



# Accounting for flood control by ecosystems at EU level

**KIP INCA project**

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*MAIA webinar 21.06.2021*

# Outline

1. Introduction: ecosystem service accounts in INCA
2. Mapping of flood control: potential, demand, use, unmet demand
3. Monetary valuation
4. Accounting tables
5. Key findings

# Introduction

## KIP INCA Project 2015-2020



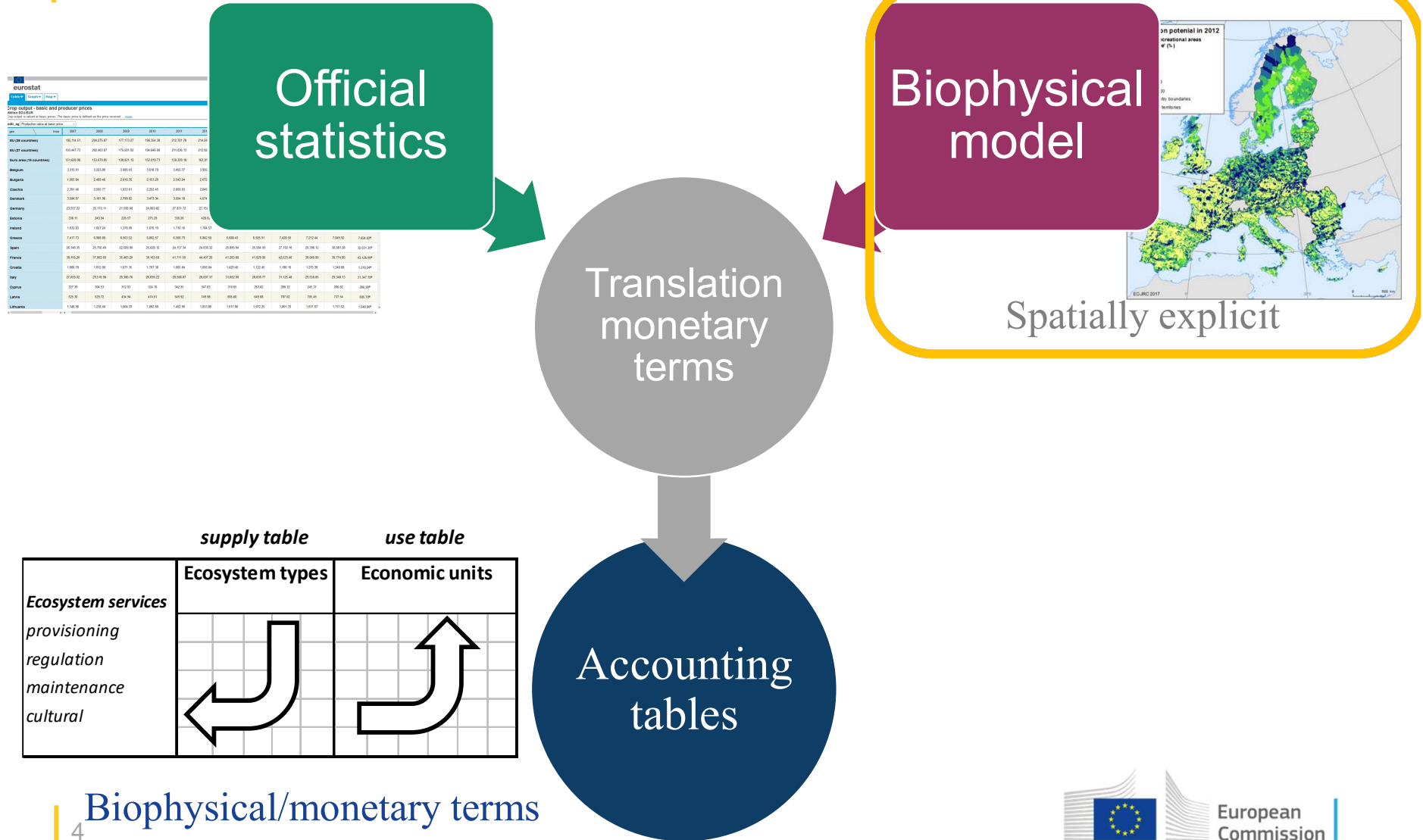
### Accounts

Ecosystem extent

Ecosystem condition

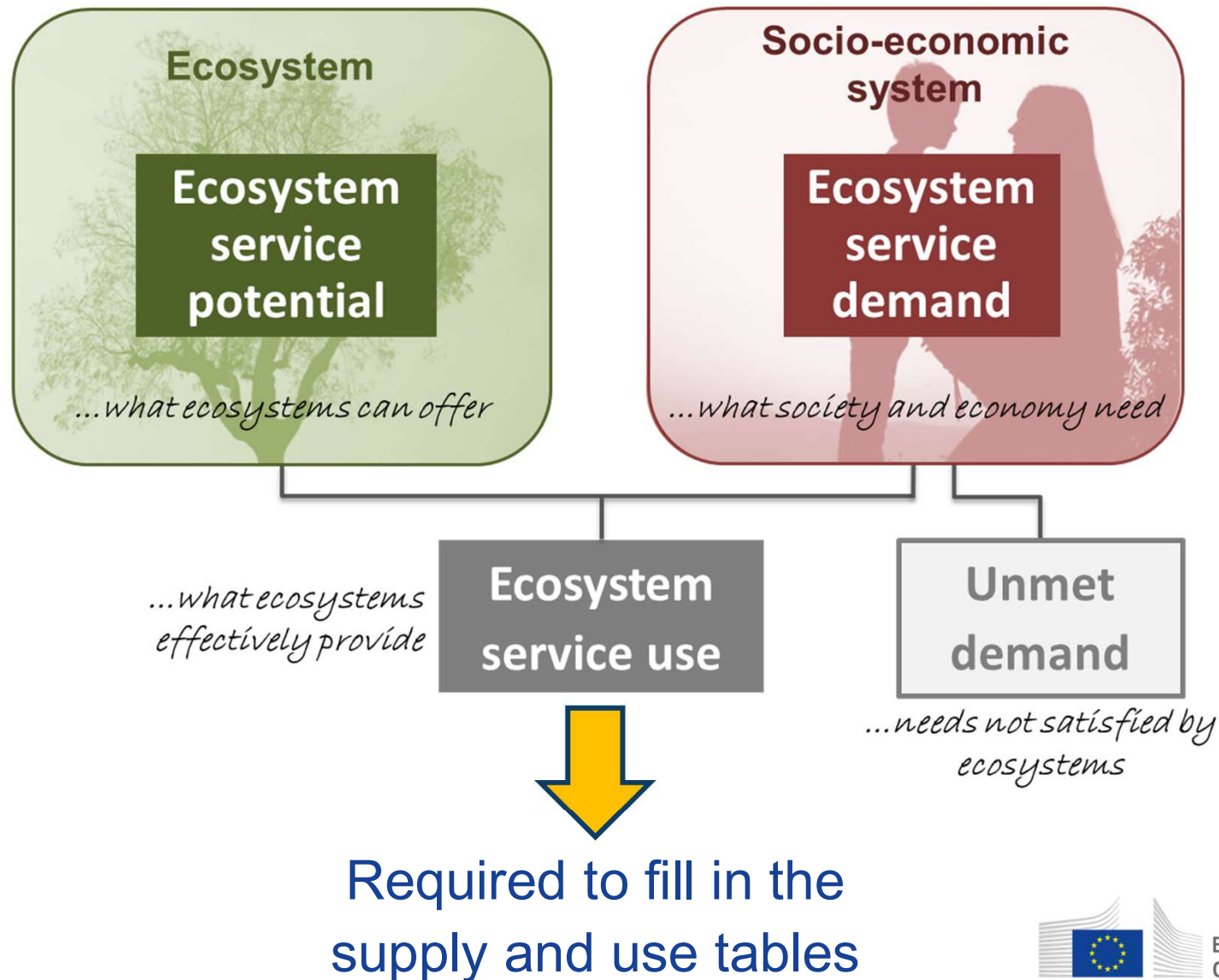
Ecosystem services

# Introduction: JRC approach



4 Biophysical/monetary terms

# Introduction: MAES framework



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# 2. Modelling flood control

