

# INTEGRATING ENVIRONMENTAL AND ECONOMIC ACCOUNTING TO SUPPORT DECISION MAKING PROCESSES IN EUROPE

Alessandra La Notte

Joint Research Centre of the European Commission



**A NEW BEGINNING  
FOR PEOPLE AND NATURE**

**#EUGreenWeek**

19–22 OCTOBER 2020





# INTEGRATED ACCOUNTING FOR DECISION MAKING

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**Objective:** to develop a system of natural capital accounting for Europe, consistent with System of integrated Environmental and Economic Accounts – Experimental Ecosystem Accounts (SEEA EEA by UNSD)

**Eurostat:**

Coordination of INCA, data provider, SEEA EEA alignment/ testing

**European Environment Agency:**

Developing shared data platform and ecosystem extent and condition accounts, data provider

## INCA partners

**DG Environment:**

Provides policy context, manages MAES, principal user of INCA outputs

**EC Joint Research Centre:**

expertise in modelling ecosystem services, developing ecosystem services accounts

**DG Research and Innovation:**

Coordination between INCA and EU research activities

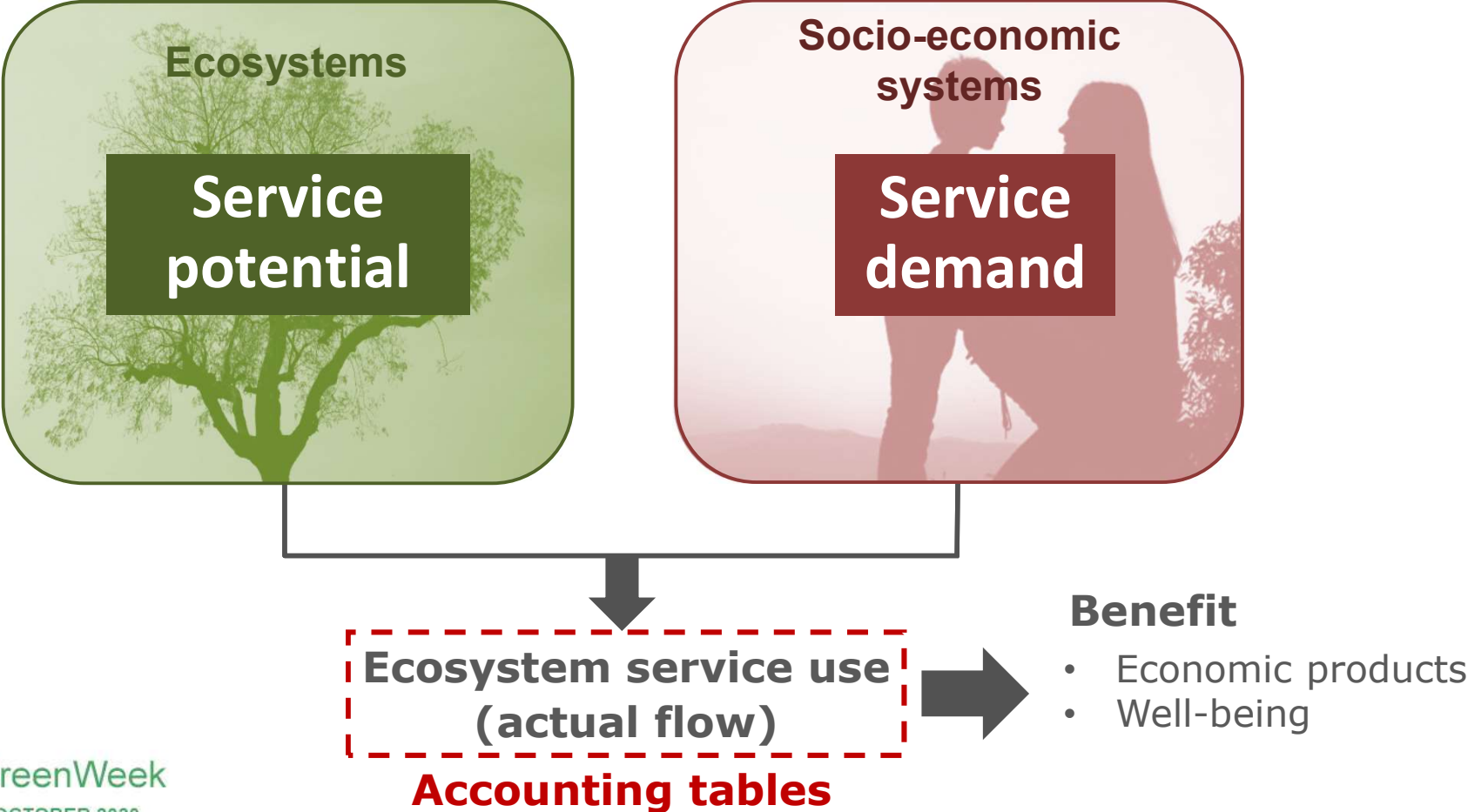
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How to use the accounts:

