Bank's Global Partnership on Wealth Accounting and the Valuation of Ecosystem Services (E.C. contribution to the multi-donors WAVES Trust Fund)



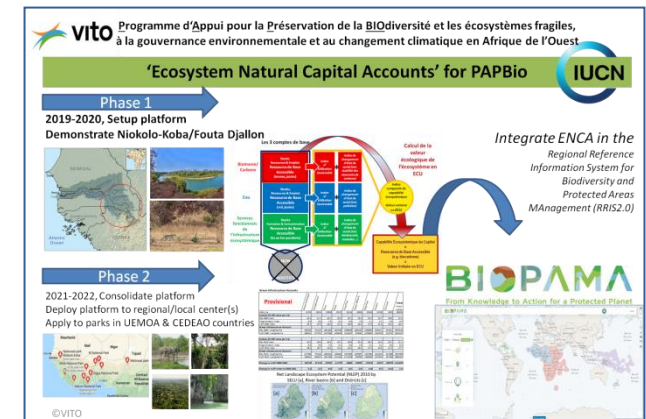
## Experimental SEEA/ENCA in Mauritius, 2014 (by the Indian Ocean Commission and Statistics Mauritius, ISLANDS project)



## SEEA/ENCA on the Guyana Shield, 2019 (by WWF and ONFI, ECOSEO project)



## SEEA/ENCA for Niokolo-Koba natural park and Fouta Djallon (Western Africa), 2019 (by IUCN and VITO, PAPBio Project)

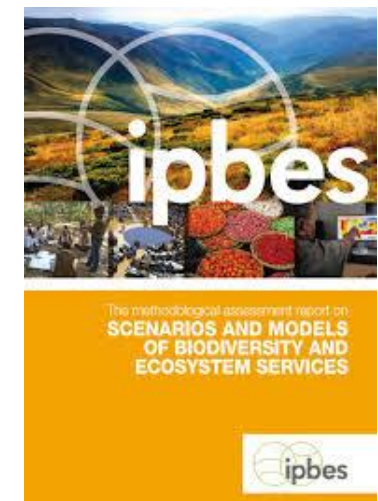
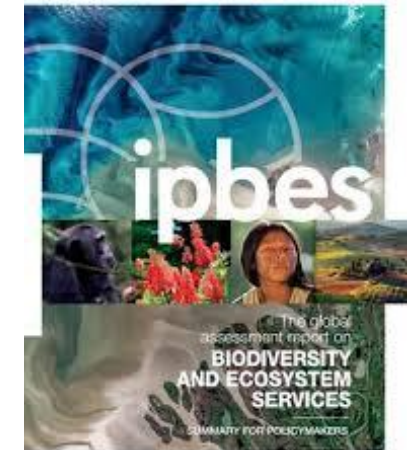