## Flood control

Runoff retention by ecosystems



Economic assets in floodplains



Flood control **POTENTIAL**

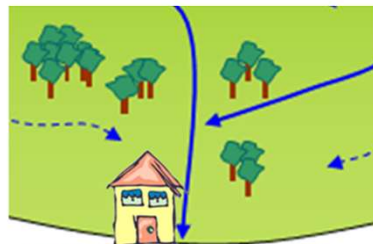
*Service Providing Areas (SPA)*

**DEMAND** for flood control

*Service Demanding Areas (SDA)*

SEEA EEA\*  
accounting  
tables

**Actual flow** of  
flood control



Extent of demand  
protected by SPA upstream

*Service Benefiting  
Areas (SBA)*

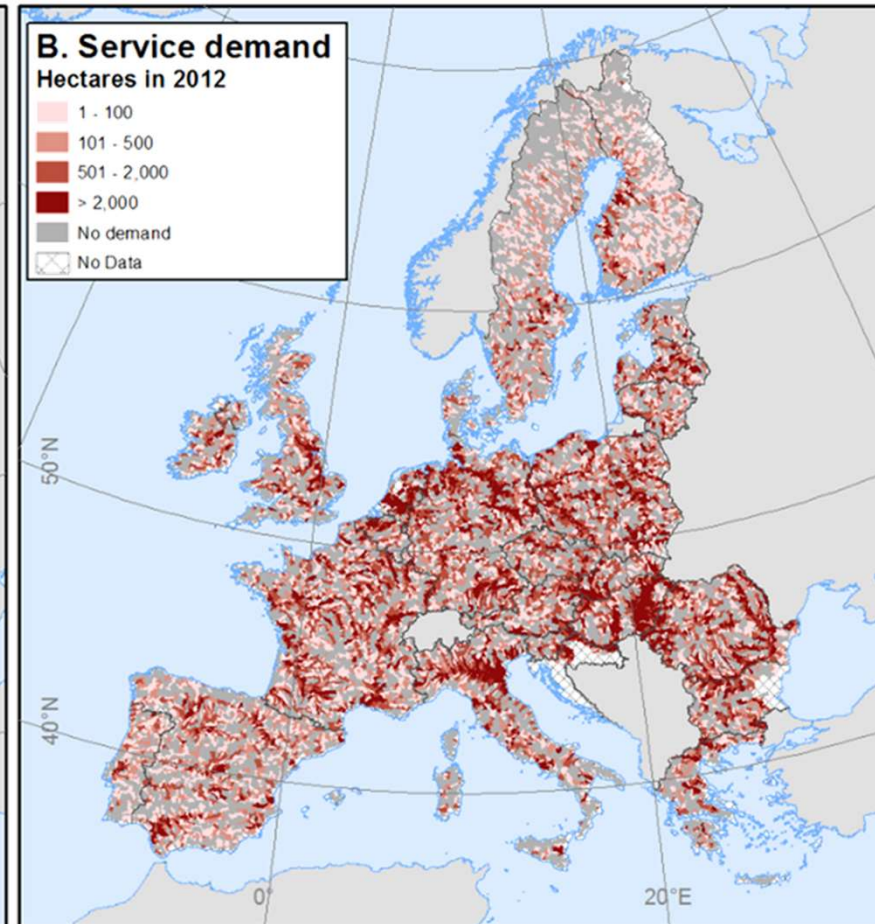
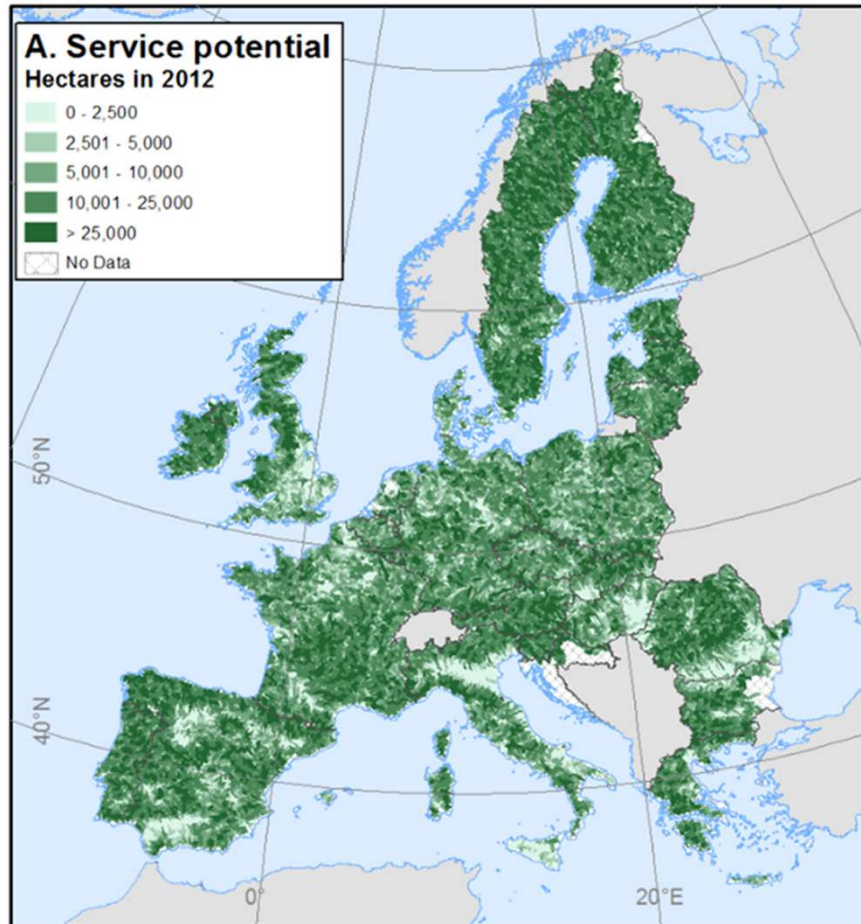
*Amount of demand  
protected by upstream  
ecosystems*

