

Ecosystem Services Accounting Compatibility Assessment Tool (ESA –CAT)

Earth observation and accounting relationship

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European Dynamics under contract with the EC JRC D6



Ecosystem Services Accounting-Compatibility Assessment Tool

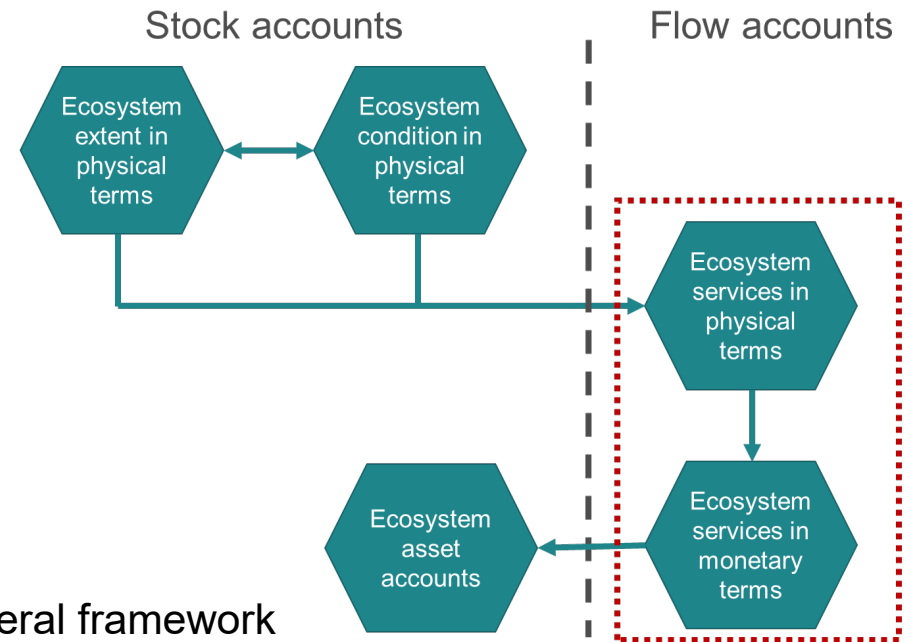
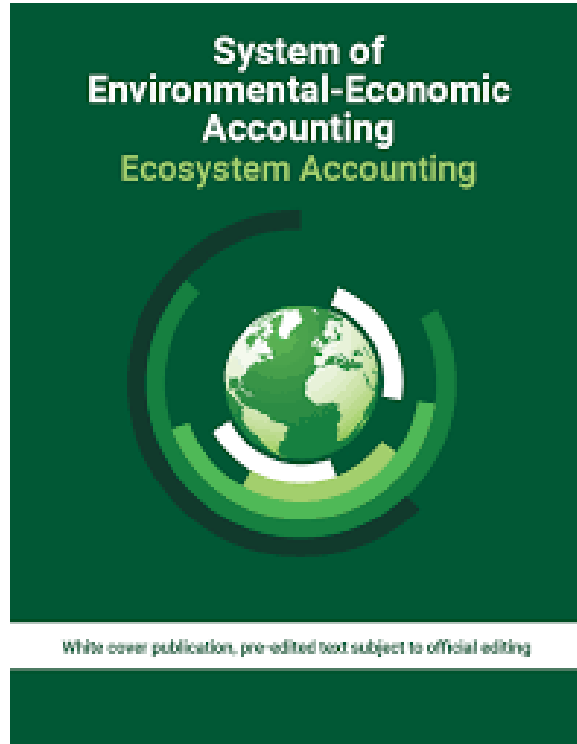
ESA-CAT is a self-assessment tool, intended to help compilers of ES accounts to work through various considerations, ideally in preparation for developing an account but could be used as a series of checks to apply to an existing account.

Why we need a Compatibility Assessment Tool?