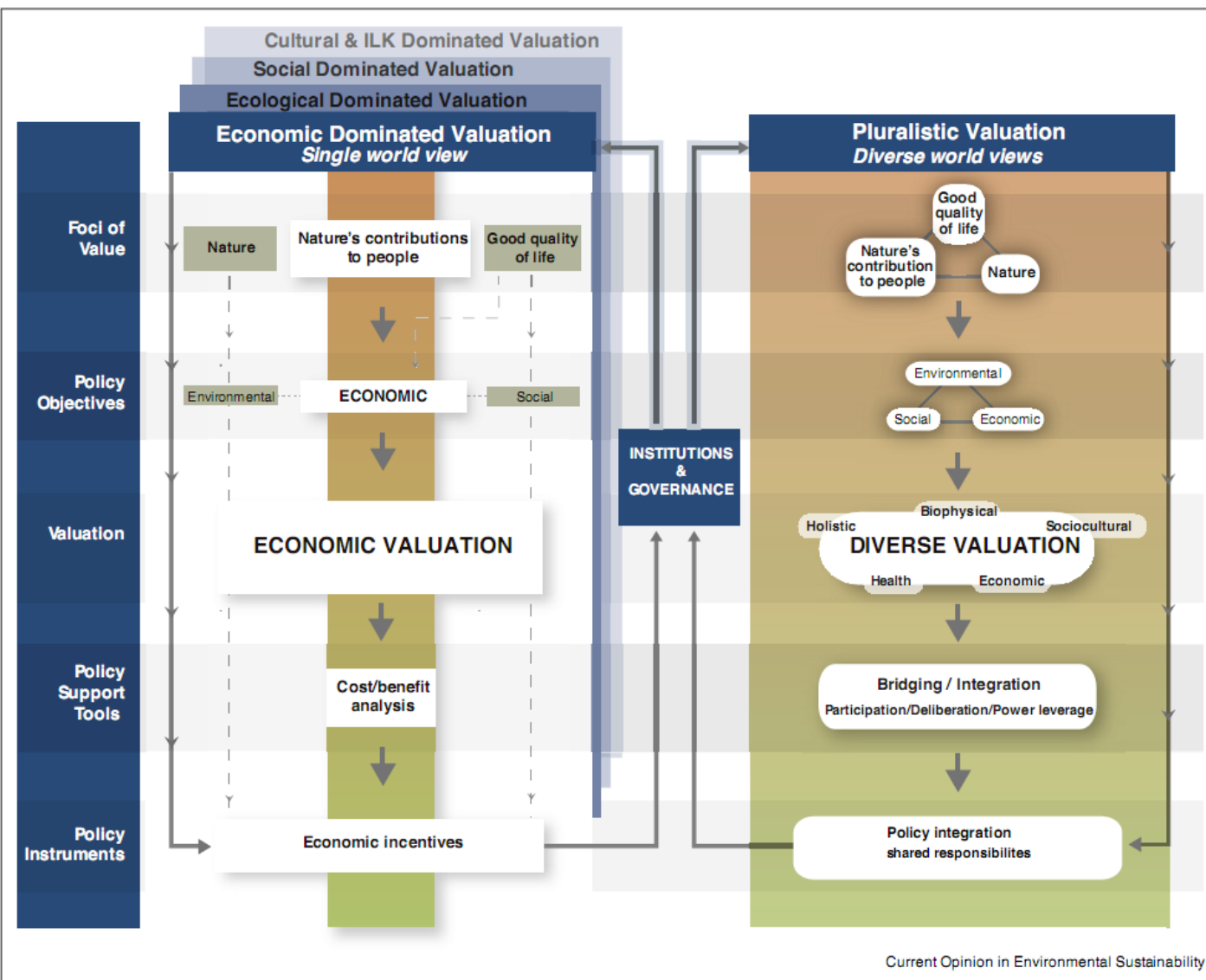
# Nature Contributions to People and Ecosystem Service Approach

FOCI OF VALUE	TYPES OF VALUE	EXAMPLES
NATURE	Non-anthropocentric (Intrinsic)	Animal welfare/rights
		Gaia, Mother Earth Evolutionary and ecological processes Genetic diversity, species diversity
NATURE'S CONTRIBUTIONS TO PEOPLE (NCP)	Anthropocentric	Instrumental Habitat creation and maintenance, pollination and propagule dispersal, regulation of climate Food and feed, energy, materials
		Relational Physical and experiential interactions with nature, symbolic meaning, inspiration Physical, mental, emotional health Way of life Cultural identity, sense of place Social cohesion
GOOD QUALITY OF LIFE		

