Update on the EU Biodiversity Strategy and Action 5 (MAES)

Contents

- *Mid Term Review of the BS*
- *MAES: current streams of work*
  - **From ecosystem mapping and assessment to valuation and accounting**
  - **MAES delivery workshop**
  - **Enlargement workshop**

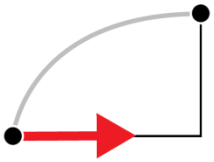
European Commission

2015 Mid-Term Review

1. **Report from the Commission to the Council and European Parliament –** The 2015 Mid-Term Review of the EU Biodiversity Strategy to 2020
2. **Accompanying Document** - EU assessment of progress in implementing the EU Biodiversity Strategy to 2020 (Staff Working Document)
3. **Leaflet:** Dashboard on progress towards EU Targets and Key trends since EU 2010 Biodiversity Baseline

Member States' contributions to the mid-term review (based on 5NR to CBD) will be uploaded on BISE

Headline Target

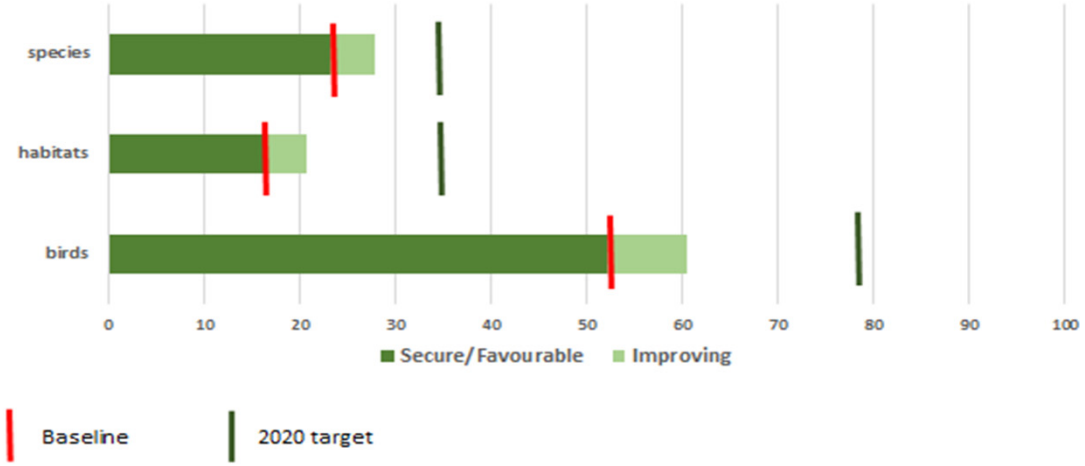


Halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, restore them in so far as possible, and contribute to averting global biodiversity loss

- **Overall, biodiversity loss and the degradation of ecosystem services have continued since the EU 2010 Biodiversity Baseline (cf. SOER 2015)**
- **This is consistent with global trends and has serious implications for the capacity of biodiversity to meet human needs in the future**
- **Many local successes demonstrate that action on the ground delivers positive outcomes**
- **These examples need to be scaled up to have a measurable impact on the overall negative trends**

Target 1

Fully implement the Birds and Habitats Directives



Source: EEA 2015

- Progress in carrying out actions under Target 1
- Slightly increased number of species and habitats in secure/favourable or improved status (SoN Report 2015)
- Many habitats and species in unfavourable status remain so; and some are deteriorating further
- Challenges until 2020: completion of marine Natura 2000, effective management and finance to support Natura 2000

Target 2

Maintain and restore ecosystems and their services

Ecosystem type	Habitat changes	Climate change	Over-exploitation	Invasive species	Pollution and nutrient enrichment
Urban	↗	↑	↗	↗	↑
Cropland	↗	↑	↗	↗	↑
Grassland	↗	↑	↗	↗	↑
Woodland and forest	↘	↑	→	→	↗
Heathland, shrub and sparsely vegetated land	→	↑	→	↗	↗
Wetlands	→	↑	→	↗	↘
Freshwater (rivers and lakes)	→	↑	→	↗	↘
Marine (transitional and marine waters, combined)	↗	↑	→	↗	→

Projected future trends in pressure			
↘	→	↗	↑
Decreasing	Continuing	Increasing	Very rapid increase
Observed impact on biodiversity to date			
Low	Moderate	High	Very high

Trends in pressures on ecos

Source: EEA 2015

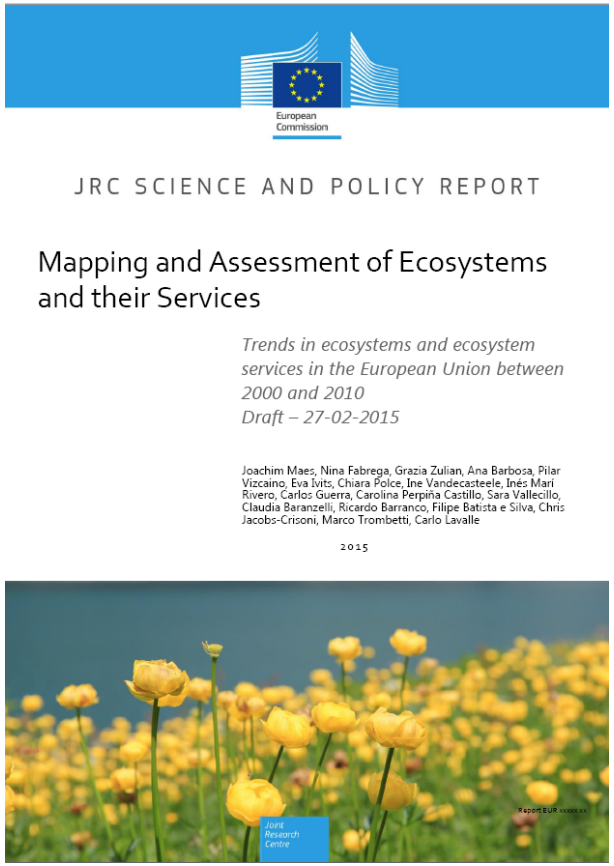
- Progress on policy and knowledge improvement actions
- Some restoration activities in Member States
- Not yet halted the trend of degradation of ecosystems
- National and regional frameworks to promote restoration and green infrastructure need to be developed and implemented
- A lot remains to be done to halt the loss of ordinary biodiversity outside Natura 2000

Trends in ecosystems and ecosystem services in the EU

Test of the MAES framework (typologies and indicators)

Trends at European scale between 2000 and 2010

Reference for a set of ecosystem services maps



21 October 2015

Joint Research Centre

Data

Ecosystems:

crosswalk between MAES and:

- Corine (2000, 2006)
- LUCAS (2009, 2012)
- MODIS (2001, 2006, 2010)
- LUISA (2006, 2010)

Ecosystem services:

30 indicators

- Provisioning (15): Eurostat (CAPRI), Aquastat (FAO)
- Regulating (12):ESTIMAP (JRC model), Eurostat (+CAPRI), SPOT, Urban Atlas
- Cultural (3): ESTIMAP, Natura 2000

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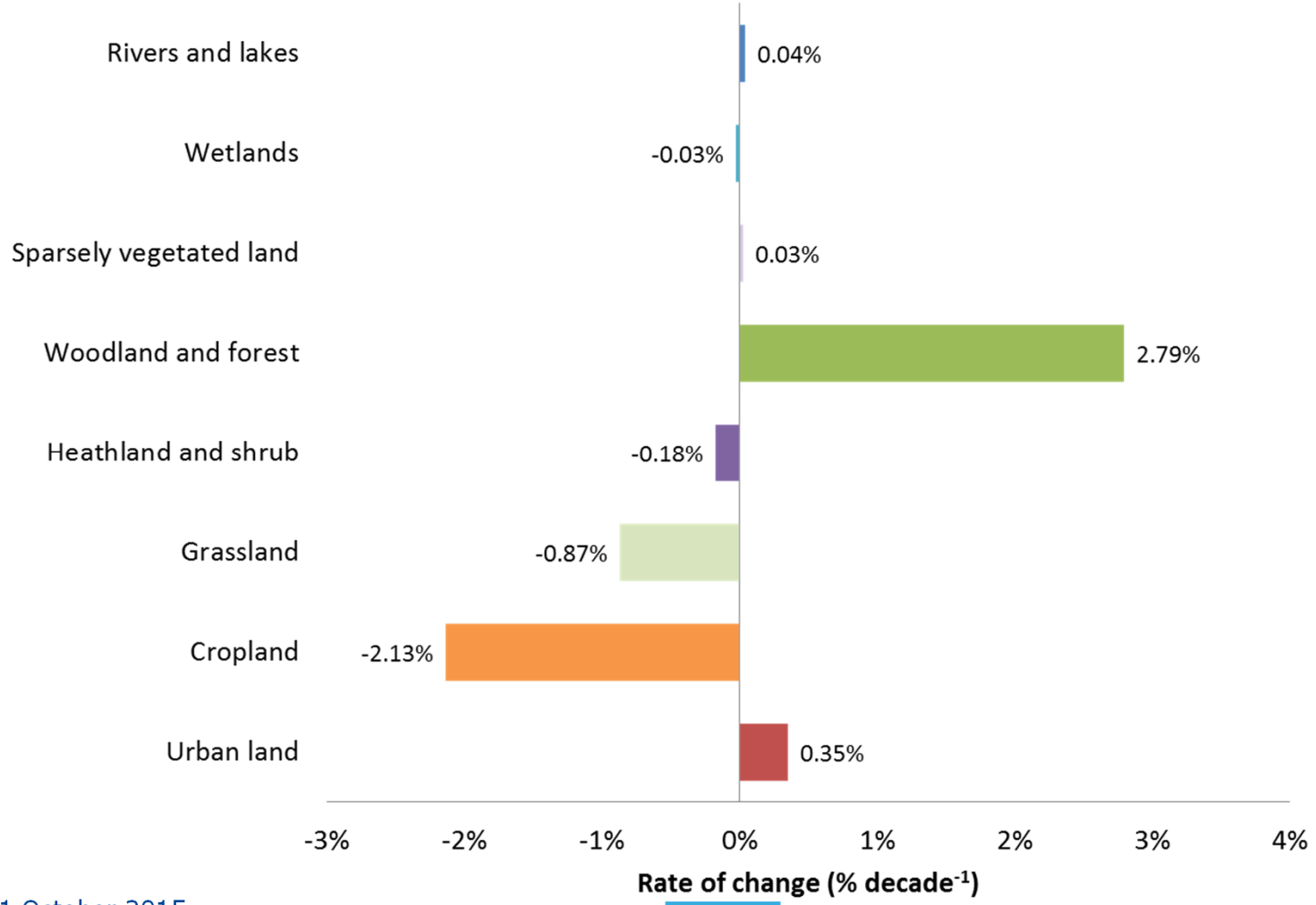
Trends in ecosystems