\*United Nations System of Environmental-Economic Accounting- Experimental Ecosystem Accounts

# 2. Modelling flood control

**Potential** (SPA catchment)

**Demand** (SDA catchment)

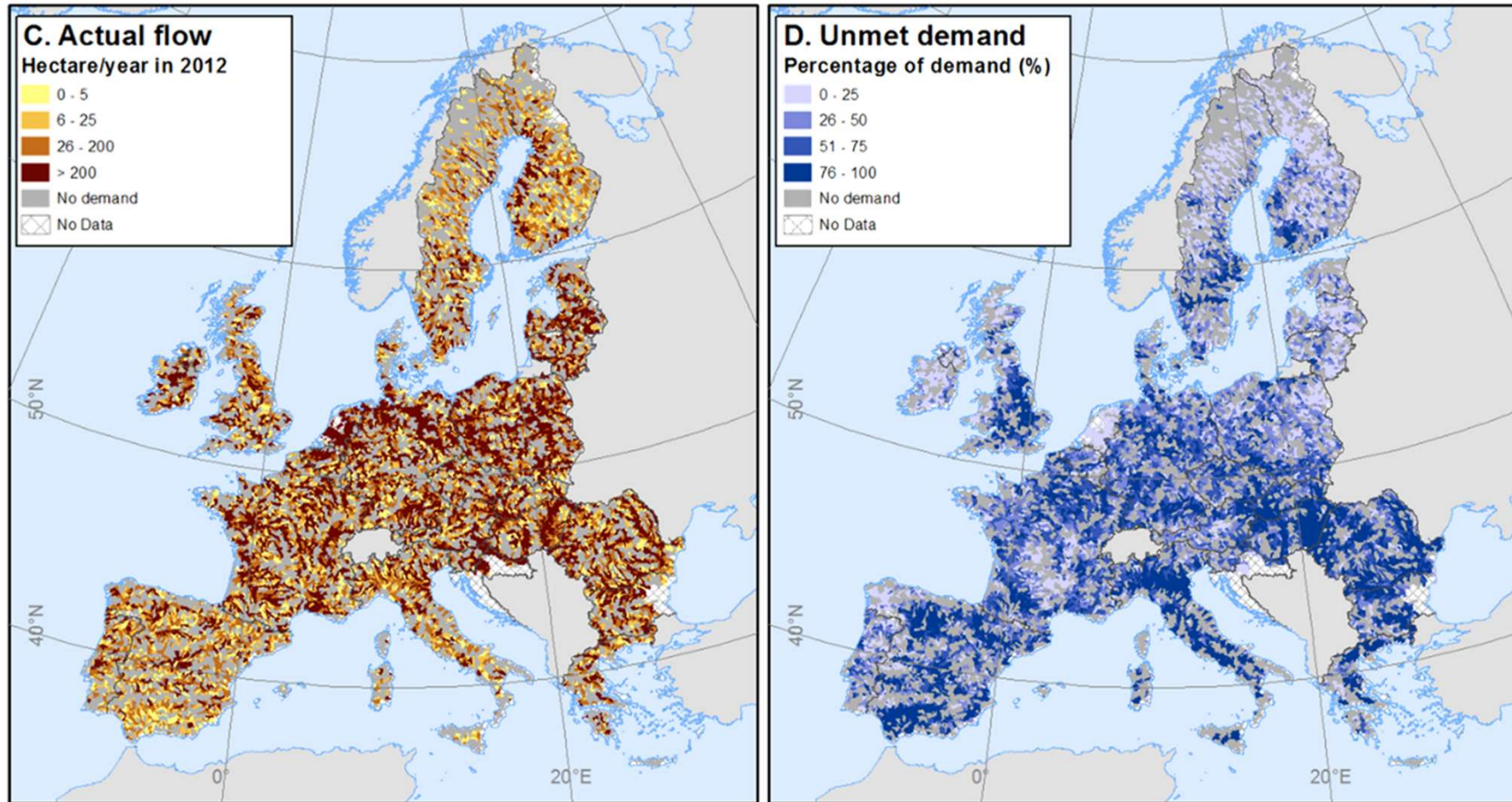




# 2. Modelling flood control

Use (SBA catchment)

Unmet demand (ecos. deficit)