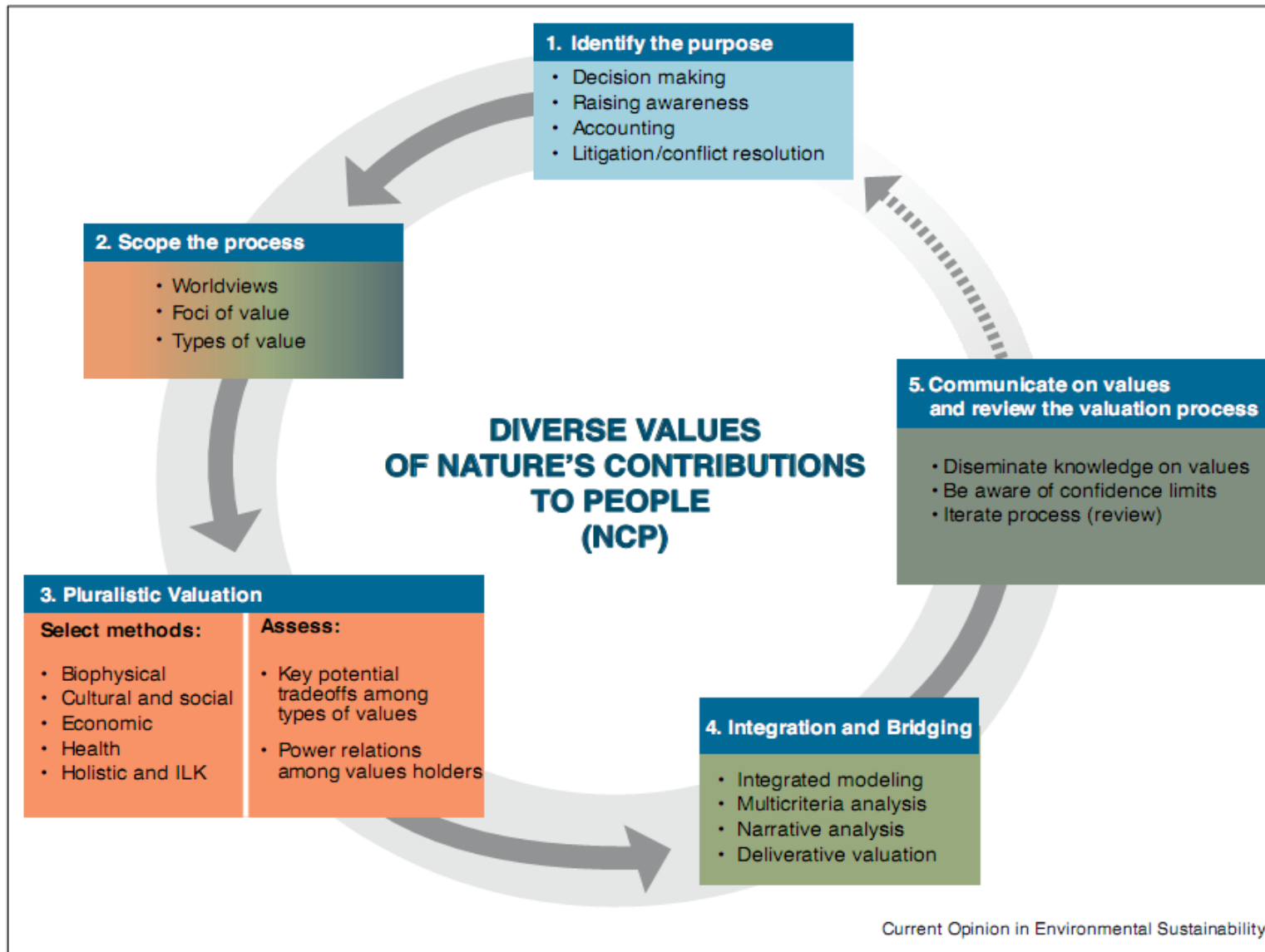
Current Opinion in Environmental Sustainability