- no further processing -> descriptive analysis  
(e.g. nature-based recreation)
- moderate processing -> indicators and scoreboards  
(e.g. crop provision)
- intensive processing -> integration with economic modelling
  - multiregional input-output analysis (e.g. water purification)
  - computable general equilibrium models (e.g. pollination)

Other applications:

- integration into the EU taxonomy for sustainable finance  
(e.g. flood control)



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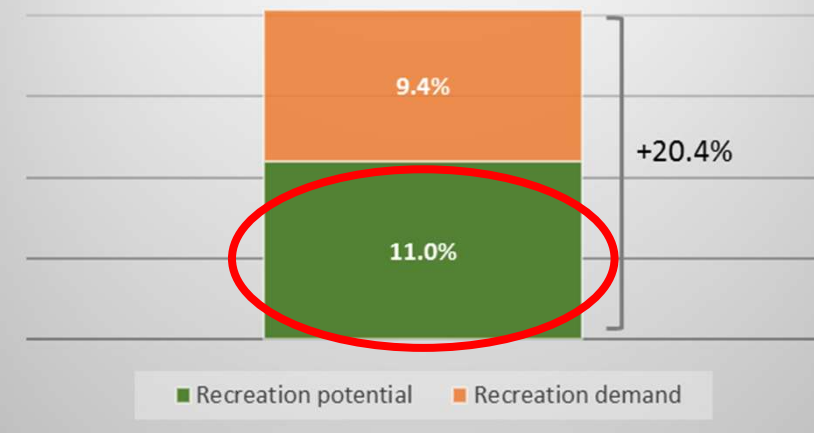
no further processing: descriptive analysis (example -> nature-based recreation)

**What is the value of the ecosystem  
service in the EU?**

~ 50 billion euro (2012)

**How did it change over time?**

Changes in the use of nature-based recreation  
(2000-2012)



Annual change +1.7%

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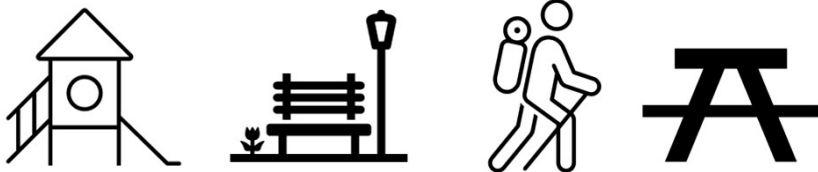
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no further processing: descriptive analysis (example -> nature-based recreation)

## How can it be enhanced?

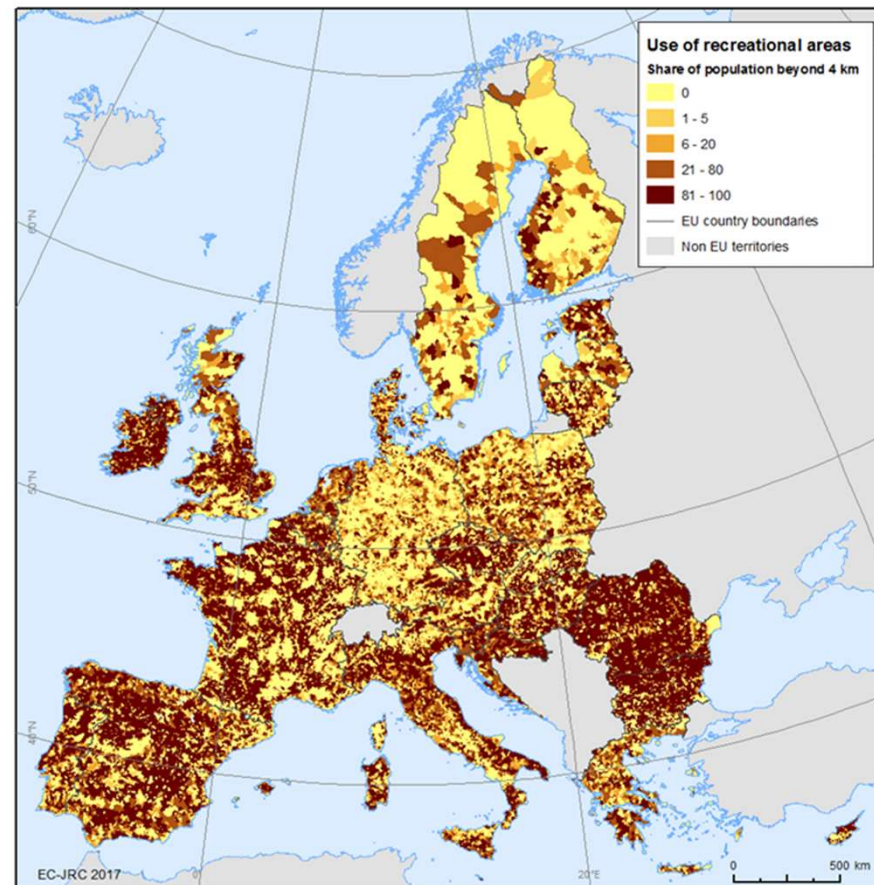
‘Green planning’ peri-urban areas



41% of the population in 2012 cannot enjoy nature-based recreation on a daily basis