- There are many ways to measure the same ecosystem service for the same area
- The results of each measurement can vary, both in terms of magnitude and trend direction

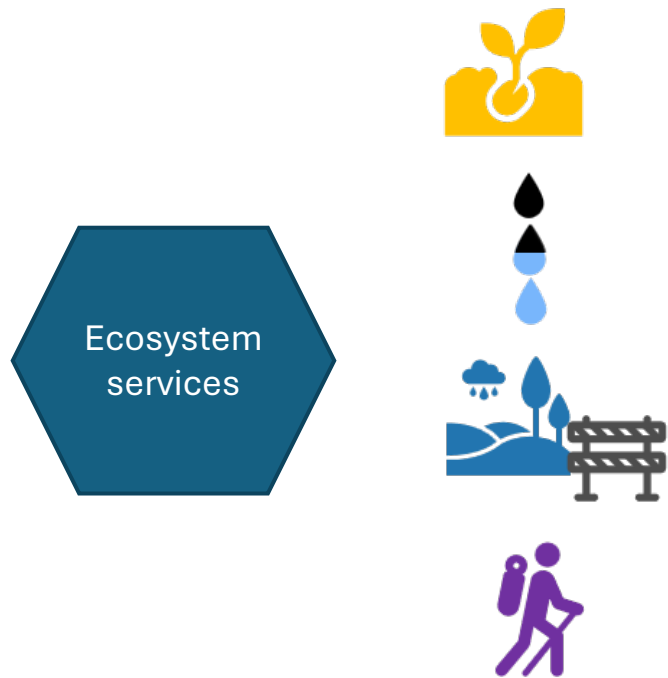


There is an international standard, but...



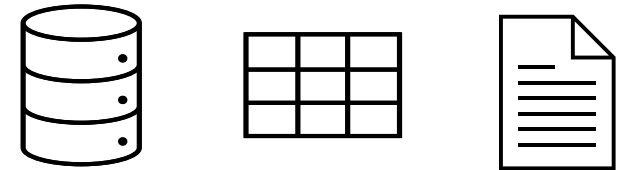
- SEEA is a general framework
- It does not provide operational procedures to guide on what to do and how to do it

How to measure Ecosystem Services?