# Nature Contributions to People (NCP) and (EU) Ecosystem Service (ESS) Approach



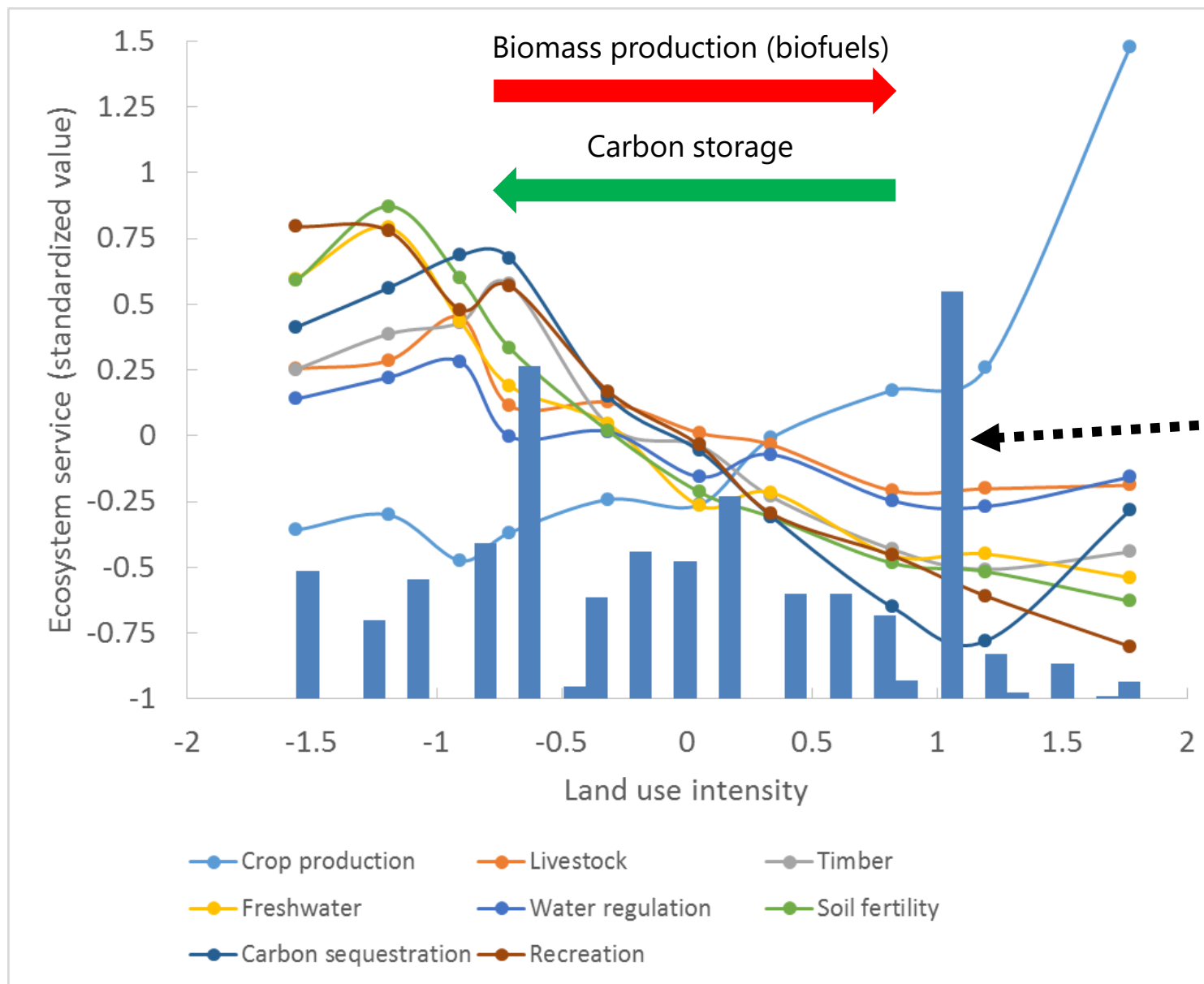
# Common Approaches NCP and ESS



- Approaches
- Methods
- Goals



# Understanding Synergies and Trade-offs



## Example implementation of LULUCF Regulation

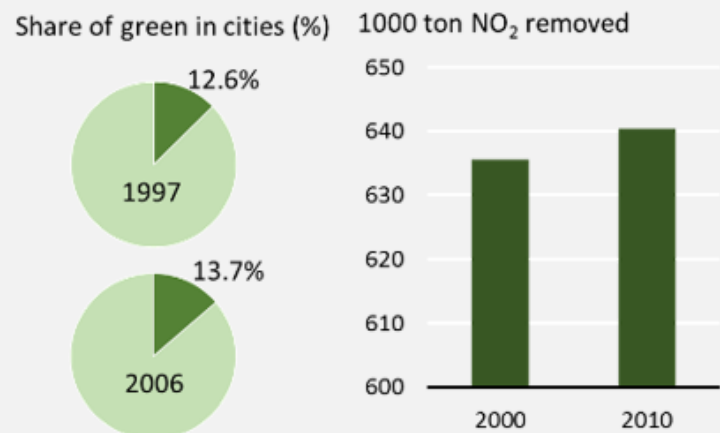
Areas per land use intensity class



# Change over time

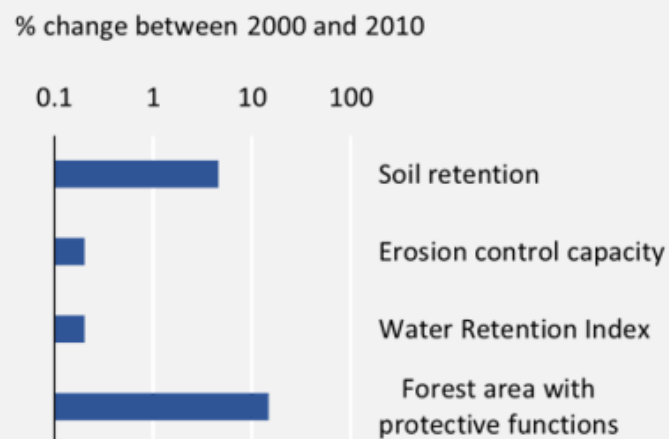