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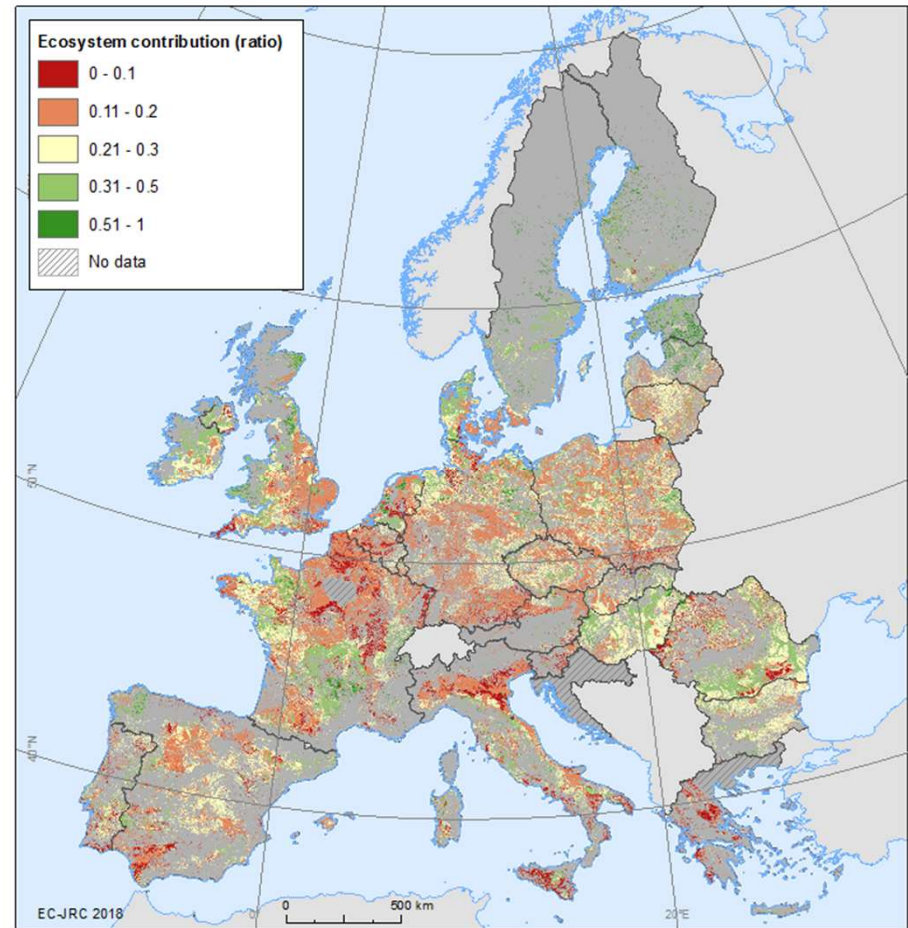
moderate processing: indicators and scoreboards (example -> crop provision)

## How to assess sustainability in agricultural production?

Selected products*	Ecosystem Types EC		Type of economic unit*		Flows from the rest of the world		Food Availability	
	Cropland E (t)	Other	Supply	Use	Imports (t)	Exports (t)	Food (t)	Food supply (Kcal/capita/day)
			Agricultural Industry (SIC A 01)	Crop processed (t)				
Wheat								
Barley								
Oats								
Maize (corn)								
Potatoes								
Sugar beet								
Rapeseed or colza seed								
Sunflower seed								

Natural Capital  
Input component
Market component
Nutrition component

**ECOSYSTEM**
**ECONOMY**
**SOCIETY**







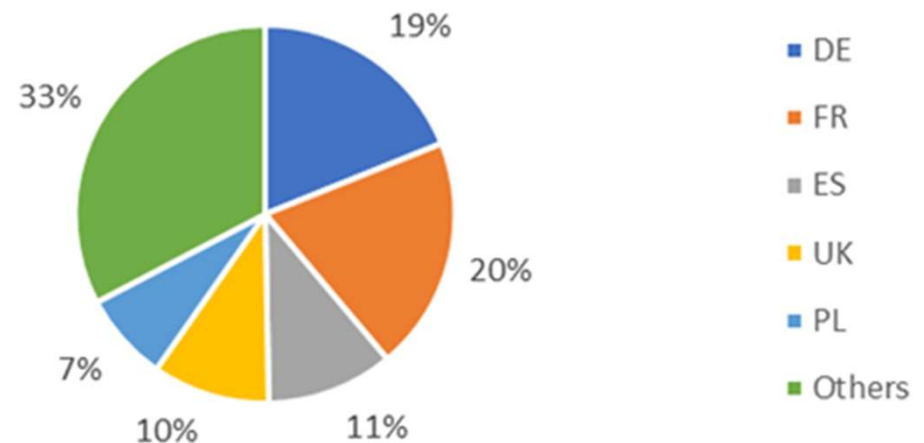
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moderate processing: indicators and scoreboards (example -> crop provision)