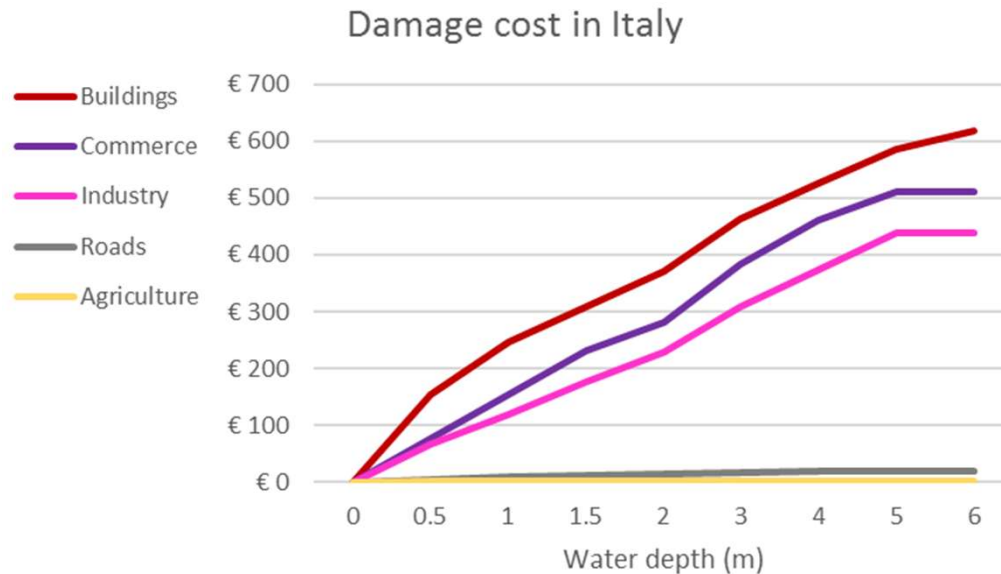


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# 3. Monetary valuation