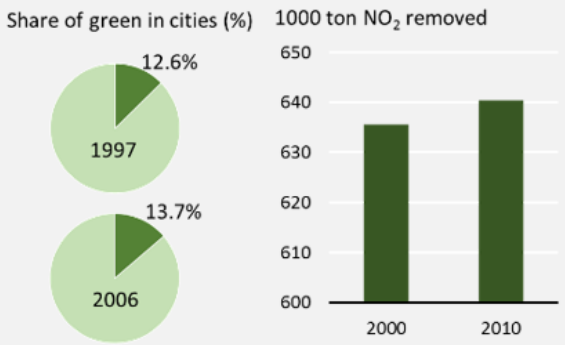
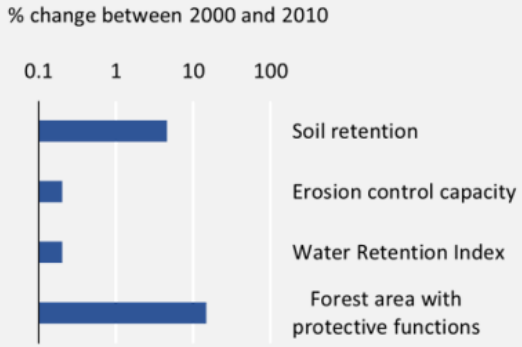
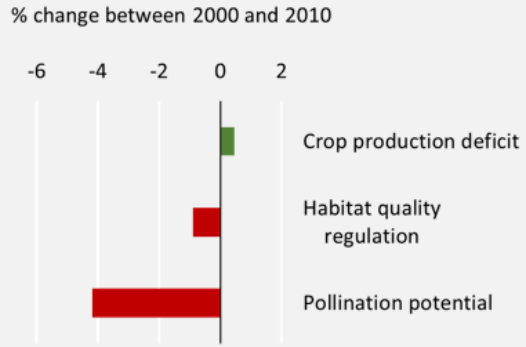
CICES

European Commission

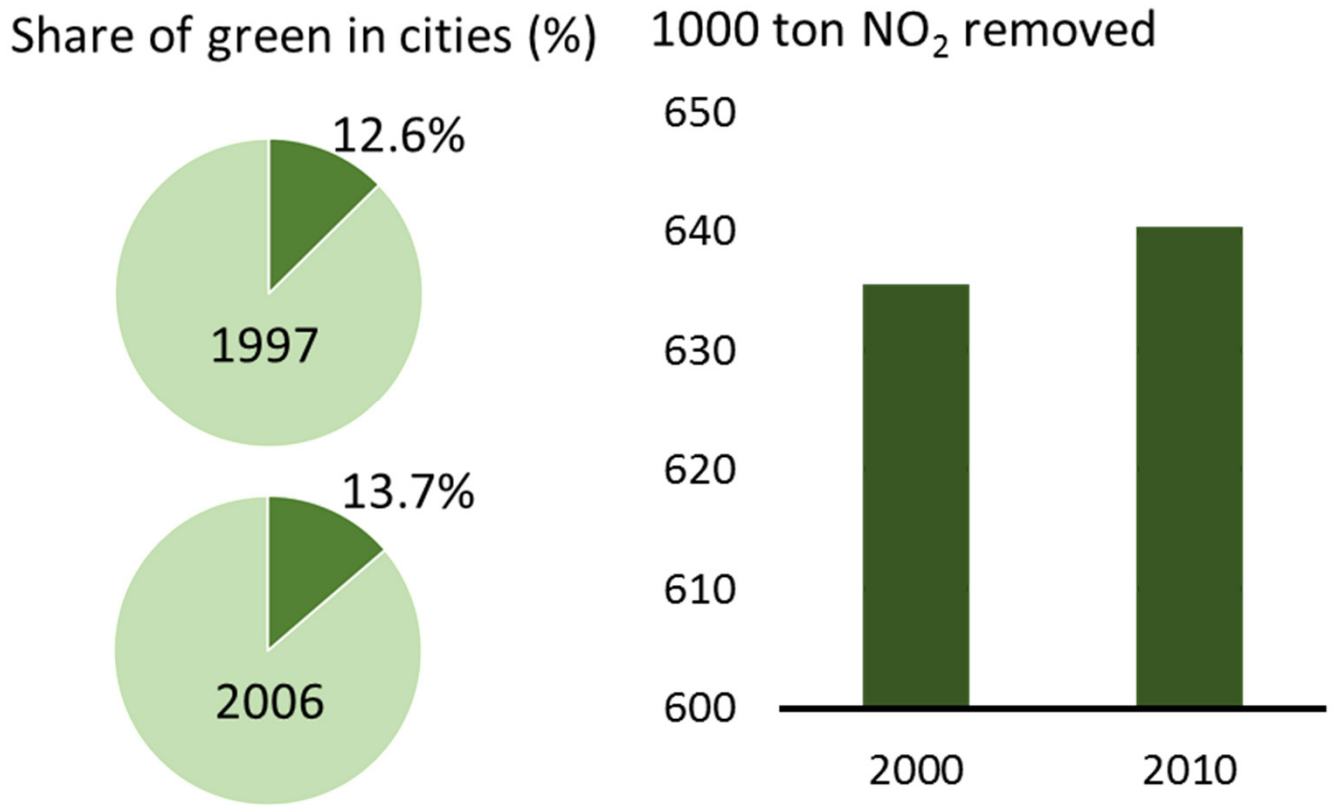
Table 4. Ecosystem service indicators used in this study assorted according to CICES.

CICES Division	CICES Group	CICES Class	Indicators (units)
Nutrition	Biomass	Cultivated crops	Surface area of organic crops (ha) Harvested production of food crops (ton year^{-1})
		Reared animals and their outputs	Grazing livestock (heads)
	Water	Surface water for drinking Ground water for drinking	Total water abstraction for public use (m^3) Proportion of renewable water withdrawn for public use (%)
Materials	Biomass	Fibres and other materials from plants, algae and animals for direct use or processing	Harvested production of textile crops (ton year^{-1}) Total timber removal (m^3 year^{-1}) Timber growing stock (m^3)
		Materials from plants, algae and animals for agricultural use	Harvested production of fodder (ton year^{-1})
	Water	Surface water for non-drinking purposes	Total water abstraction for industrial use (m^3) Proportion of renewable water withdrawn for industrial use (%)
		Ground water for non-drinking purposes	Total water abstraction for agricultural use (m^3) Proportion of renewable water withdrawn for agricultural use (%)
Energy	Biomass-based energy sources	Plant-based resources	Timber growing stock (m^3) Harvested production of energy crops (ton year^{-1})
Mediation of waste, toxics and other nuisances	Mediation by biota		
	Mediation by ecosystems	Filtration/sequestration/storage/accumulation by ecosystems	Proportion of green areas in the high density area of cities (%) Removal of NO_2 by urban vegetation (ton ha^{-1} year^{-1})
		Dilution by atmosphere, freshwater and marine ecosystems	
		Mediation of smell/noise/visual impacts	
Mediation of flows	Mass flows	Mass stabilisation and control of erosion rates	Capacity of ecosystems to avoid soil erosion (dimensionless between 0-1) Soil retention (ton ha^{-1} year^{-1})
		Buffering and attenuation of mass flows	Surface area of forest with a protective function (ha)
	Liquid flows	Hydrological cycle and water flow maintenance	Water Retention Index (dimensionless between 0-10)
	Gaseous / air flows		
Maintenance of physical, chemical, biological conditions	Lifecycle maintenance, habitat and gene pool protection	Pollination and seed dispersal	Pollination potential (dimensionless between 0-1) Crop production deficit (%)
		Maintaining nursery populations and habitats	Habitat quality based on common birds (dimensionless ratio)
	Pest and disease control		
	Soil formation and composition	Weathering processes	
		Decomposition and fixing processes	Gross nitrogen balance (ton year^{-1})
	Water conditions		
	Atmospheric composition and climate regulation	Global climate regulation by reduction of greenhouse gas concentrations	Net ecosystem productivity (normalized index between 0-1) Forest carbon potential (percent change, %)
		Micro and regional climate regulation	
Physical and intellectual interactions with biota, ecosystems, and land-/seascapes [environmental settings]			Share of high provision easily accessible land in the recreation opportunity spectrum (%) Surface area of special protection area (ha) Surface area of sites of community importance (ha)
Spiritual, symbolic and other interactions with biota, ecosystems, and land-/seascapes [environmental settings]			