## How to assess sustainability in agricultural production?

	Mkt Indicator	Food Indicator	EcoCon Indicator
Austria	14.37	2.20	43.94
Belgium	5.20	1.54	12.63
Bulgaria	83.35	4.82	34.10
Czechia	53.33	1.54	47.52
Germany	22.94	2.20	31.12
Denmark	43.53	1.00	55.27
Estonia	81.18	26.48	90.76
Greece	16.29	2.85	1.00
Spain	27.29	1.17	28.73
Finland	28.20	22.54	54.97
France	10.70	4.82	22.77



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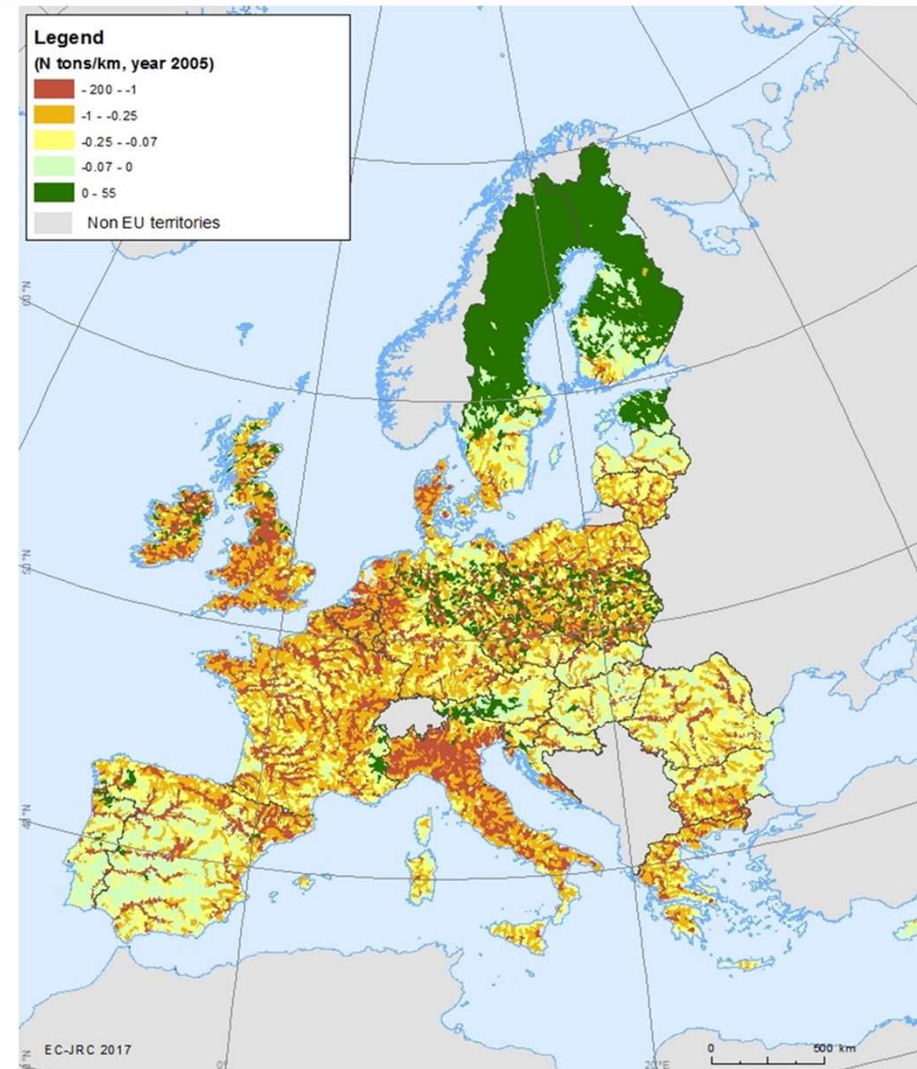
intensive processing: economic modelling  
(example -> water purification)

## Drivers of ecosystem degradation: production

from production accounts to  
consumption-based accounts:  
multi-regional input-output analysis