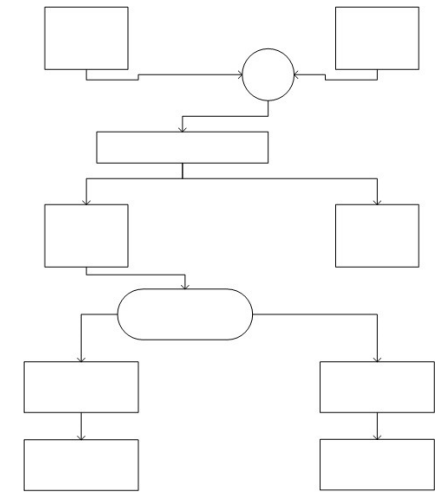


Ecosystem services are ecological processes: we need to choose proxies

Already existing metrics



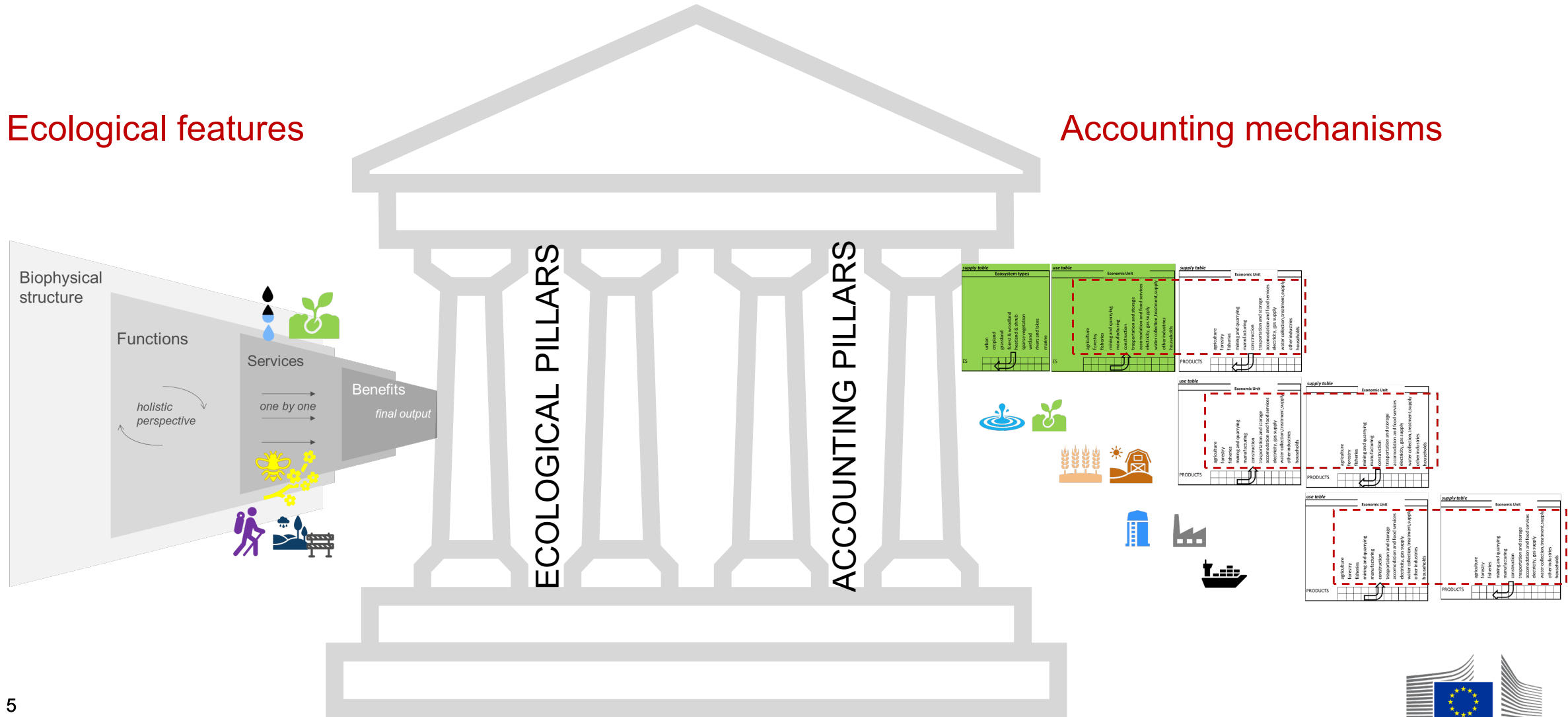
Biophysical models



Ecosystem service accounting

Ecological features

Accounting mechanisms



Ecosystem service accounting

Accounting

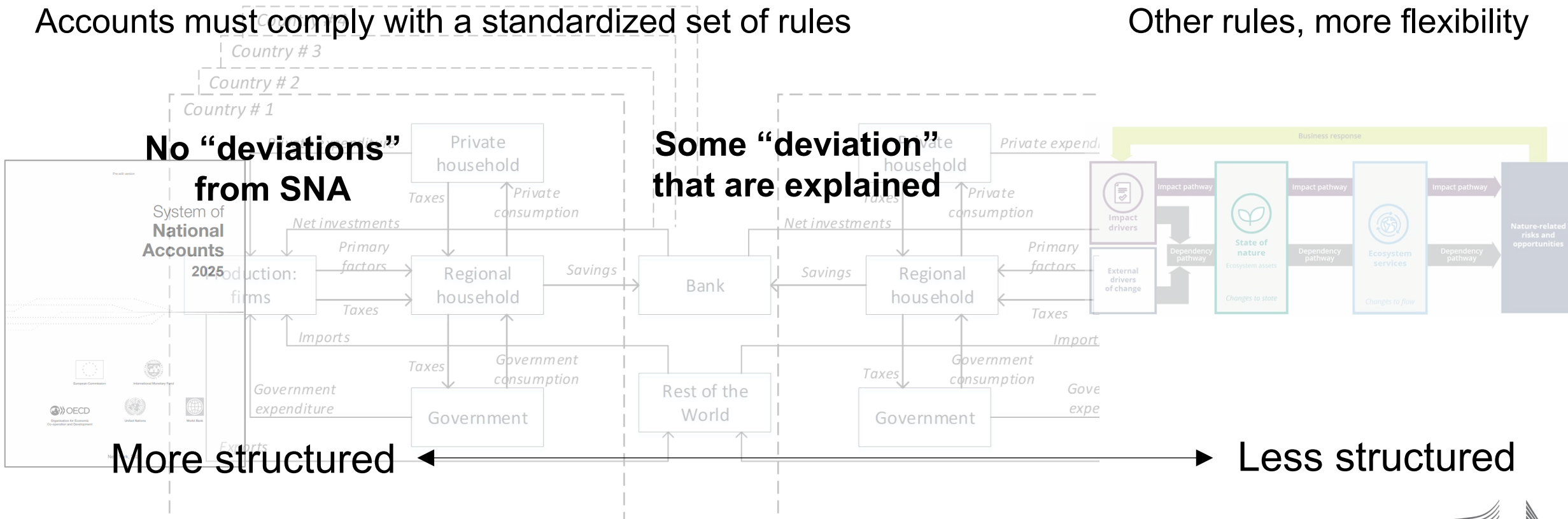
Reporting

Accounts must comply with a standardized set of rules

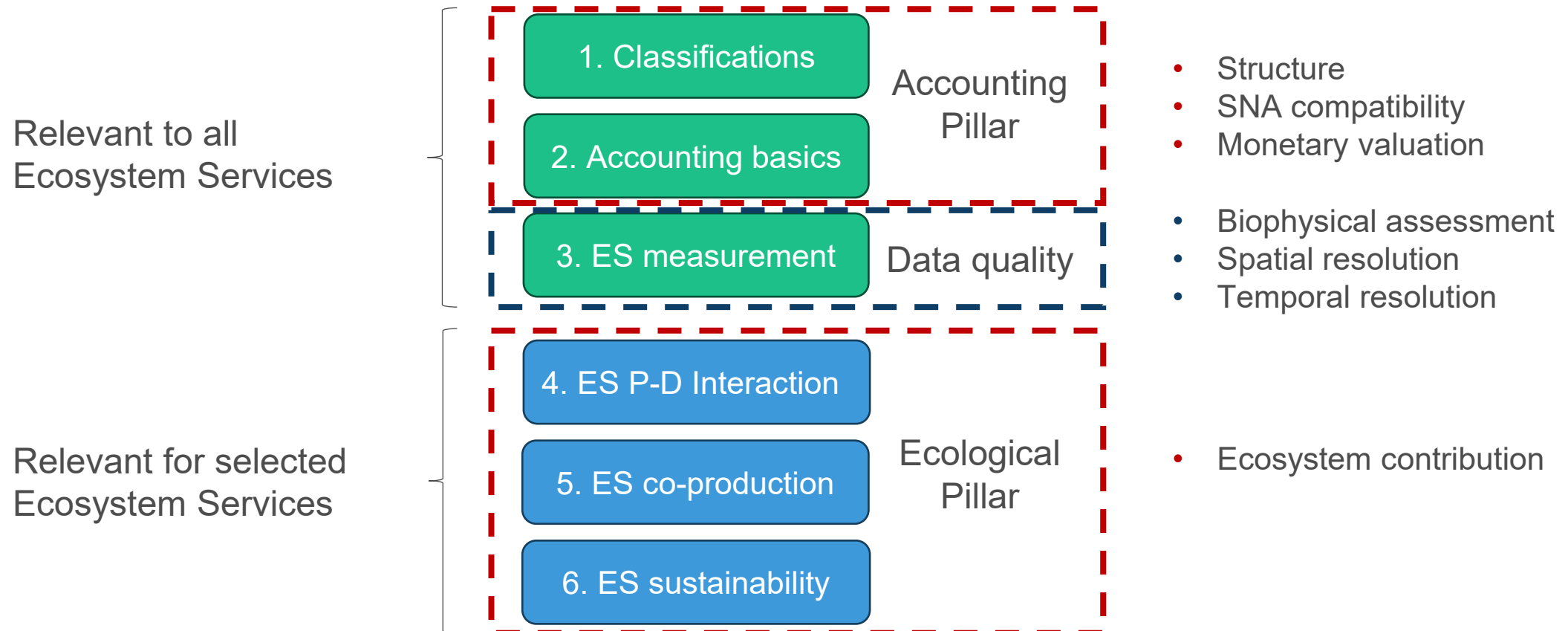
Other rules, more flexibility

No “deviations”
from SNA

Some “deviation”