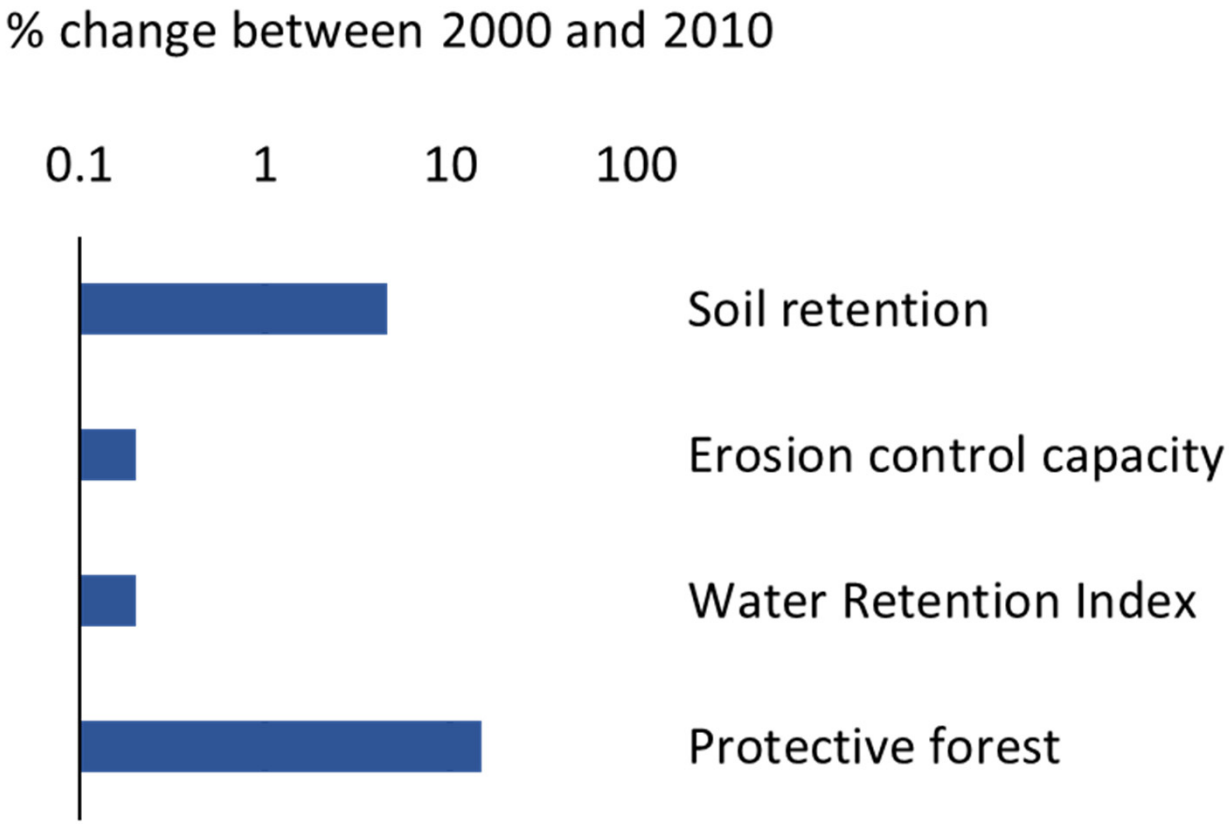
Trends in regulating services

Air quality regulation (in cities)	Erosion control and water regulation	Habitat maintenance and pollination
		
Cities expanded, on average, their green area. Trees captured 1% more NO_2 in 2010 relative to 2000.	The area of protective forest expanded. Soil retention increased. Modelled erosion control and water retention capacities remained equal.	Despite increasing production levels of crops in need of pollinating insects, pollination potential declined across the EU. Habitat quality (regulation) slightly declined.

Trends in regulating services
Air quality regulation in a sample of cities



Trends in regulating services
Erosion control and water regulation



Trends in regulating services
Pollination and habitat maintenance

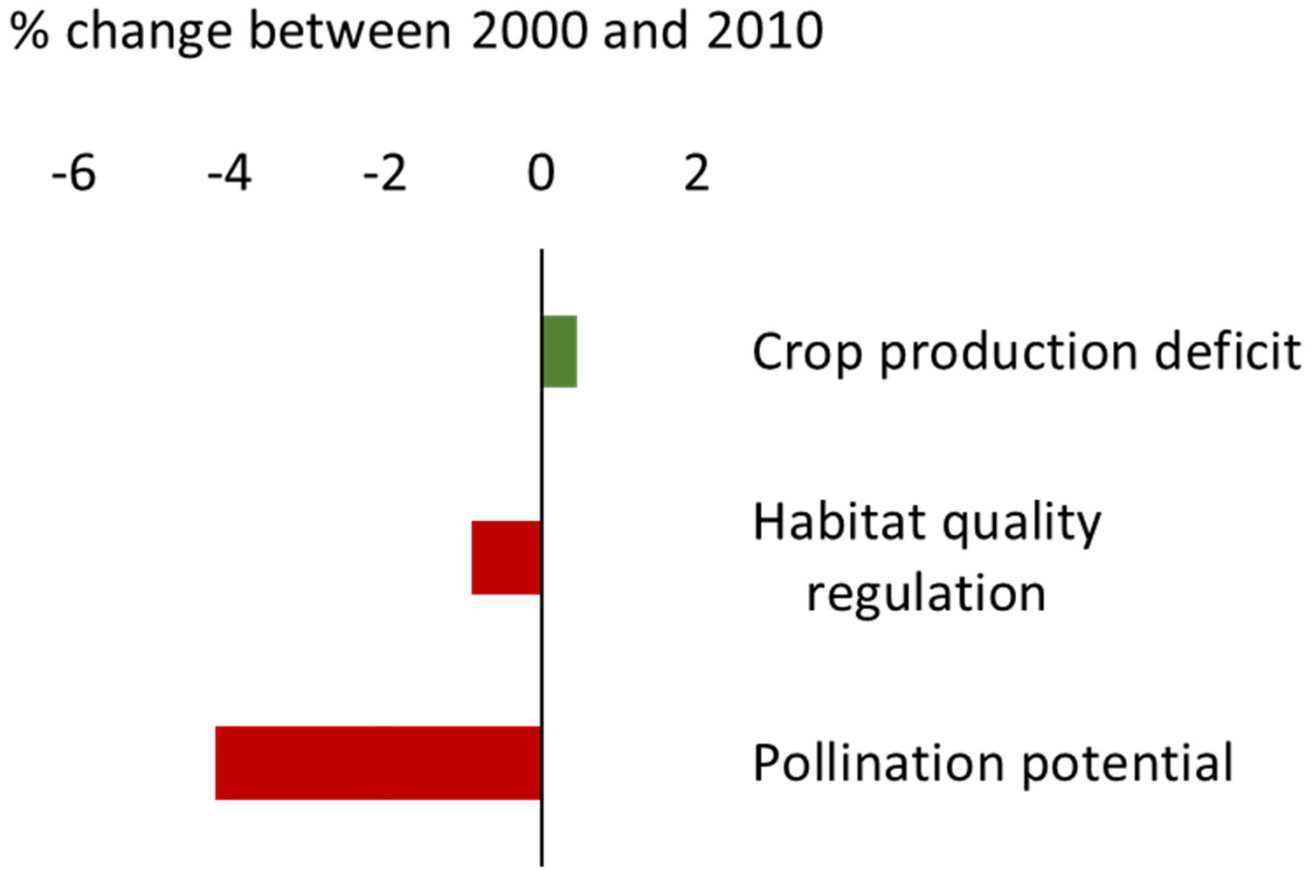


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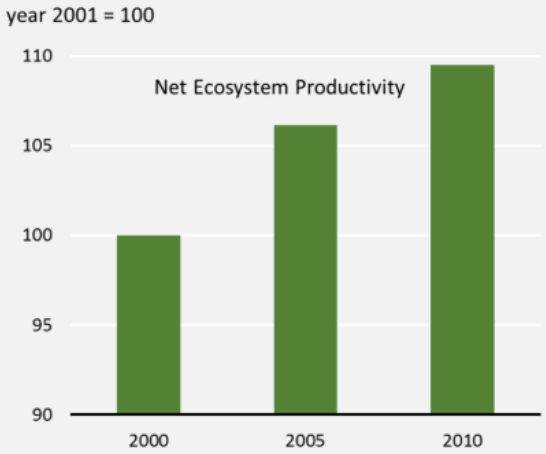
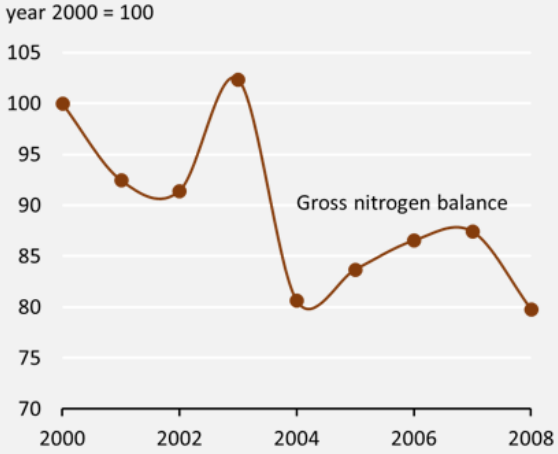
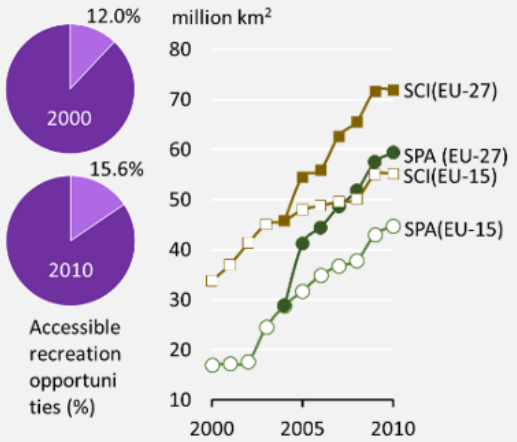
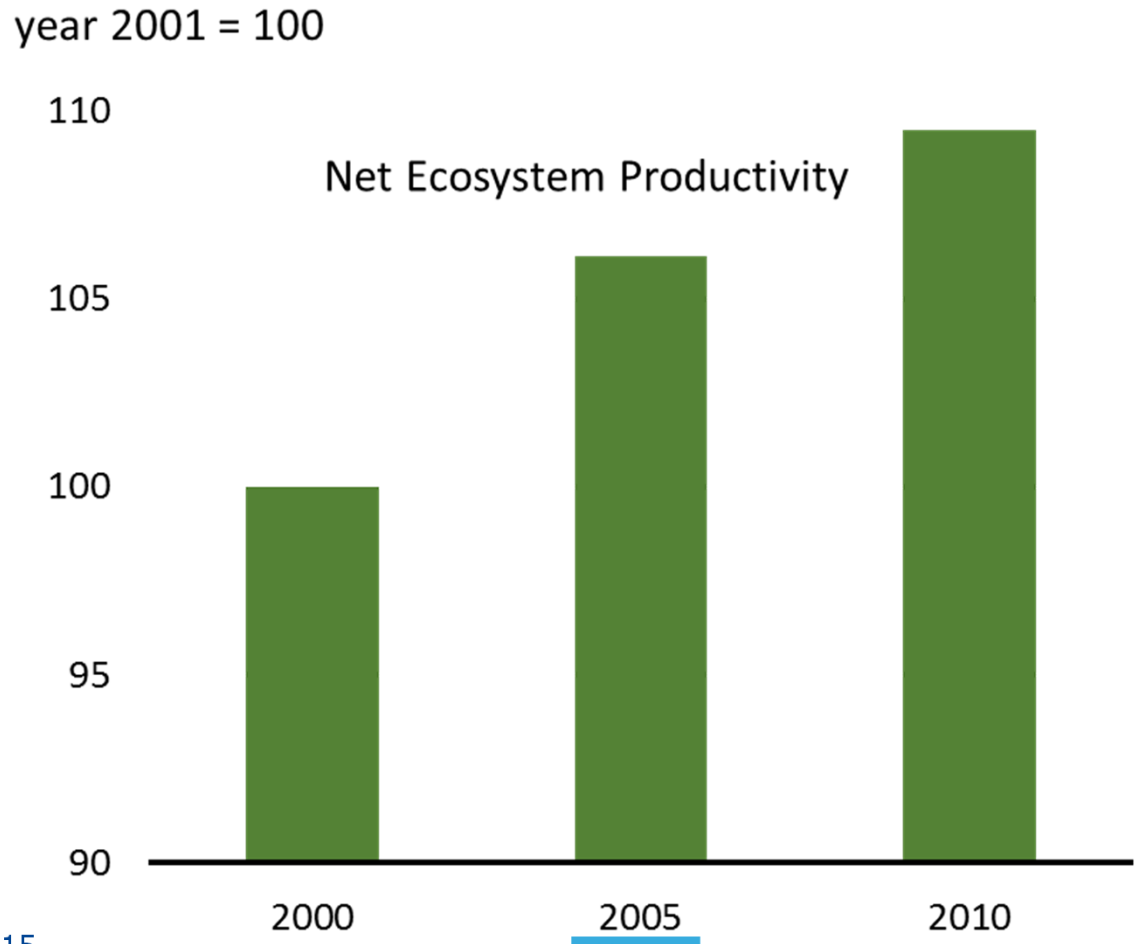
Table 8. Decadal change in ecosystem services per ecosystem.