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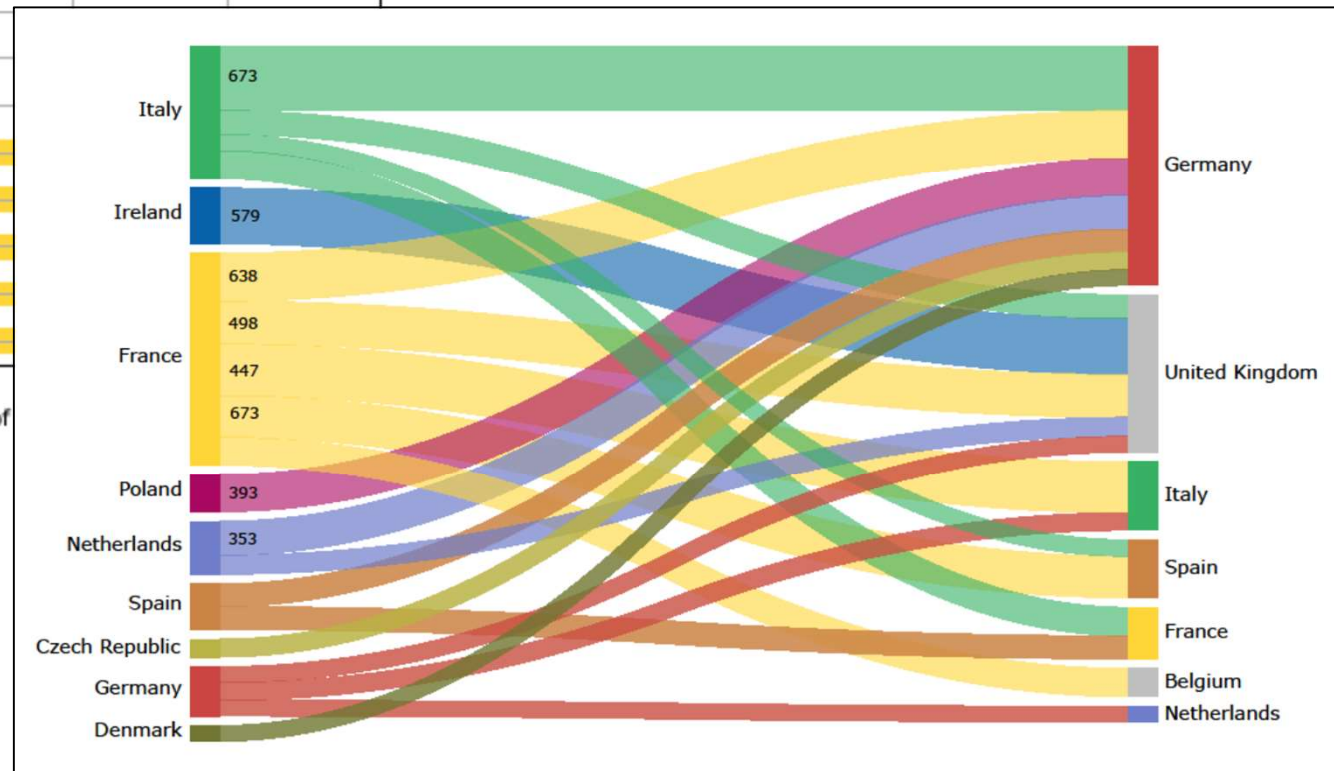
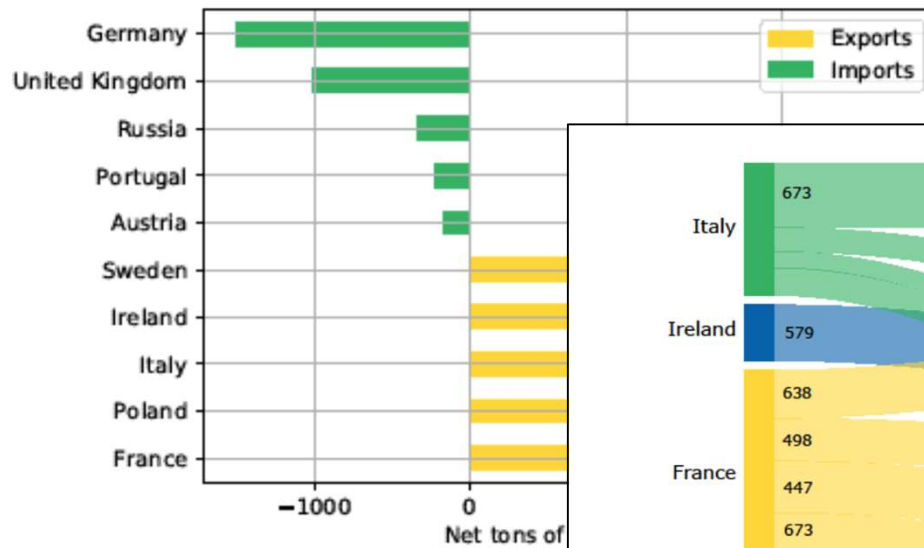


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intensive processing: economic modelling (example -> water purification)

## Drivers of ecosystem degradation: consumption



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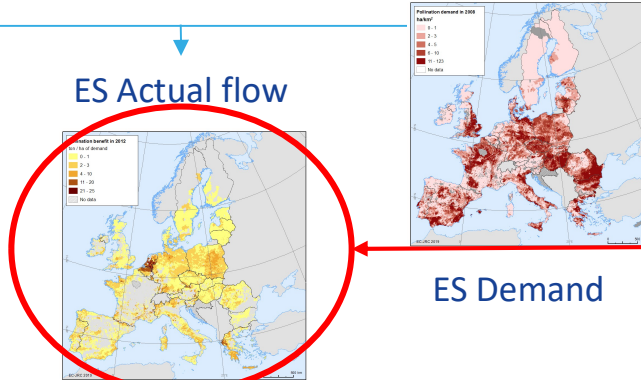
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intensive processing: economic modelling (example -> pollination)