## Trends in regulating services

### Air quality regulation (in cities)



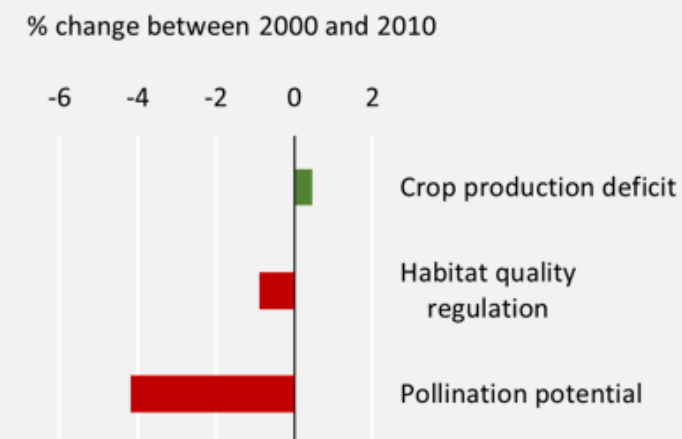
Cities expanded, on average, their green area. Trees captured 1% more NO<sub>2</sub> in 2010 relative to 2000.

### Erosion control and water regulation



The area of protective forest expanded. Soil retention increased. Modelled erosion control and water retention capacities remained equal.