	Indicator	Urban	Crop land	Grass land	Wood land and forest	Heath land and shrub	Bare land	Wet lands	Rivers and lakes
Provisioning	Harvested production		+7.7%						
	Agricultural Area		–1.9%						
	Total Organic Crop Area		+78.5%						
	Total timber Removal				+2.3%				
	Pollination Potential				–4.1%	–26.8%	–27.7%	–40.6%			
Regulating and maintenance	Water Retention		+0.4%	–0.04%	–0.1%	–0.2%	+0.05%		
	Erosion control		+0.2%	+0.2%	–0.1%	+1.6%			
	Soil retention		+17.8%	–8.3%	+9.6%	–4.0%			
	NO_2 Removal	+0.8%							
	Urban Green	+1.2%							
	Net ecosystem productivity		+9.2%	+9.2%	+9.6%	+10.3%	+11.0%	+10.3%	
	Crop production deficit		+0.5%						
	Habitat Quality	–0.9%							
Cultural	Recreation opportunity	+3.5							
	Special protection area	+87.7							
	Site of community importance	+63.4							

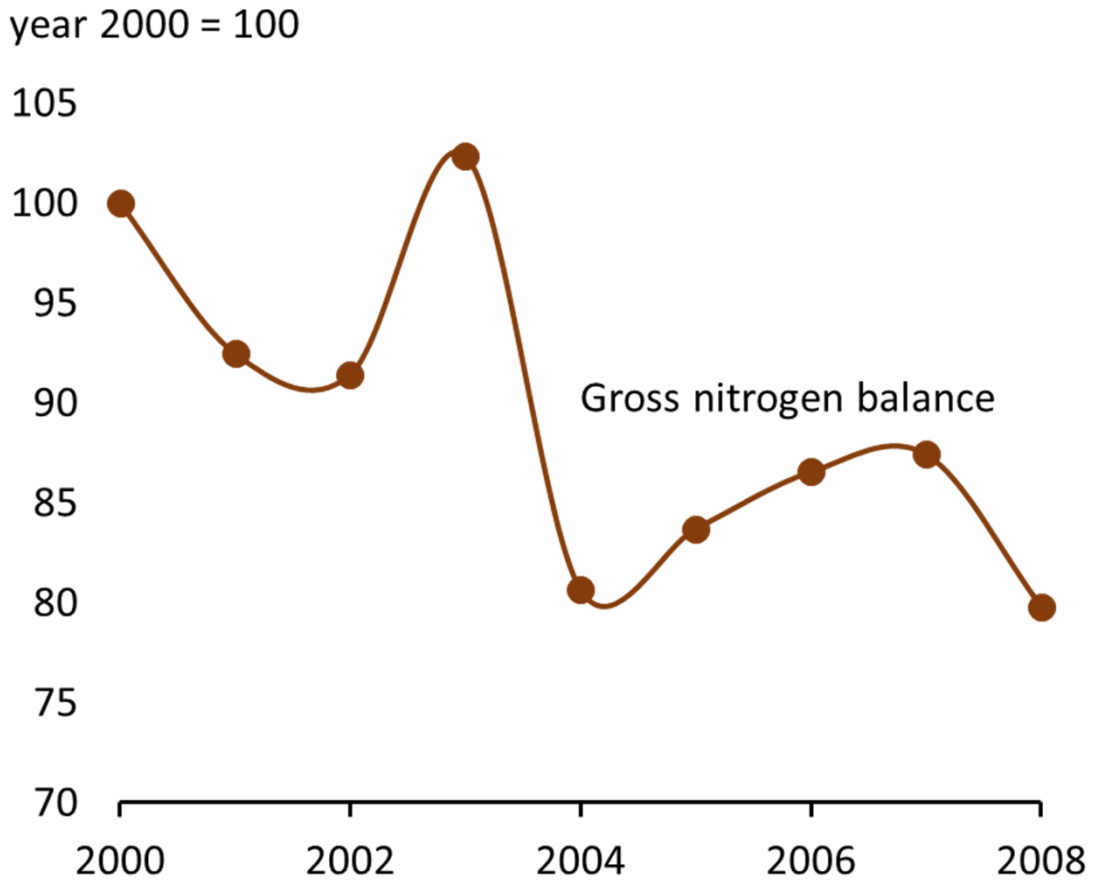
Trends in regulating and cultural services

Climate regulation	Soil formation and composition	Recreation
		
Net ecosystem productivity in the EU has increased with about 10%. Forest carbon potential increased with 1.7%.	All countries report a surplus in nitrogen on cropland (inputs exceed outputs) but the surplus is decreasing.	More high provision and easily accessible land for outdoor recreation value has become available for citizens. More area is protected in 2010 than in 2000.

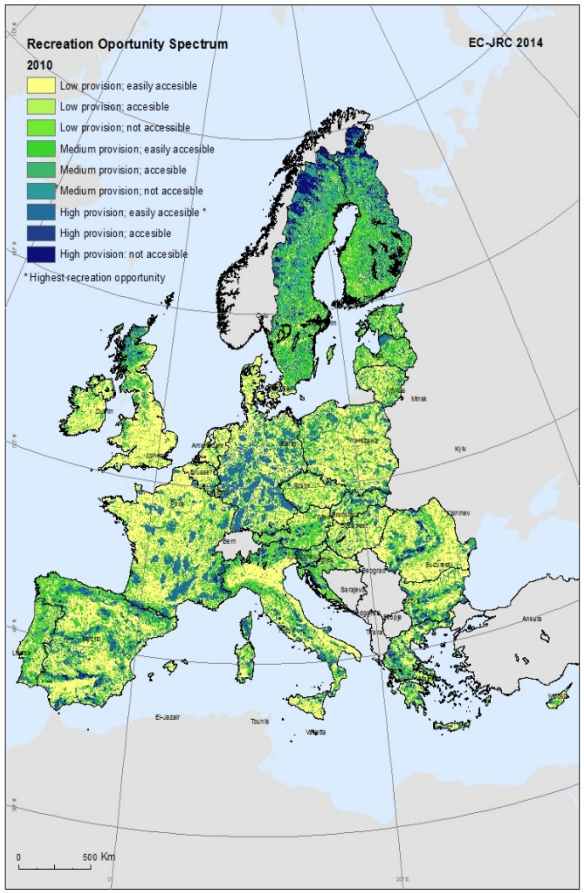
Trends in regulating services
Climate regulation