that are explained

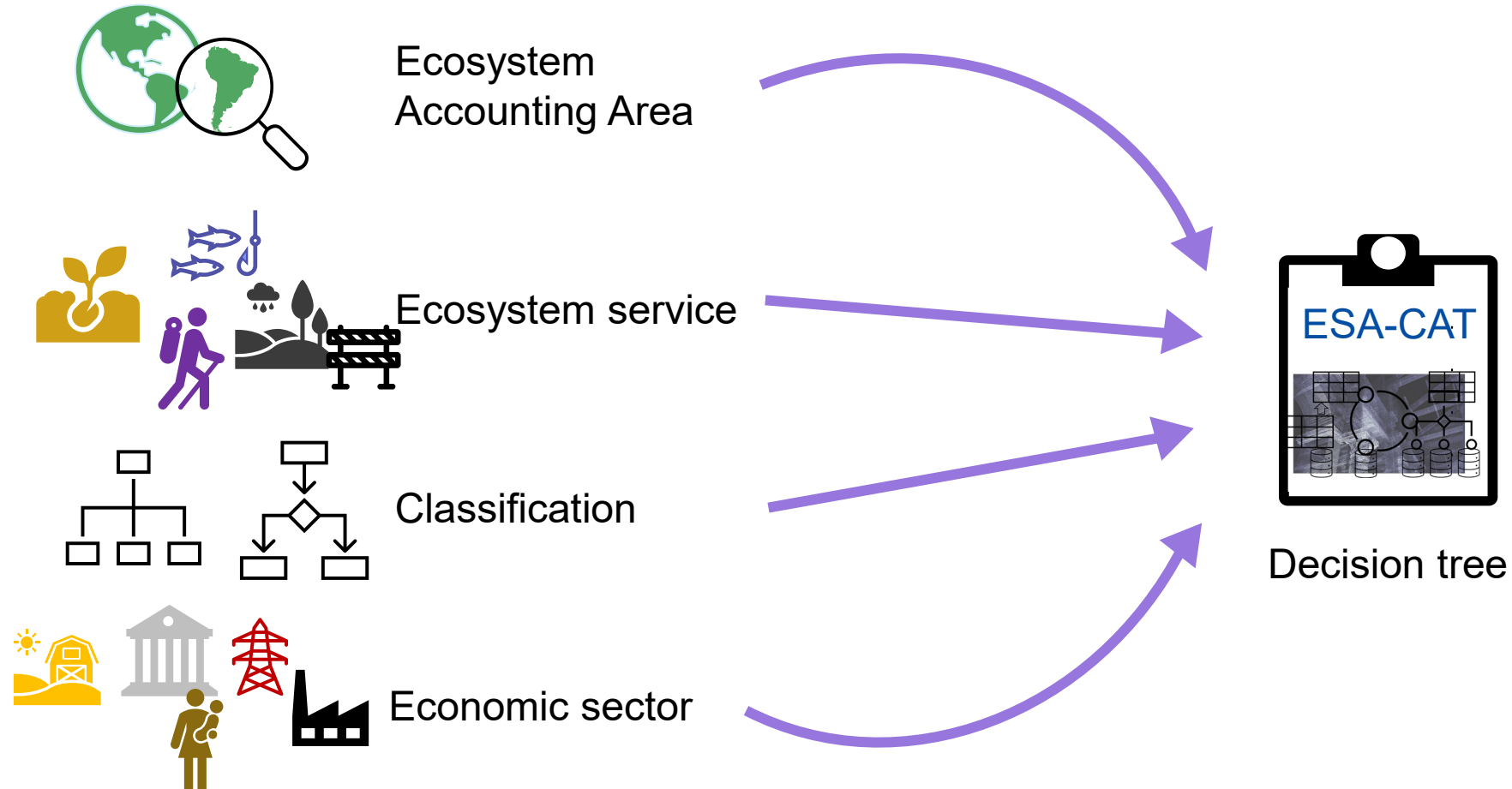


ESA-CAT has 6 components



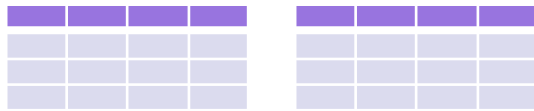
Component 1: Classification

Accounting pillar



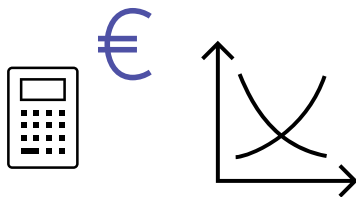
Component 2: Accounting basics

Accounting pillar



SUT

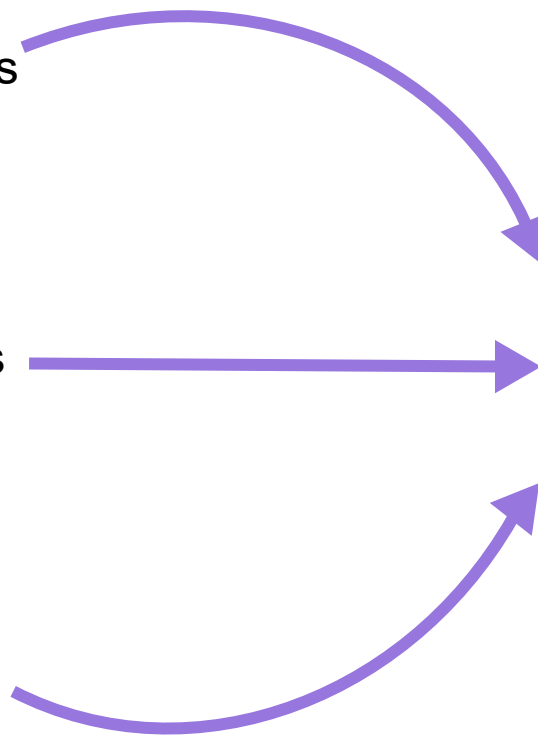
Supply = Use



Accounting principles

Accounting identities

Monetary valuation



Decision tree

Component 3: Ecosystem Service measurement

Data quality



Biophysical assessment

2000
2010
2020



Temporal resolution