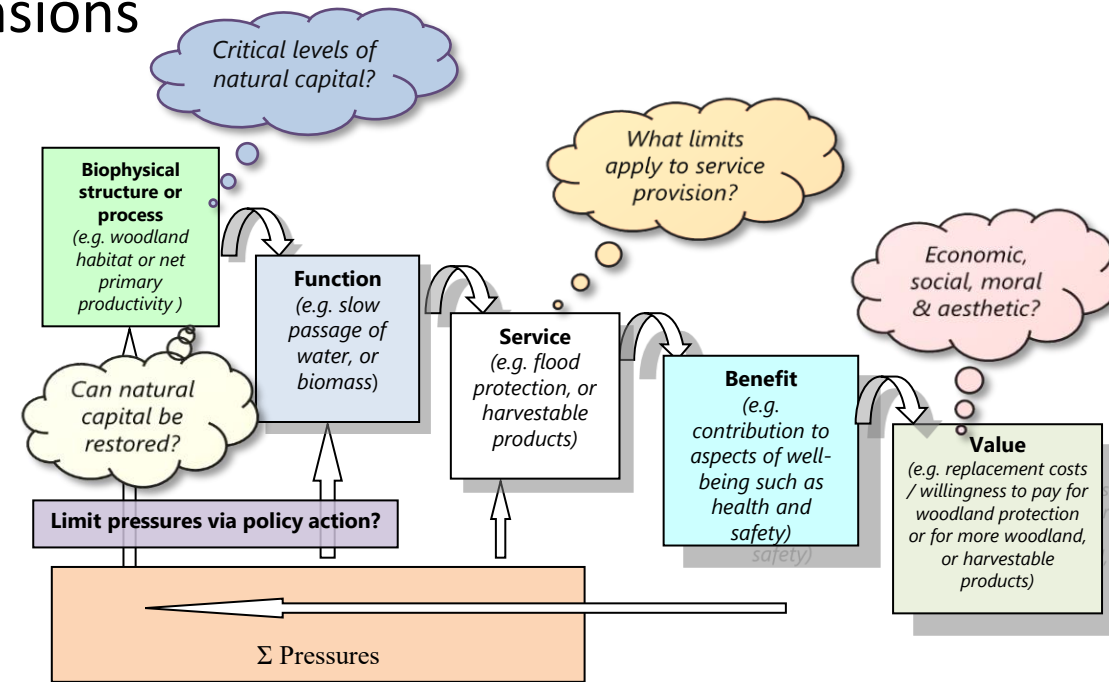
### Habitat maintenance and pollination



Despite increasing production levels of crops in need of pollinating insects, pollination potential declined across the EU. Habitat quality (regulation) slightly declined.

# Challenges Towards Solutions

- Biophysical level / bio-physico-chemical level
  - Implementation of ecosystem condition and management in (regional) modeling approaches
  - Connecting ecosystem condition – ecosystem service capacity
  - From quantitative service specific to multiple service assessments
- Connecting biophysical – economic – social dimensions
  - Micro-economy e.g. farm level, local market
  - Macro-economy including global market
  - Integrating economic - social - cultural dimensions
- Methodological challenges in valuation
  - Lack of appropriate methods (e.g. intrinsic value, willingness to pay ...)
  - Integrating economic - social - cultural interactions
- Implementation
  - From (research based) assessments / case studies to operational monitoring for change detection



Source: Potschin & Haines-Young, 2011





# Thank you very much for your attention

European  
Commission

JRC SCIENCE FOR POLICY REPORT

## Mapping and Assessment of Ecosystems and their Services: An EU ecosystem assessment

Joachim Maes, Anne Teller, Markus Erhard, Sophie Condé, Sara Vallecillo, José I. Barredo, Maria Luisa Paracchini, Dania Abdul Malak, Marco Trombetti, Olga Vigiak, Grazia Zullian, Anna M. Addamo, Bruna Grizzetti, Francesca Somma, Andrea Hagyo, Peter Vogt, Chiara Polce, Arwyn Jones, Ana I. Marin, Eva Ivits, Achille Mauri, Carlo Rega, Bálint Czucz, Guido Ceccherini, Enrico Pisoni, Andrej Cegljar, Pierluca De Palma, Iacopo Cerrani, Michele Meroni, Giovanni Caudullo, Emanuele Lugato, Jürgen V. Vogt, Jonathan Spinoni, Carmelo Cammalleri, Annemarie Bastrup-Birk, Jesús San Miguel, Sonsoles San Román, Peter Kristensen, Trine Christiansen, Nihat Zai, Ad de Roo, Ana Cristina Cardoso, Alberto Pistocchi, Irene Del Barrio Alvarellos, Konstantinos Tslamis, Eugenio Gevasini, Ivan Deniu, Alessandra La Notte, Raúl Abad Vilho, Matteo Vizzani, Andrea Camia, Nicolas Robert, Georgia Kakoulaki, Eduardo Garcia Bendito, Panos Panagos, Cristiano Ballabio, Simone Scarpa, Luca Montanarella, Alberto Orgiazzi, Oihane Fernandez Ugalde, Fernando Santos-Martín