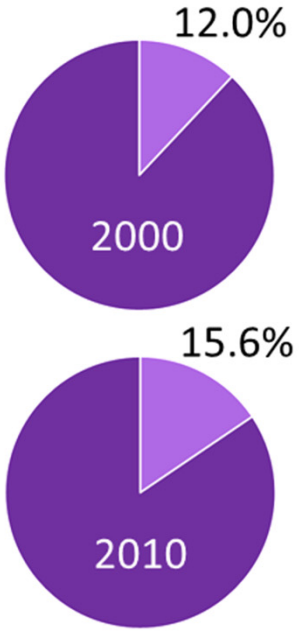


Trends in regulating services
Soil quality maintenance

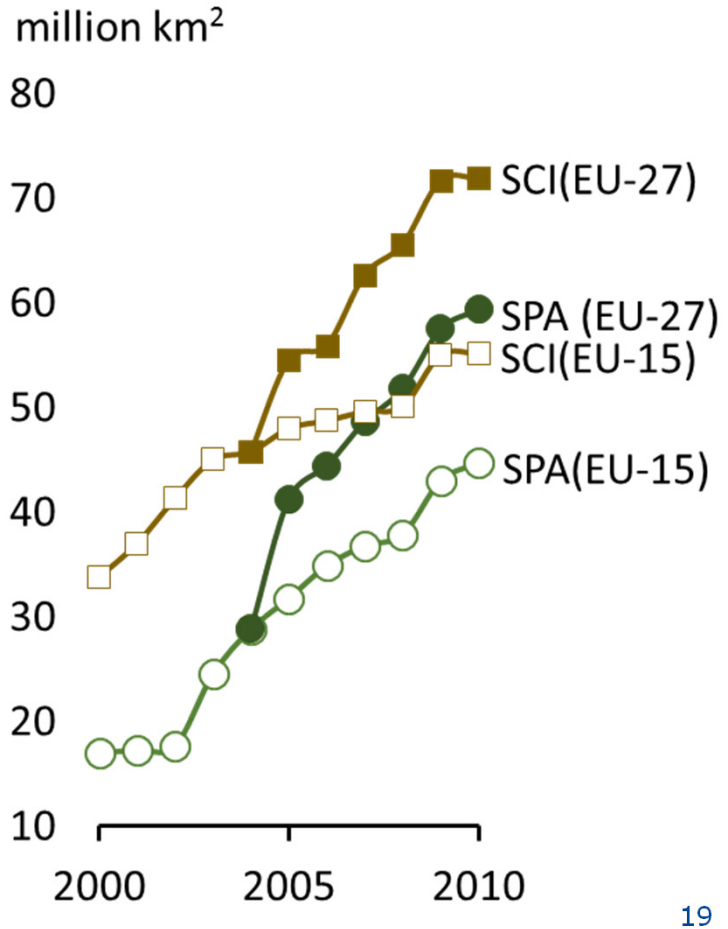


Trends in cultural services
Nature-based recreation

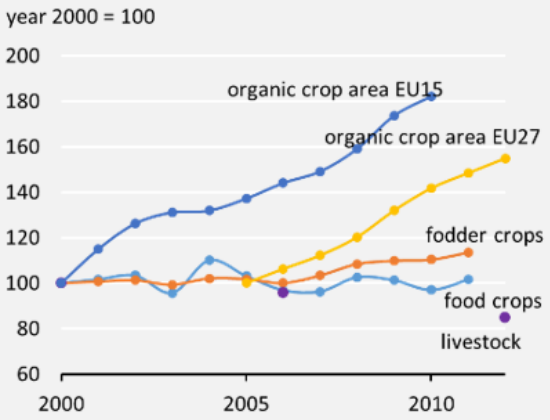
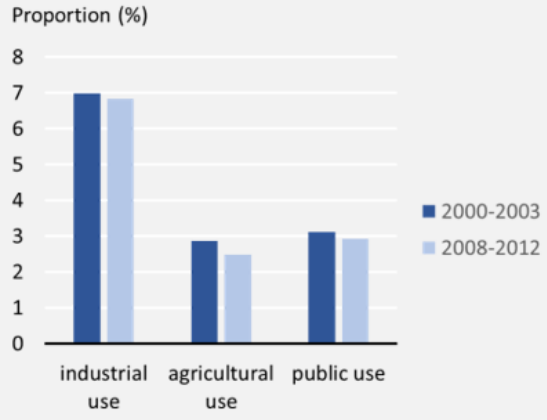
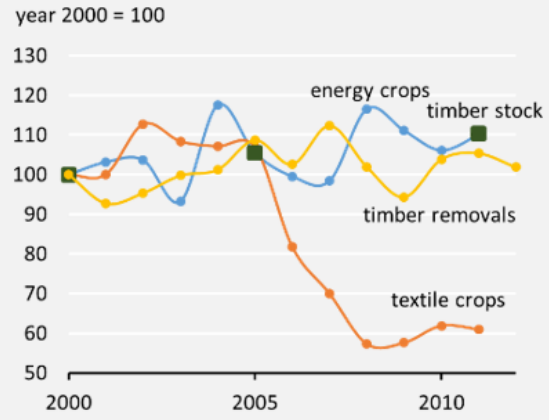




Accessible recreation opportunities (%)



Trends in provisioning services

Food and fodder	Water	Materials, timber and energy
		
Food and fodder crop production increased, even when agricultural area decreased. More organic food is grown. Numbers of livestock decreased.	The proportion of renewable water use decreased slightly in all sectors.	Afforestation in Europe resulted in increasing timber stocks and higher removals. Energy crops fluctuated while textile crops slashed.

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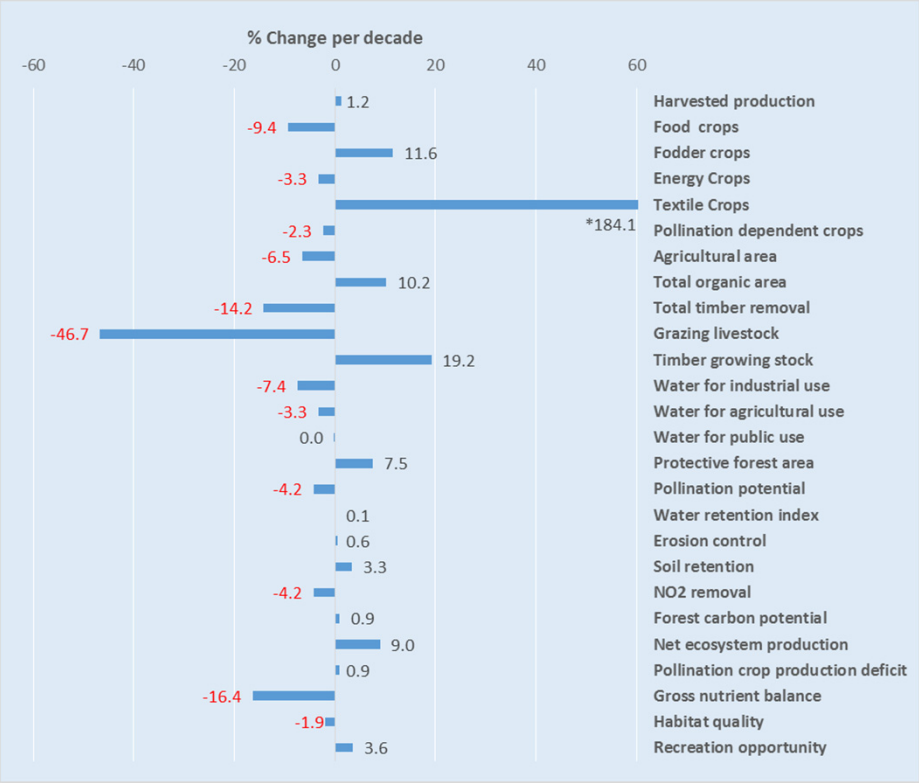
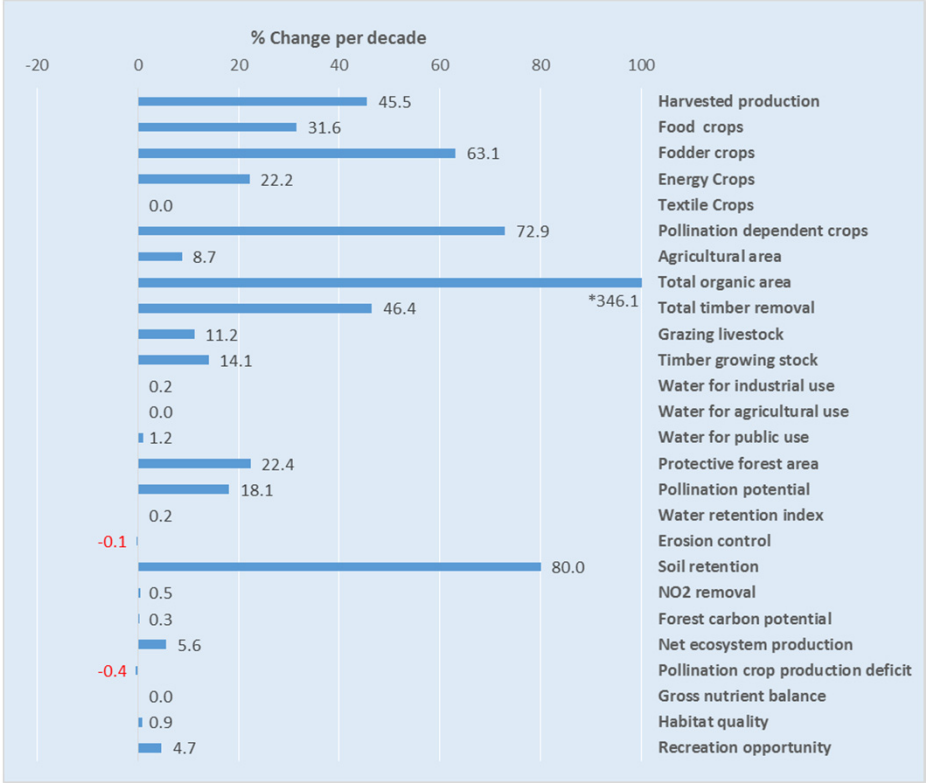
Italy