Spatial resolution

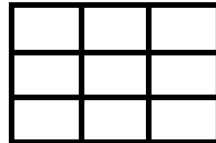
Spatial explicit
Made spatial explicit
No spatial explicit



Decision tree

Component 3: Spatial resolution_1

How to make Ecosystem Services spatially explicit?

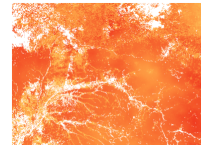


Dry Matter Productivity 2014-present (raster 300 m), global, 10-daily – version 1

General info

Represents the overall growth rate or dry biomass increase of the vegetation and is directly related to ecosystem Net Primary Production (NPP), however with units customized for agro-statistical purposes (kg/ha/day). Every 10-days estimates are available in near real time at global scale in the spatial resolution of about 300 m from January 2014 to June 2020 based upon PROBA-V data with version 1.0 and from July 2020 onwards based upon Sentinel-3/OLCI data with version 1.1.

Download



[View in the data viewer](#)

Validation status

Validated

See the Quality section for detailed information.

Dataset citation

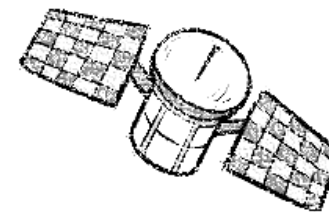
DOI: <https://doi.org/10.2909/67797662-7edc-4a29-b93b-a58af384b137>