Joint Research Centre, European Environment Agency, DG Environment, European Topic Centre on Biological Diversity, European Topic Centre on Urban, Land and Soil Systems

2020



<https://publications.jrc.ec.europa.eu/repository/handle/JRC120383>

**IPBES NCP platform:** <https://ipbes.net/modelling-consequences-nature'-benefits-people>

**EU Green Deal:** [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en)

**EEA:** <https://www.eea.europa.eu/>

**Knowledge Centre for Biodiversity:** <https://biodiversity.europa.eu/ecosystems> (under development)

**BISE:** <http://biodiversity.europa.eu/>

**EU and MS Ecosystem Assessment:** <https://biodiversity.europa.eu/ecosystems>

**ESMERALDA Project Results:** <http://esmeralda-project.eu/documents/3/>

**Ecosystem Service Classification:** [www.cices.eu](http://www.cices.eu)

**The Ecosystem Services Partnership:** <https://www.es-partnership.org/>

**OPPLA platform:** <https://oppla.eu/>

**UNSD-SEEA:** <https://seea.un.org/>

European Environment Agency



# Additional Links



enter search terms:

[ASK](#) [LOG IN](#)

- [HOME](#)
- [GET STARTED](#)
- [ASK OPPLA](#)
- [WHAT IS OPPLA](#)
- [EVENTS](#)
- [NEWS](#)
- [CONTACT](#)

## Collaborate • Innovate • Communicate

Sign up to become part of this exciting new community!

[JOIN](#)

You'll receive updates about Oppla as it develops. You'll also be given opportunity to contribute your own ideas and network with other members.



**Ask Oppla**

Ask a question and receive answers from the Oppla community...

**ASK**

Latest news ...



Events



Twitter





# Ecosystem Service Partnership

The screenshot shows the homepage of the Ecosystem Service Partnership (ESP) website. At the top left is the ESP logo. To its right are navigation links for 'Log in', 'Subscribe', and 'Contact', along with a search bar. Below the logo is the tagline: 'Worldwide network to enhance the science and practical application of ecosystem services'. A secondary navigation bar includes 'Community', 'Services', 'ESP Conferences', 'Partners', 'News', 'About', and 'ESP member Portal'. The main banner features an aerial photograph of a large, modern building complex surrounded by lush greenery and a winding river. Below the photo is the text: 'The 9th world conference of the Ecosystem Services Partnership will take place in Shenzhen, China from 11-15 December 2017'. Below the banner are four categories of working groups: 'Thematic Working Groups', 'Biome Working Groups', 'Sectoral Working Groups', and 'Regional Chapters National Networks', each with a representative image. To the right of these categories are links for 'Members' (Become a member, Current members) and 'ESP Update' (Subscribe button). Further down is a 'Read our latest Items' section with a sub-section for 'ESP March Update', which includes links for 'ESP Secretariat' and 'ESP Updates, News', and a date of 'March 28, 2017'. At the bottom, there is a preview of an article titled 'TWG 17 - ES Accounting & Governance'.