## 'Avoided damage cost'



\* Actual flow

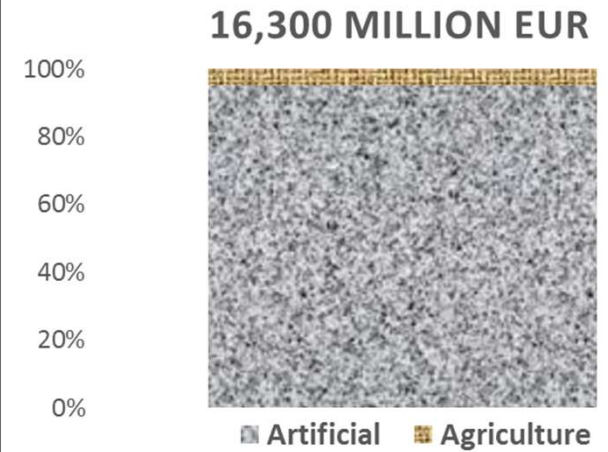
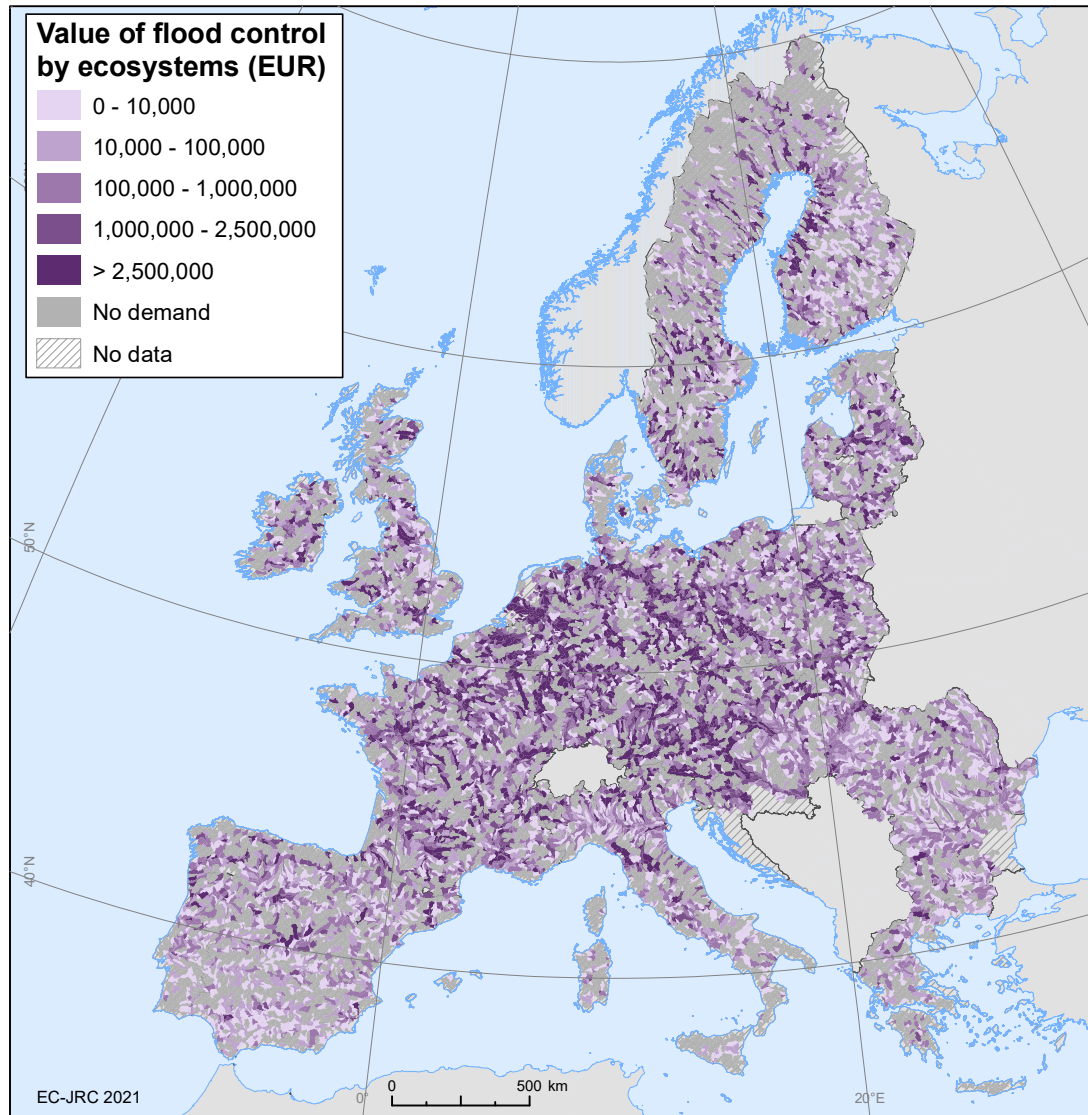