Croatia



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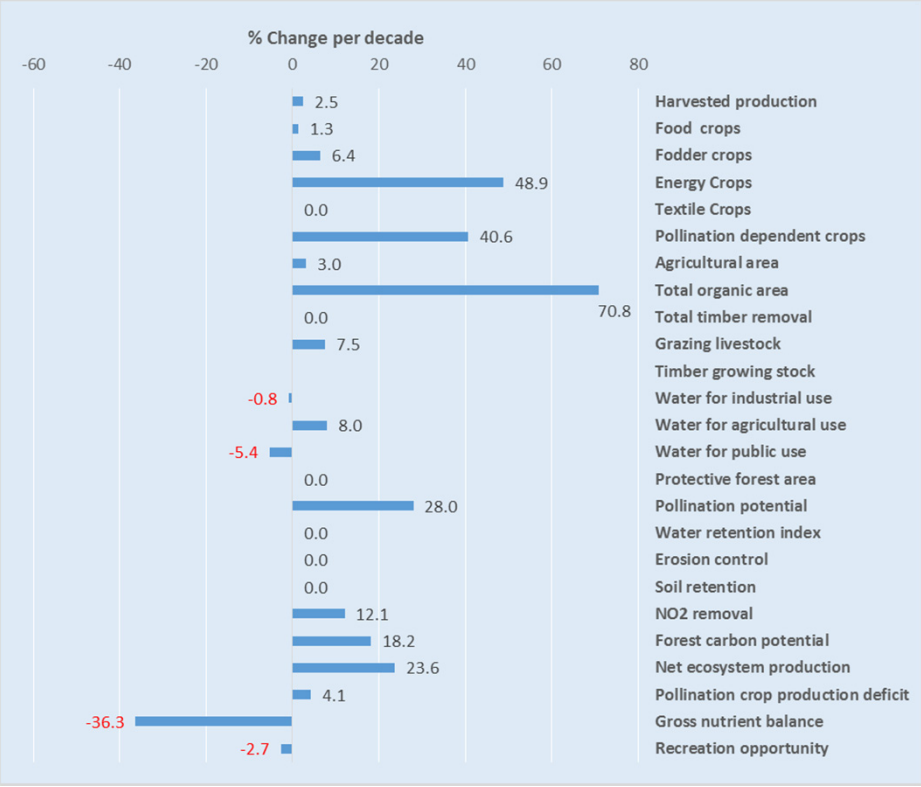
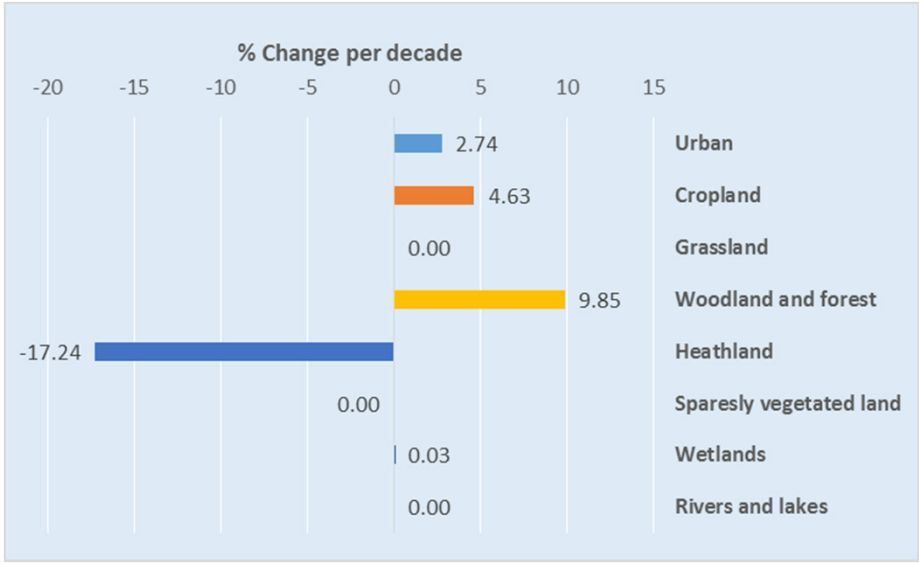
Malta



Malta



Joint Research Centre

Conclusions

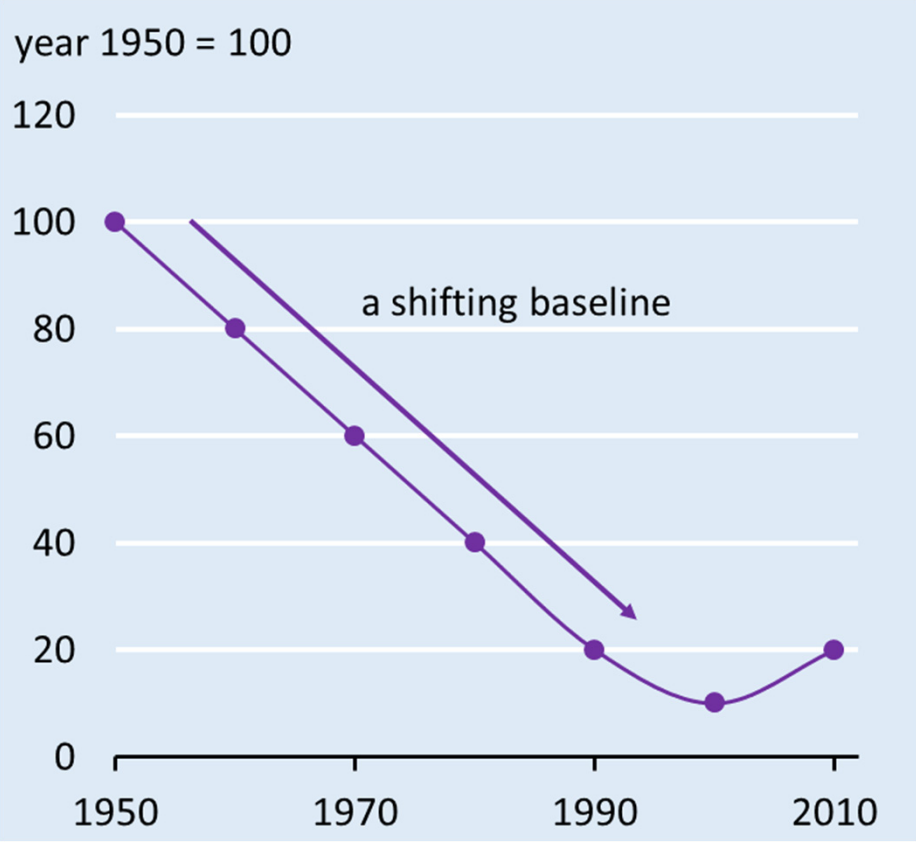
Positive trends in several ecosystem services, **negative trends** in two services which are related to biodiversity (loss of grassland and heathland).

What drives these trends? A complex interaction of changes in agricultural production, afforestation, higher ecosystem productivity and increased protection.

Maps and data are available for an in-depth analysis:

- Role of ecosystem capacity/condition/biodiversity to provide services

Shifting baselines

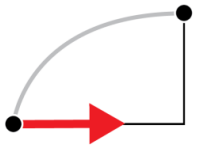


for ESMERALDA

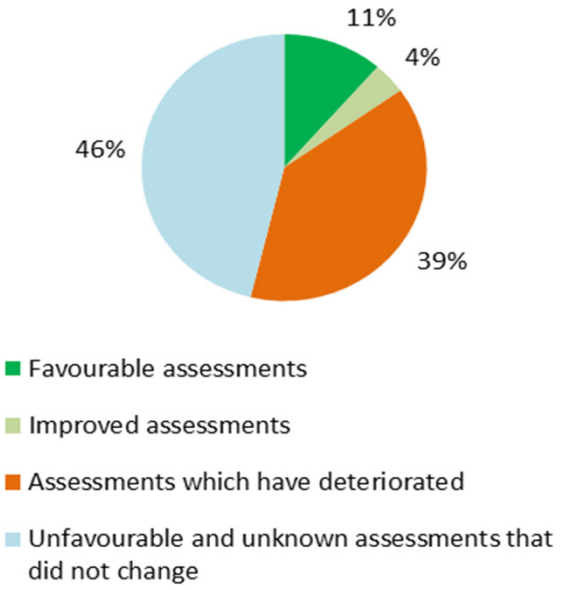
- Indicator based approach introduced bias
  - Provisioning services based on use, benefits
  - Regulating and cultural services based on potential, capacity, processes or functions
  - Do we map and assess ecosystem services as the contributions of ecosystems to wellbeing? See also Finnish framework

- The role of external factors in the step from mapping (spatially explicit quantification of ecosystems) to assessment (translation of this scientific evidence to an understandable form). Are the mappers and assessers the same people?

Target 3a



Increase the contribution of agriculture to maintaining and enhancing biodiversity

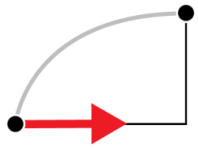


Changes (2007-2012 vs 2001-2006) in conservation status for habitats of Community interest associated with agricultural ecosystems (grassland and cropland)

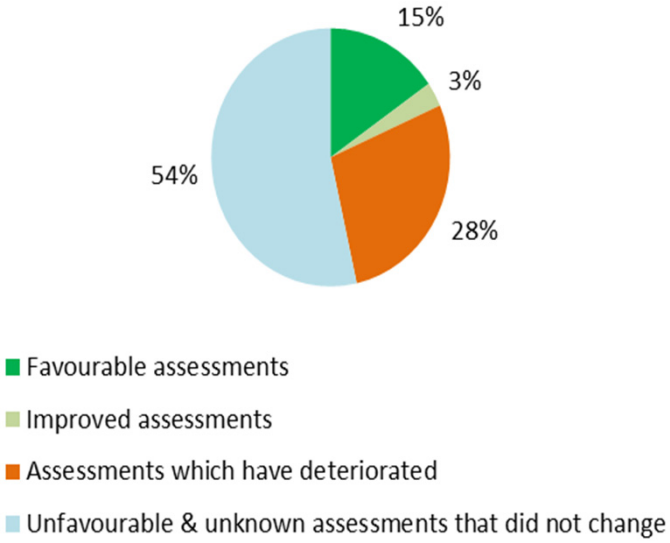
Source: EEA 2015

- Continuing decline in the status of species and habitats of EU interest associated with agriculture
- CAP reform 2014-2020 provides a range of instruments to support biodiversity. These opportunities need to be taken-up by Member States on a sufficient scale
- Local examples demonstrate success of sustainable agricultural practices. If implemented more broadly, they could put the EU back on track to achieve the target by 2020

Target 3b



Increase the contribution of forestry to maintaining and enhancing biodiversity



Change (2007-2012 vs 2001-2006) in conservation status for habitats of Community interest associated with woodland and forest ecosystem at EU-27 level