ES Potential

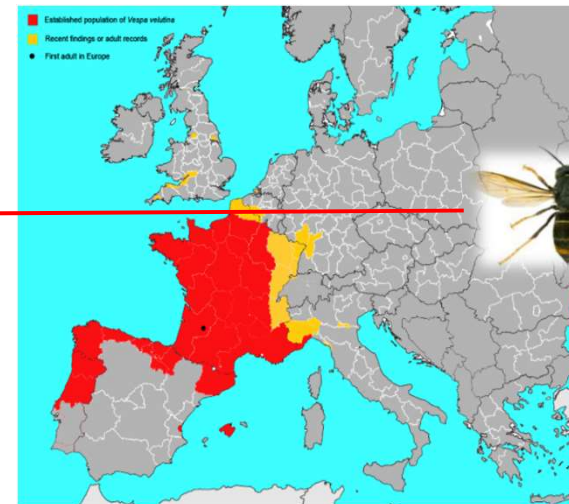


ES Actual flow

ES Demand

SNA benefits

Non-SNA benefits



	Type of economic unit											Type of ecosystem unit			
	Agriculture														
	Apple/pear and peaches	Other fruits	Citrus	Protein crops	Oilseeds	Rape and rapeseeds	Soya	Sunflower	Vegetables	Tomatoes	Other	Green urban areas	Cropland	Grassland	Other
EU 28, mln euro															
Supply table															
crop pollination															
2000												2,668			
2006												3,130			
2012												4,357			
SNA met demand															
2000	588	1,941	1,142	673	148	1,845	6	348	191	2,696					
2006	682	2,343	1,217	436	106	2,124	5	430	155	2,932					
2012	712	2,946	1,240	466	170	4,323	6	807	110	3,221					
SNA unmet demand															
2000	703	2,045	1,795	548	60	1,374	414	1,399	1,350	2,376					
2006	761	2,313	1,960	425	28	1,397	201	1,057	972	2,845					
2012	823	2,604	2,115	426	46	2,815	253	2,249	812	2,721					
Use table															
crop pollination															
2000	667	1,037	58	35	30	575	20	97	10	139					
2006	797	1,267	62	23	22	663	20	118	8	151					
2012	833	1,626	63	24	30	1,348	32	229	6	166					

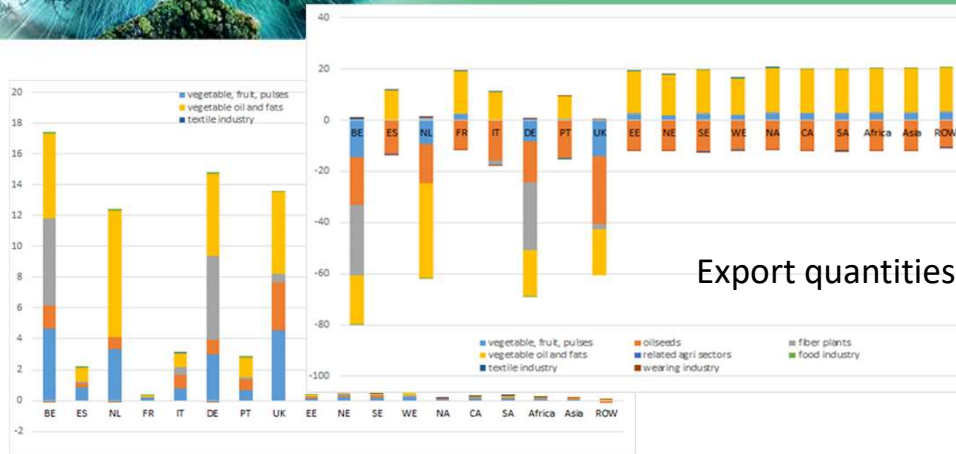
What are the economic impact of ecosystem degradation (e.g. invasive alien species)?