2 m depth  
(EUR 371)

\* Actual flow = 1 per pixel → EUR 371

\* Actual flow = 0.2 per pixel → EUR 74.2

# 3. Monetary valuation



Year 2012

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# 4. Accounting tables

## Supply table: contribution of ecosystems

	Ecosystem types									
	Urban	Cropland	Grassland	Woodland and forest	Wetland	Heathland and shrub	Sparsely vegetated land	River and lake	Coastal/intertidal area	Total
<i>hectare</i>										
2006	26,159	315,864	772,658	2,932,927	67,740	72,379	247	0	0	2,027,705
2012	26,239	313,591	767,010	2,922,936	67,508	72,032	243	0	0	4,169,559
<i>million Euro</i>										
2006	89	1,012	3,099	11,244	332	350	1	0	0	16,127
2012	89	1,015	3,129	11,388	333	357	1	0	0	16,312



70% provided  
by forest

7 thousand  
EUR/km<sup>2</sup>

# 4. Accounting tables

## Use table: users of flood control by ecosystems

	Economic units				
	Primary sector	Secondary sector	Tertiary sector	Households	Total
<i>hectare</i>					
2006	3,691,255	43,193	302,887	150,638	4,187,973
2012	3,671,353	45,534	300,855	151,817	4,169,559
<i>million Euro</i>					
2006	804	2,303	1,393	11,627	16,127
2012	799	2,402	1,384	11,726	16,312

88% used by agriculture

72% used by households

**6.5 thousand**  
EUR/km<sup>2</sup> of  
agricultural land

**823 thousand**  
EUR/km<sup>2</sup> of artificial  
areas

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5. **Key findings**



# 5. Key findings

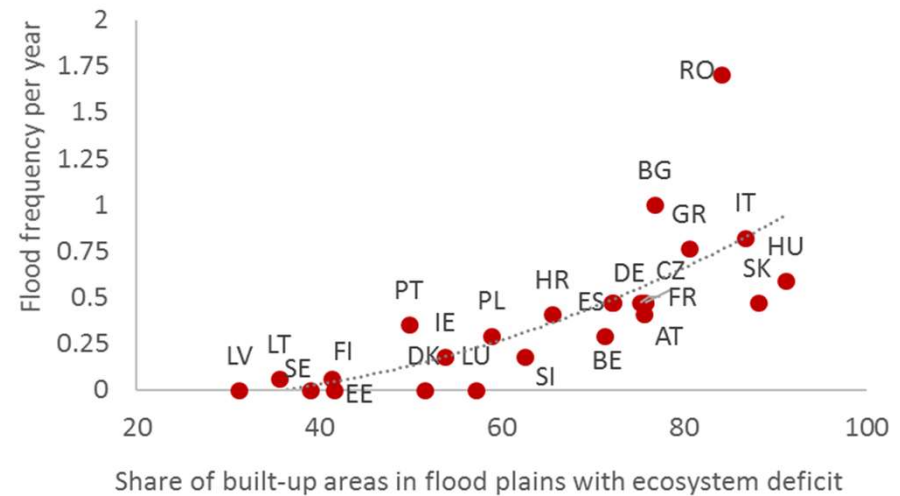
## SOME BAD NEWS...

- The value of flood control has increased by **1.14%** between 2006 and 2012  
More users! Urban sprawl in flood plains
- **67%** of the demand is not protected by ecosystems (unmet demand or ecosystem deficit)