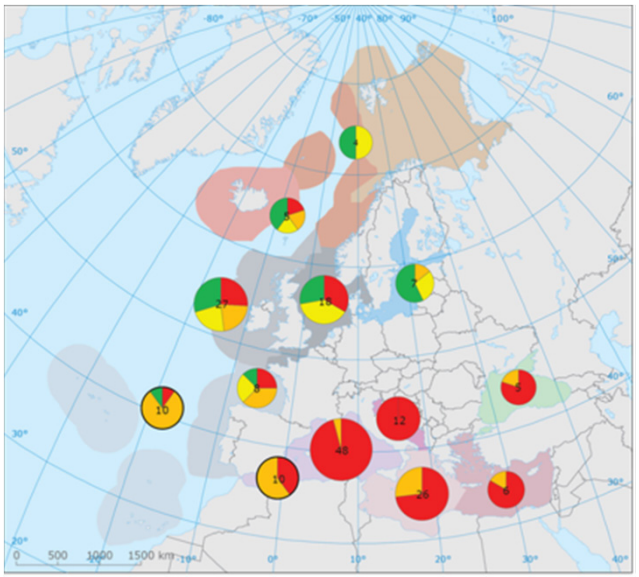
Source: EEA 2015

- EU forest area has increased since the 2010 Biodiversity Baseline
- No signs of improvement in the conservation status of forest habitats and species covered by EU nature legislation
- EU-level data on the status of forest habitats outside Natura 2000 limited
- Forest Management Plans or equivalent instruments can play an important positive role in achieving the target, but their potential remains largely unused

Target 4

European Commission

Ensure the sustainable use of fisheries resources and achieve Good Environmental Status



Marine environment still overexploited

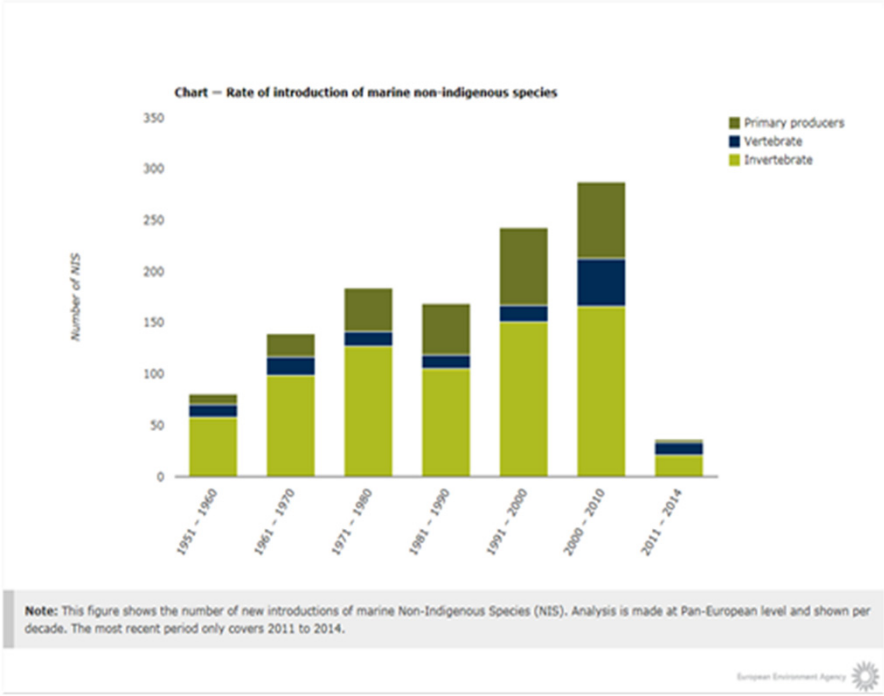
Assessed stock status

- Stocks with F & SSB in GES
- Stocks with SSB in GES
- Stocks with F in GES
- Stocks not in GES

- Significant progress in setting the policy framework for sustainable fisheries and GES
- Promoting improvements in Oceans Governance for more sustainable management of marine resources
- Uneven policy implementation across the EU; major challenges remain
- Just over 50% of MSY-assessed stocks fished sustainably in 2013
- As a result of multiple pressures, marine species and ecosystems continue declining across Europe's seas

Target 5

Help combat invasive alien species



Rate of introduction of marine non-indigenous species

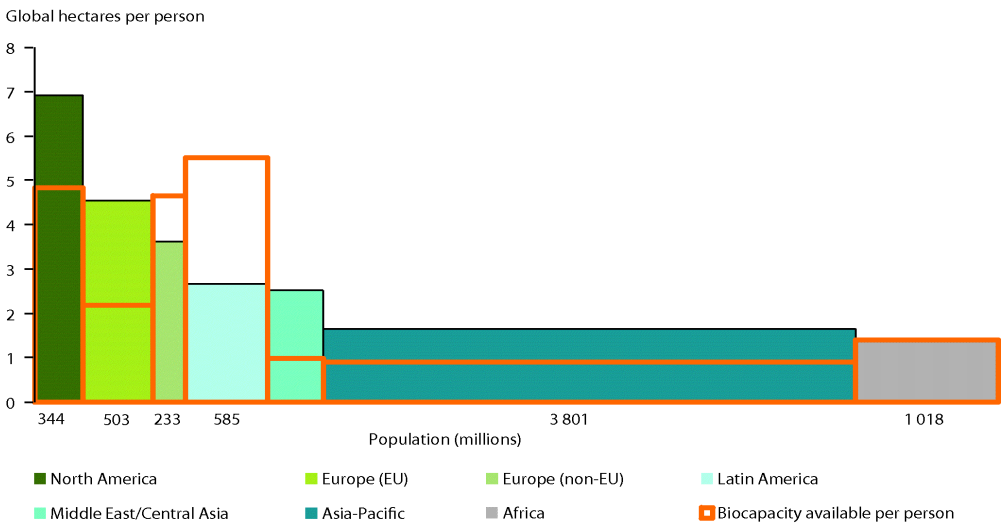
Source: EEA 2015

- Fast-growing threat to biodiversity
- IAS Regulation entered into force in 2015. Work is under way to propose the first list of IAS of Union concern (by end 2015)
- Next critical step will be implementation by Member States
- Ratification of the Ballast Water Convention, crucial for addressing marine IAS, is slow-going with only 7 MS ratifications

Target 6

Help avert global biodiversity loss

- EU remains by far the largest financial donor. Progress in increasing resources for global biodiversity
- Initial steps to reduce indirect drivers of global biodiversity loss.
- Insufficient progress in reducing the impacts of EU consumption patterns on global biodiversity
- On the current trajectory, existing efforts may not be sufficient to meet the Aichi Biodiversity Targets



Ecological footprint per region of the world

Source: EEA (SEBI)

Financing

- Biodiversity aspects integrated into key EU financing instruments
- LIFE, while limited in size, has considerable return on investment for nature and biodiversity
- Innovative financing set up (e.g. Natural Capital Financing Facility)
- Programming under ESIF reveals heterogenous picture across MS
- New processes for biodiversity proofing and for tracking biodiversity-related financing in the EU budget
- EU external instruments are enshrined in the B4Life flagship initiative launched in 2014

Partnership

- Cooperation enhanced through Natura 2000 Biogeographical Process
- Awareness raising through Natura 2000 Award scheme
- Engagement of private sector in EU Business and Biodiversity platform,
- Overseas partnership of (BEST)
- TEEB, and synergies with other conventions

Knowledge

- Streamlined reporting under the Nature Directives
- Towards more integrated assessment (MAES/IPBES)
- Development of indicator-based monitoring and reporting
- Facilitated access to information through BISE
- Support for research (FP6, FP7, Horizon 2020, ERA-Net, SPI) and innovation
- Still major knowledge gaps need to be filled (e.g. marine, ecosystem health, links to services, etc.)

Conclusions (1)

- Policy frameworks in place
- Progress under each target
- A wealth of positive experience to build on
- Timelag to see impact on biodiversity

Targets can only be reached if implementation and enforcement efforts become considerably bolder and more ambitious, and integration effective.

At the current rate of implementation, biodiversity loss will continue in the EU and globally, with significant implications for the capacity of ecosystems to meet human needs in the future.

Conclusions (2)

- Urgent to intensify implementation across all targets
- Strong partnerships and full engagement of key actors at all levels needed in order to:
  1. Complete and manage effectively Natura 2000
  2. Implement Invasive Alien Species Regulation
  3. Recognize natural capital throughout the EU
- Effective integration with a wide range of policies:
  - Coherent priorities and adequate funding
  - Agriculture and forestry
  - Marine and fisheries
  - Regional development.

Achieving biodiversity objectives can contribute to the growth and jobs agenda, food and water security and quality of life, as well as to the SDG implementation.

Action 5 and MAES

MAES work remains crucially important as the strategy is implemented at national scale.

ESMERALDA designed to give tailored support to Member States on mapping and assessment

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"*

*Action 5 is one of the keystones of the strategy providing a knowledge base for **Europe's biodiversity policy**.*

HALFWAY THERE?