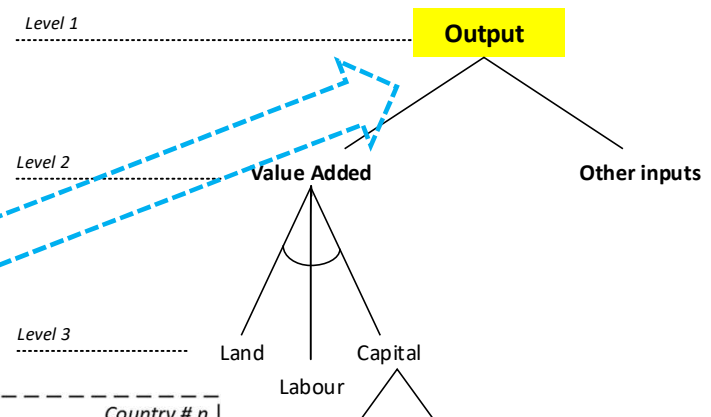


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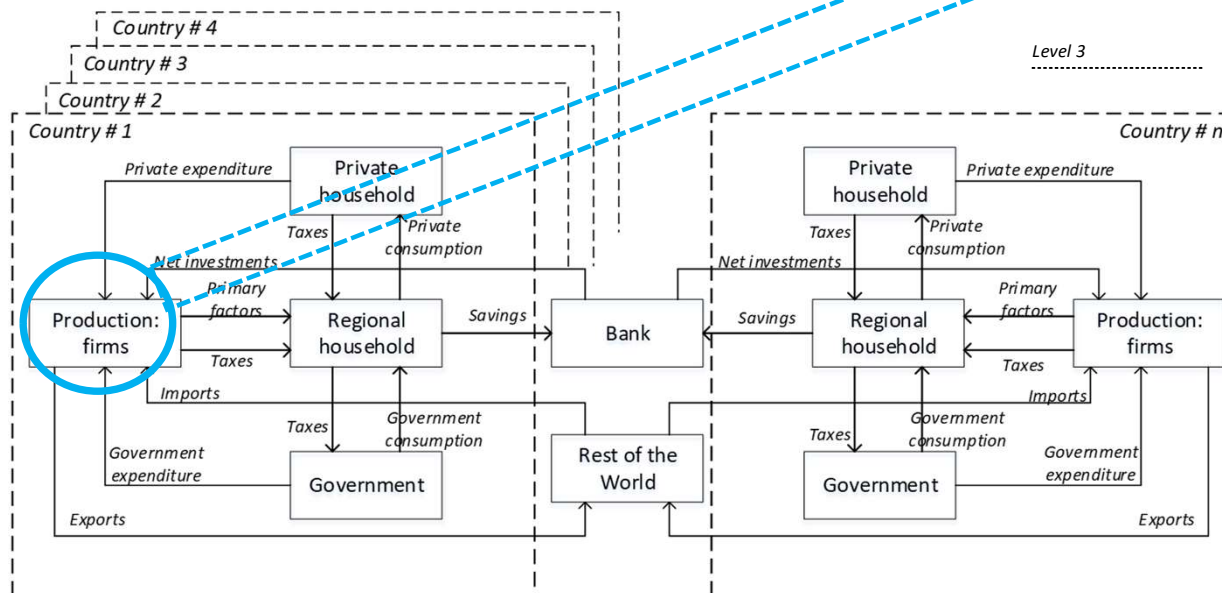
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intensive processing: economic modelling (example -> pollination)



Production structure





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linkage to taxonomy: prove environmental sustainability and justify the reduction of risk (example -> flood control)

## How to assess an investment?

supply table

Ecosystem units	
	urban
	cropland
	grassland
	forest & woodland
	heathland & shrub
	sparse vegetation
	wetland
	rivers and lakes
	shelf and open ocean
ECOSYSTEM SERVICES	

use table

Economic units	
	agriculture
	forestry
	fisheries
	mining and quarrying
	manufacturing
	construction
	transportation and accommodation and food services
	electricity, gas supply
	water collection, treatment, supply
	other industries
	households
	global society
ECOSYSTEM SERVICES	

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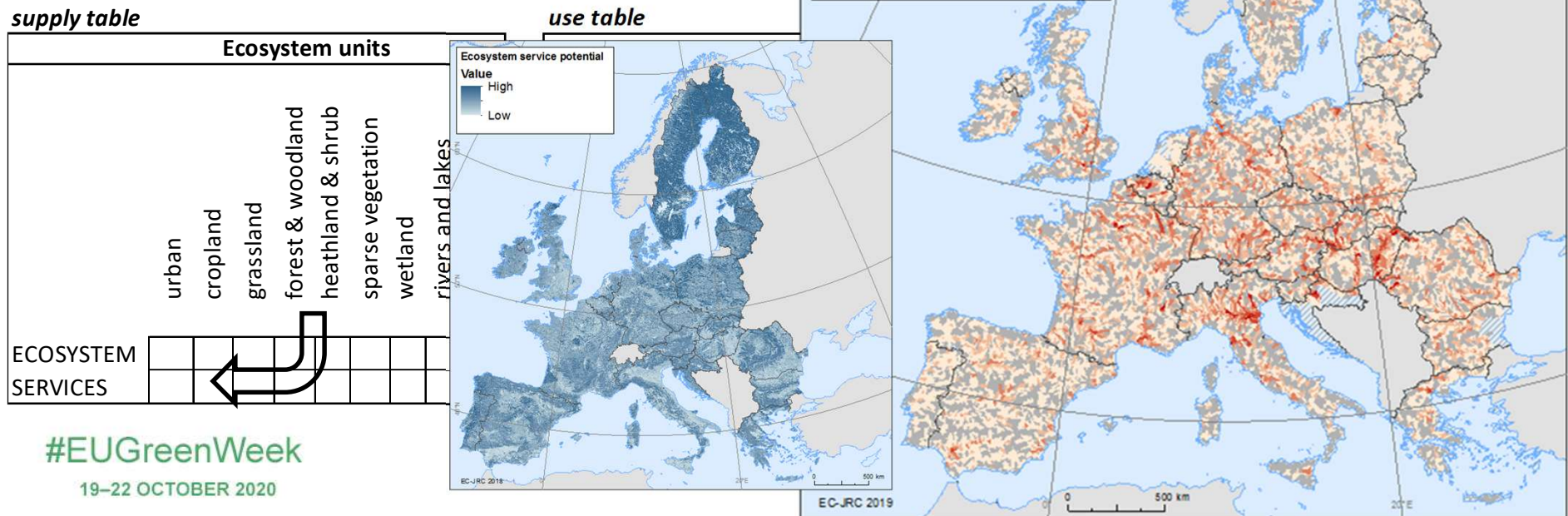