FORESTRY

Database

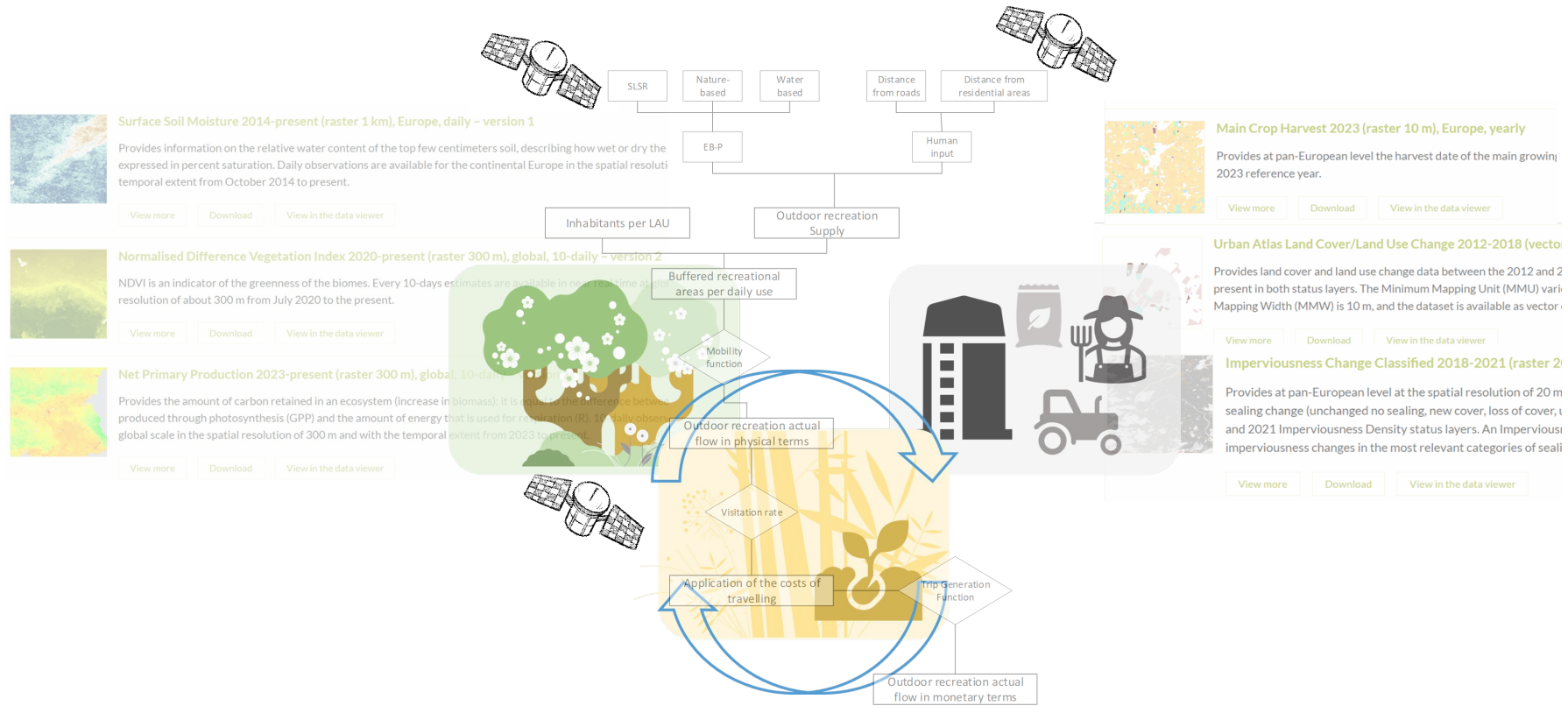
Overview
Database
Publications
Information on data
Methodology
Legislation

- Forestry (for)
 - Timber removals, wood products and trade (for_rpt)
 - Economics (for_eaf)
 - Employment (for_emp)
 - Forest resources (for_sfm)
 - Area of wooded land (EFA questionnaire) (for_area_efa)
 - Volume of timber over bark (EFA questionnaire) (for_vol_efa)
 - Area of wooded land (FAO) (for_area)
 - Volume of timber (FAO) (for_vol)
 - Environmental functions (for_sfmen)



Component 3: Spatial resolution_II

How to make Ecosystem Services spatially explicit?



Ecosystem features and their location

Component 4-5-6: Ecosystem contribution

Ecological pillars

4. ES P-D Interaction

whether the measurement of the ecosystem service flow reflects:

- the full potential supply
- the full socio-economic demand
- the match between actual supply and use.



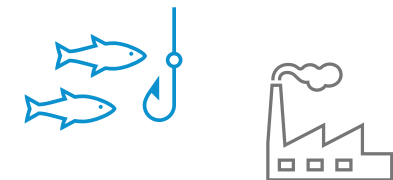
5. ES co-production

how the contribution of the ecosystem is disentangled from human inputs involved in producing the benefit



6. ES sustainability

whether sustainability of the ecosystem service flow has been assessed and how potentially unsustainable use may be flagged in reporting the accounts



Automatic reporting_I



Decision tree

Ecosystem Services Accounting - Compatibility Assessment Tool (ESA-CAT)

Fields marked with * are mandatory.