MID-TERM ASSESSMENT
OF PROGRESS ON THE EU 2020
BIODIVERSITY STRATEGY MAY 2015

BirdLife

ACTION 5 **IMPROVE KNOWLEDGE OF ECOSYSTEMS AND THEIR SERVICES IN THE EU**

PROGRESS ASSESSMENT

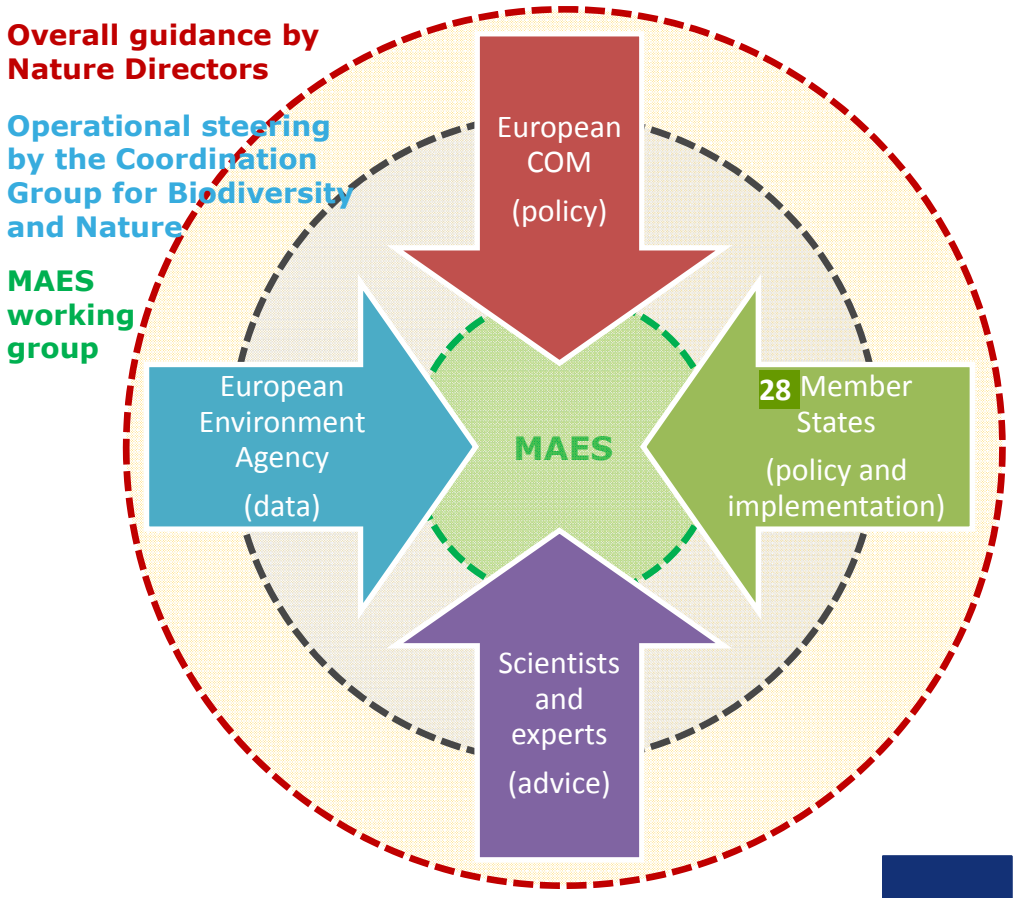
Member States, with the assistance of the Commission, will map and assess the state of ecosystems and their services in their national territory by 2014, assess the economic value of such services, and promote the integration of these values into accounting and reporting systems at EU and national level by 2020.

ACTION 6 **SET PRIORITIES TO RESTORE AND PROMOTE THE USE OF GREEN INFRASTRUCTURE**

6A By 2014, Member States, with the assistance of the Commission, will develop a strategic framework to set priorities for ecosystem restoration at sub-national, national and EU level.

6B The Commission will develop a Green Infrastructure Strategy by 2012 to promote the deployment of green infrastructure in the EU in urban and rural areas, including through incentives to encourage up-front investments in green infrastructure projects and the maintenance of ecosystem services, for example through better targeted use of EU funding streams and Public Private Partnerships.

Working group MAES on Mapping and Assessment of Ecosystems and their Services

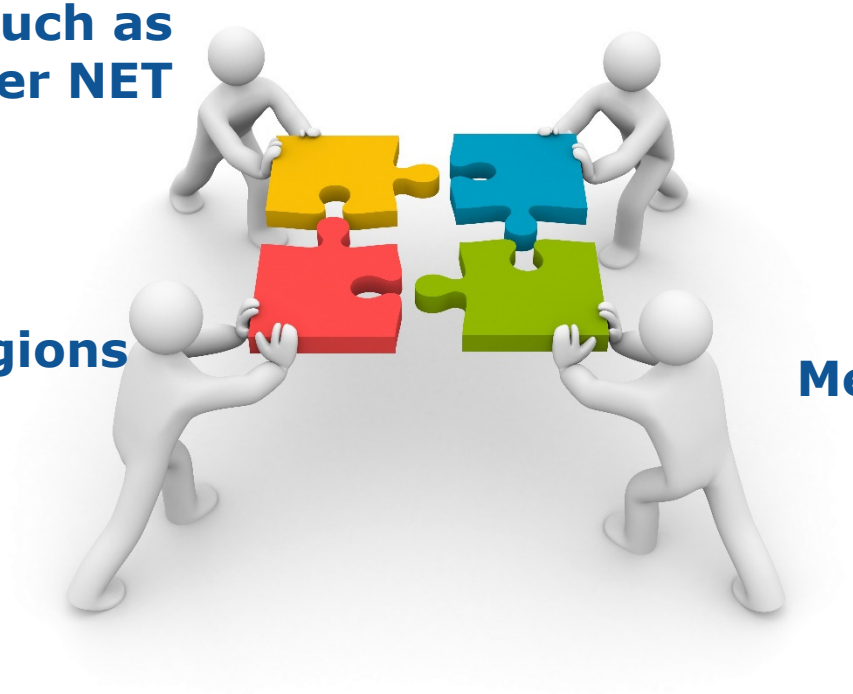


- *Oversees implementation of Action 5*
- *Provides guidance to the EU Member States in technical issues (mapping) but also in mainstreaming ES into sectoral policies*
- *EU input to ipBes assessments*

The MAES approach: building communities of practice

Framework projects
Research institutes
Networks such as ESP or Alter NET

EU, European Commission, European Environment Agency



Cities and regions
Stakeholders

Member States

MAES working group

- Conceptual model linking biodiversity to human well-being
- Typologies for ecosystems and ecosystem services (CICES 4.3)
- Common Assessment Framework
- Thematic and cross-cutting pilots

EU institutions

- **EEA**: Ecosystem map, Ecosystem condition mapping and assessment, BISE
- **JRC**: Mapping ecosystem services
- **ENV**:Guidance and training
- **RTD**: Horizon 2020

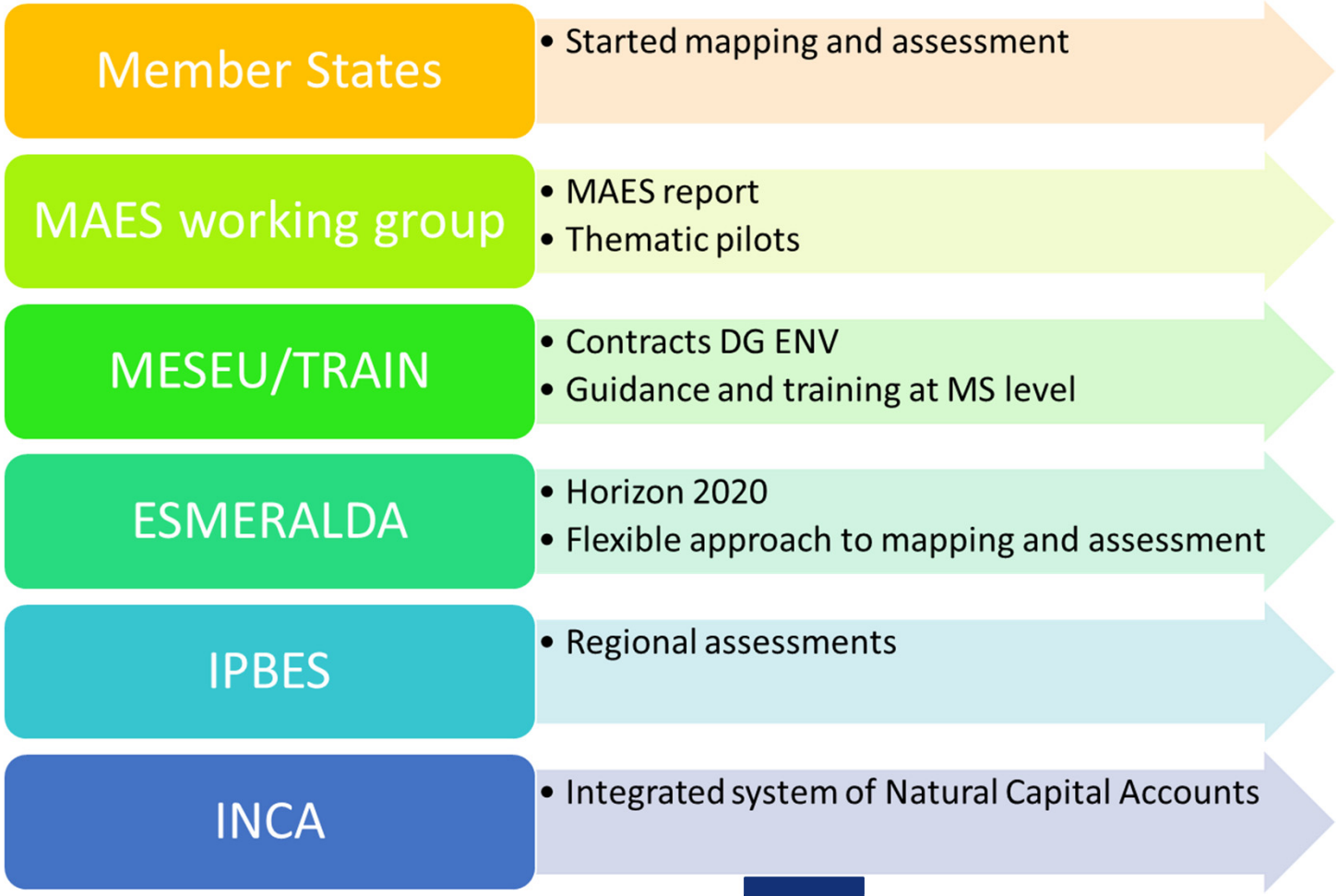
Member States (MS)

- MAES started in almost all MS.
- Some MS have completed a national scale mapping
- Many MS have regional case studies

Science Policy Interface

- **ESMERALDA**: A dedicated coordination and support action
- FP7 projects OpenNESS, OPERAs, MARS
- Ecosystem Services Partnership, ALTER-net
- IPBES

MAES working streams



Expectations from the Commission

Dedicated and high-quality scientific support to the MAES initiative by

- *Building communities of practice (ESP), networking and bringing the relevant actors together at national scale (**WP2**)*
- *Helping prepare the MAES working group for the post 2015 period with increased focus on how maps can be used for valuation and NCA (**WP3**)*
- *Helping set up a methodology for integrated assessment based on different reporting streams and state of the art research (**WP4**)*
- *Facilitating ES mapping at national scale (workshops will be critically important) (**WP3**, **WP5**)*
- *Using your position to liaise between your country and ESMERALDA (**WP6**)*

Next events

MAES delivery workshop: 15-16 December 2015, Brussels (with BEES Christmas market and IPBES morning session)

MAES enlargement workshop, 26-28 January 2016, Ispra (only for non-EU countries)

Thank you for your attention!

More information on Europa
http://ec.europa.eu/environment/nature/index_en.htm

BISE
http://biodiversity.europa.eu/