## SOME GOOD NEWS...

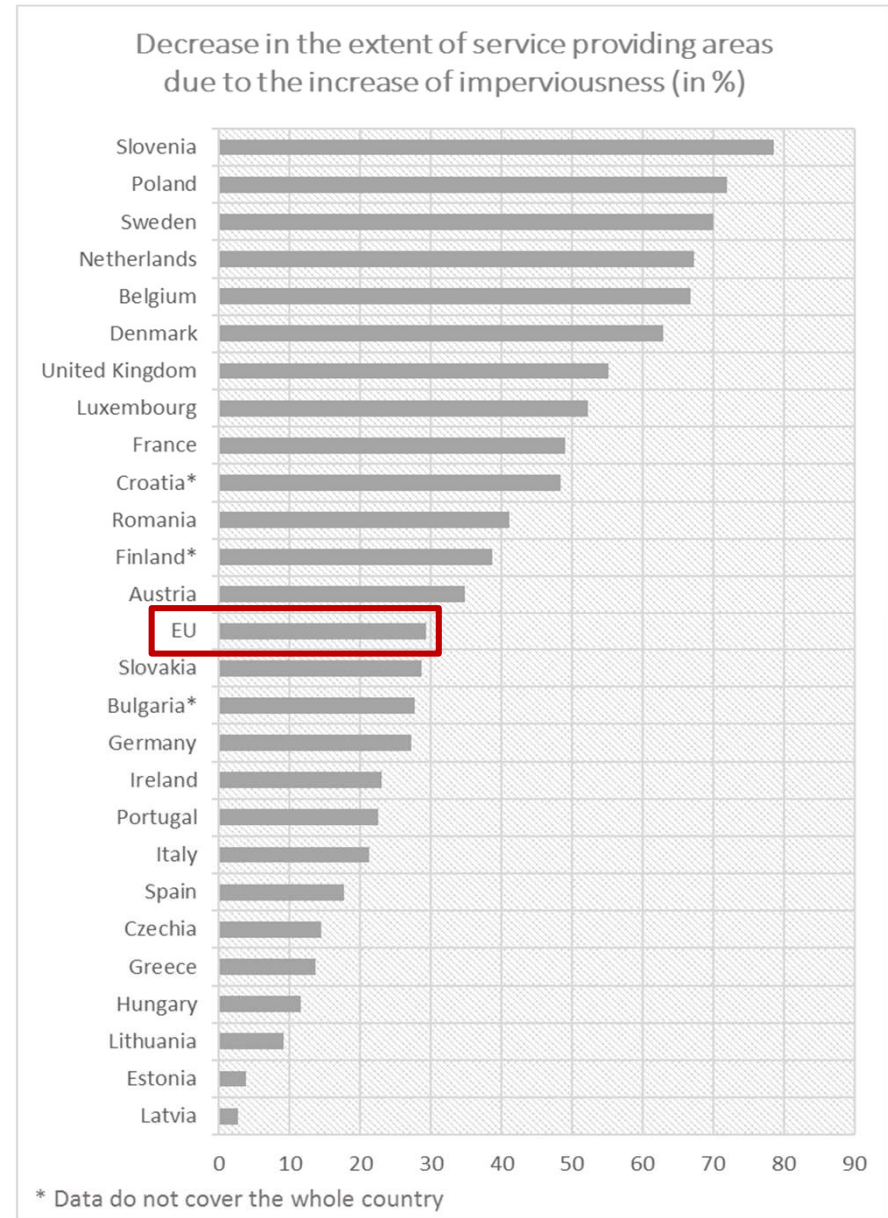
- Unmet demand useful to support flood risk management plans (reduce flood frequency!)



# 5. Key findings

## Linkage to condition

To what extent soil sealing reduce the extent of SPA?



# INCA website: <https://ecosystem-accounts.jrc.ec.europa.eu/>



INCA

Integrated System for Natural Capital and Ecosystem Services Accounting

Home > Energy, Climate change, Environment > INCA

## Welcome to INCA

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### Map Tool

INCA offers EU ecosystem accounts, maps and tables that allow exploring the contributions of ecosystems to people and the economy.

START

### Ecosystem Services

Data and maps of the potential, use and demand for ecosystem services.

-- Select --

### Ecosystem Extent

Information about the total extent or area of different ecosystem types in an accounting area.

-- Select --

### Ecosystem Condition

Information about the state and trends of the physical, chemical and biological quality of ecosystems.

READ MORE

### Accounting Tables

Supply use tables per ecosystem service for different years at EU level

-- Select --

### National Data

Potential, flow and demand of ecosystem services at national level

-- Select --

QGIS plug-in  
to account for  
ecosystem  
services  
(ESTIMAP)

### EU supply and use tables

These tables provide monetary estimates of the flow of ecosystem services from ecosystems to economic sector. The tables contain aggregated data for the EU-28.

DOWNLOAD

VIEW

# Thank you

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