Pages: [Home] [Component 1] [Component 1] [Component 1] [Component 2] [Component 3] [Component 3] [Component 4] [Component 5] [Final]

Ecosystem Services Accounting - Compatibility Assessment Tool

Ecosystem Services accounts are part of the core accounts set out in SEEA. There are various possible approaches to Ecosystem Service measurement approaches that are compatible or consistent with the accounting. The purpose of this tool is to support compilers of Ecosystem Service accounts and if the accounts are in line with the SEEA EA. The tool is designed to be used for one Ecosystem Service at a time. It goes through the tool several times, i.e. once for each Ecosystem Service. It is assumed that users of the self-assessment tool are fully familiar with the SEEA EA.

Decision tree content:

- 1. Are you measuring the service in monetary terms?
 - Yes: Proceed to Q.13
 - No: Proceed to Q.14
- 2. Are you measuring the service in monetary terms?
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- 50. Are you measuring the service in monetary terms?
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 - No: Proceed to Q.14

$$\sum \left(\frac{3}{8} \times \frac{5}{8} \right) \div \int \frac{5}{8}$$

Flood control

Indicator	Value
Population	80.00
Urban population	30.00
Rural population	50.00
Population density	100.00
Population growth	0.00
Population change	0.00
Population change (annual)	0.00
Population change (10-year)	0.00
Population change (20-year)	0.00
Population change (30-year)	0.00
Population change (40-year)	0.00
Population change (50-year)	0.00
Population change (60-year)	0.00
Population change (70-year)	0.00
Population change (80-year)	0.00
Population change (90-year)	0.00
Population change (100-year)	0.00

Legend:

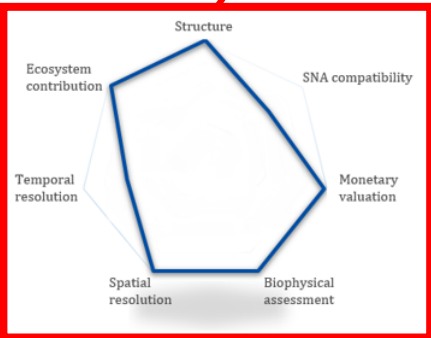
- Structure: 3
- SEA contribution: 2
- Monetary valuation: 3
- Biophysical assessment: 3
- Spatial resolution: 3
- Temporal resolution: 2
- Ecosystem contribution: 3

Standardized text

...an accounting point of view the ... is partially ... SEEA EA. The ... directly ... IF Q. 13 ... measurements ... in monetary terms ... therefore difficult to track ... of changes when they occur ... The explanation provided by the compiler is the following.”.



Automatic reporting_I



Legend		
	Structure	3
	SNA compatibility	2
	Monetary valuation	3
	Biophysical assessment	3
	Spatial resolution	3
	Temporal resolution	2
	Ecosystem contribution	3

Supply - Flood Control (2018) [Million EUR (2000 value)]	
Ecosystems	Million EUR
Settlements and other artificial areas	80.00
Cropland	865.00
Grassland (semi-natural and natural grassland)	2,011.10
Forest and woodland	9,525.00
Heathland and shrub	255.00
Inland wetlands	204.00
...	0.00
Total	12,940.10

Use - Flood Control (2018) [Million EUR (2000 value)]	
Sector	Million EUR
Intermediate consumption by industries	2,601.53
Government final consumption	1,728.94
Households final consumption	8,609.62
Gross capital formation	
Exports	
Total	12,940.10

Self-assessment for ES account compilers

Map & table for ES accounts users

Metric features description for ES accounts users

Descriptive component



Users of ESA-CAT

Accounts compilers

- National Statistical offices (NSO) that have the mandate of creating the accounts
- Compilers of the Ecosystem Service accounts outside the NSO
- Practitioners who need to prepare datasets based on Ecosystem Service accounts

Accounts users

- Responsible of Sustainability Reporting within the Private sector
- Institutional analysts within the Public sectors
- Economic and financial researchers/analysts on sustainable policies and risk assessment

Conclusion

ESA-CAT intended to help compilers of ES accounts to work through various considerations, ideally in preparation for developing an account but could be used as a series of checks to apply to an existing account.

How to think about the role of Earth Observation when focusing on integrated accounting systems?

- Measure in a spatially explicit way
- Make tabular data spatially explicit



Thank you

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