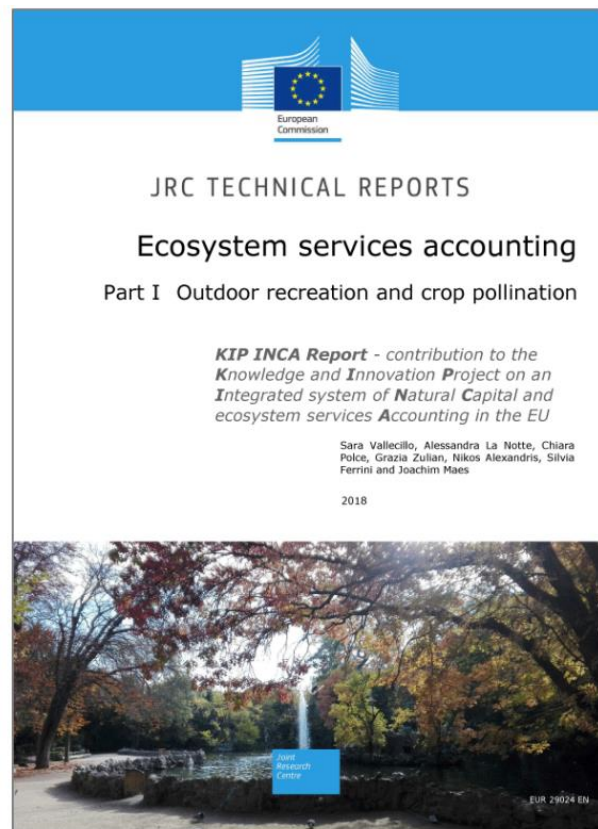
<https://www.es-partnership.org/>

# Background reports

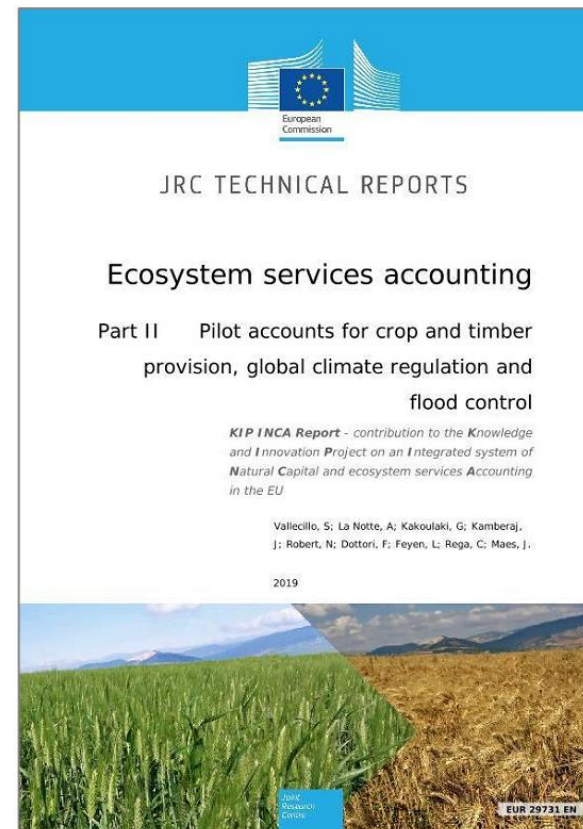
## EU level ecosystem service assessments and valuation



<https://ec.europa.eu/jrc/en/publication/implementing-eu-system-accounting-ecosystems-and-their-services-initial-proposals-implementation>



<https://ec.europa.eu/jrc/en/publication/ecosystem-services-accounting-part-i-outdoor-recreation-and-crop-pollination>



<https://ec.europa.eu/jrc/en/publication/ecosystem-services-accounting-part-ii-pilot-accounts-crop-and-timber-provision-global-climate>



<https://ec.europa.eu/jrc/en/publication/linking-accounts-ecosystem-services-and-benefits-economy-through-bridging-lisbeth>

# Ecosystem Services in Business Sector

**CBD:** See the Global Platform on Business and Biodiversity <https://www.cbd.int/business/>

- [Case Studies on Business and Biodiversity](#)
- [Tools and Mechanisms](#)
- [CBD technical series number 63](#) "Review of the Biodiversity Requirements of Standards and Certification Schemes"

**World Forum on Natural Capital** <https://naturalcapitalforum.com>

**Natural Capital Coalition** <https://naturalcapitalcoalition.org/>

**TEEB for Business and Enterprise** <http://www.teebweb.org/areas-of-work/teeb-for-business/>

TEEB for Business – The Netherlands <https://www.cbd.int/financial/privatesector/netherlands-businessstudy.pdf>

**The EU Business and Biodiversity Platform** [http://ec.europa.eu/environment/biodiversity/business/index\\_en.htm](http://ec.europa.eu/environment/biodiversity/business/index_en.htm)

**World Business Council for Sustainable Development** <http://www.wbcsd.org/>