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## How to assess an investment?





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JRC TECHNICAL REPORTS

## Implementing an EU system of accounting for ecosystems and their services

Initial proposals for the implementation of ecosystem services accounts

Report under p  
of natural capit



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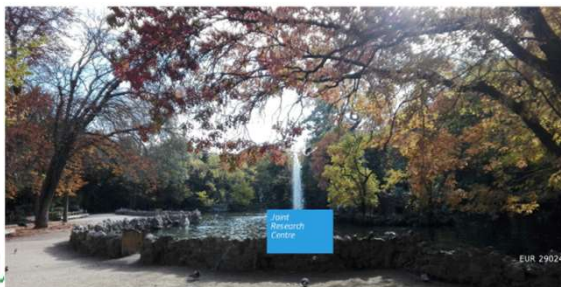
## Ecosystem services accounting

Part I Outdoor recreation and crop pollination

*KIP INCA Report - contribution to the Knowledge and Innovation Project on an Integrated system of Natural Capital and ecosystem services Accounting in the EU*

Sara Vallecillo, Alessandra La Notte, Chiara Polce, Grazia Zuiliani, Nikos Alexandris, Silvia Ferrini and Joachim Maes

2018



#EU

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JRC TECHNICAL REPORTS

## Ecosystem services accounting

Part II Pilot accounts for crop and timber provision, global climate regulation and flood control

*KIP INCA Report - contribution to the Knowledge and Innovation Project on an Integrated system of Natural Capital and ecosystem services Accounting in the EU*

Vallecillo, S.; La Notte, A.; Kakoulaki, G.; Kamberaj, J.; Robert, N.; Dottori, F.; Feyen, L.; Rega, C.; Maes, J.

2019



JRC TECHNICAL REPORT

## Linking accounts for ecosystem Services and Benefits to the Economy THrough bridging (LISBETH)

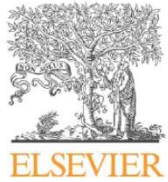
*Natural Capital Accounts and economic models: interaction and applications*

Alessandra La Notte, Alexandra Marques, Domenico Pisani, Silvia Carilli, Sara Vallecillo, Chiara Polce, Ana Cristina Cardoso, Eugenio Gervasini, Joachim Maes

2020







Contents lists available at [ScienceDirect](#)

## Ecosystem Services

journal homepage: [www.elsevier.com/locate/ecoser](http://www.elsevier.com/locate/ecoser)



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### Beyond the economic boundaries to account for ecosystem services

Alessandra La Notte\*, Sara Vallecillo, Alexandra Marques, Joachim Maes

European Commission, Joint Research Centre (JRC), Dire



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## Environmental Impact Assessment Review

journal homepage: [www.elsevier.com/locate/eiar](http://www.elsevier.com/locate/eiar)



ECOSYSTEM HEALTH AND SUSTAINABILITY  
<https://doi.org/10.1080/20964129.2019.1634979>

RESEARCH ARTICLE

### The theoretical frameworks behind integrated environmental, ecosystem, and economic accounting systems and their classifications

Alessandra La Notte<sup>a,\*</sup>, Charles Rhodes<sup>b</sup>



### Adjusted macroeconomic indicators to account for ecosystem degradation: an illustrative example

Alessandra La Notte and Alexandra Marques

European Commission, Joint Research Centre (



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## Ecosystem Services

journal homepage: [www.elsevier.com/locate/ecoser](http://www.elsevier.com/locate/ecoser)



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### How ecosystem services are changing: an accounting application at the EU level

Sara Vallecillo<sup>a,\*</sup>, Alessandra La Notte<sup>a</sup>, Silvia Ferrini<sup>b,c</sup>, Joachim Maes<sup>a</sup>

