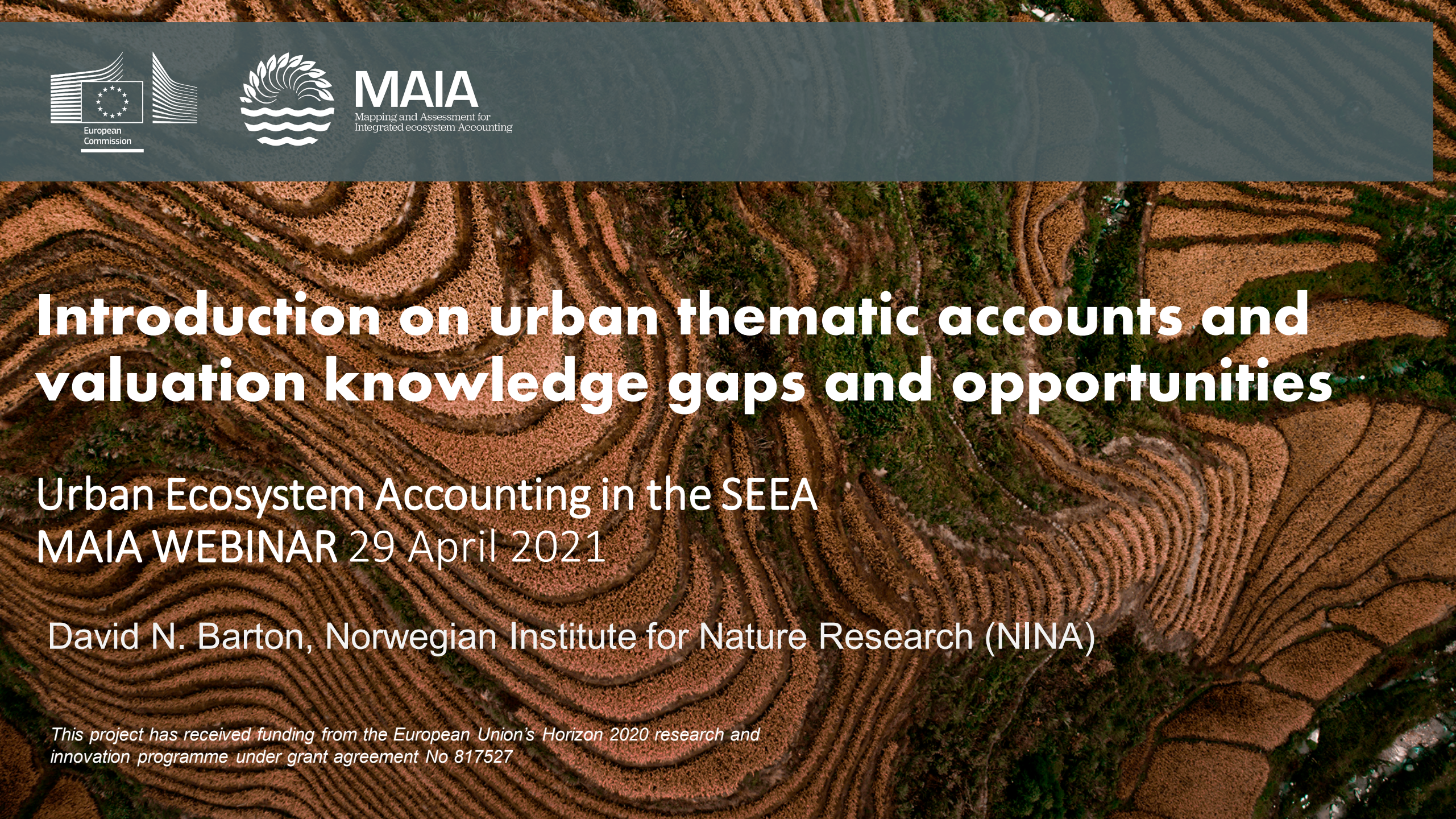


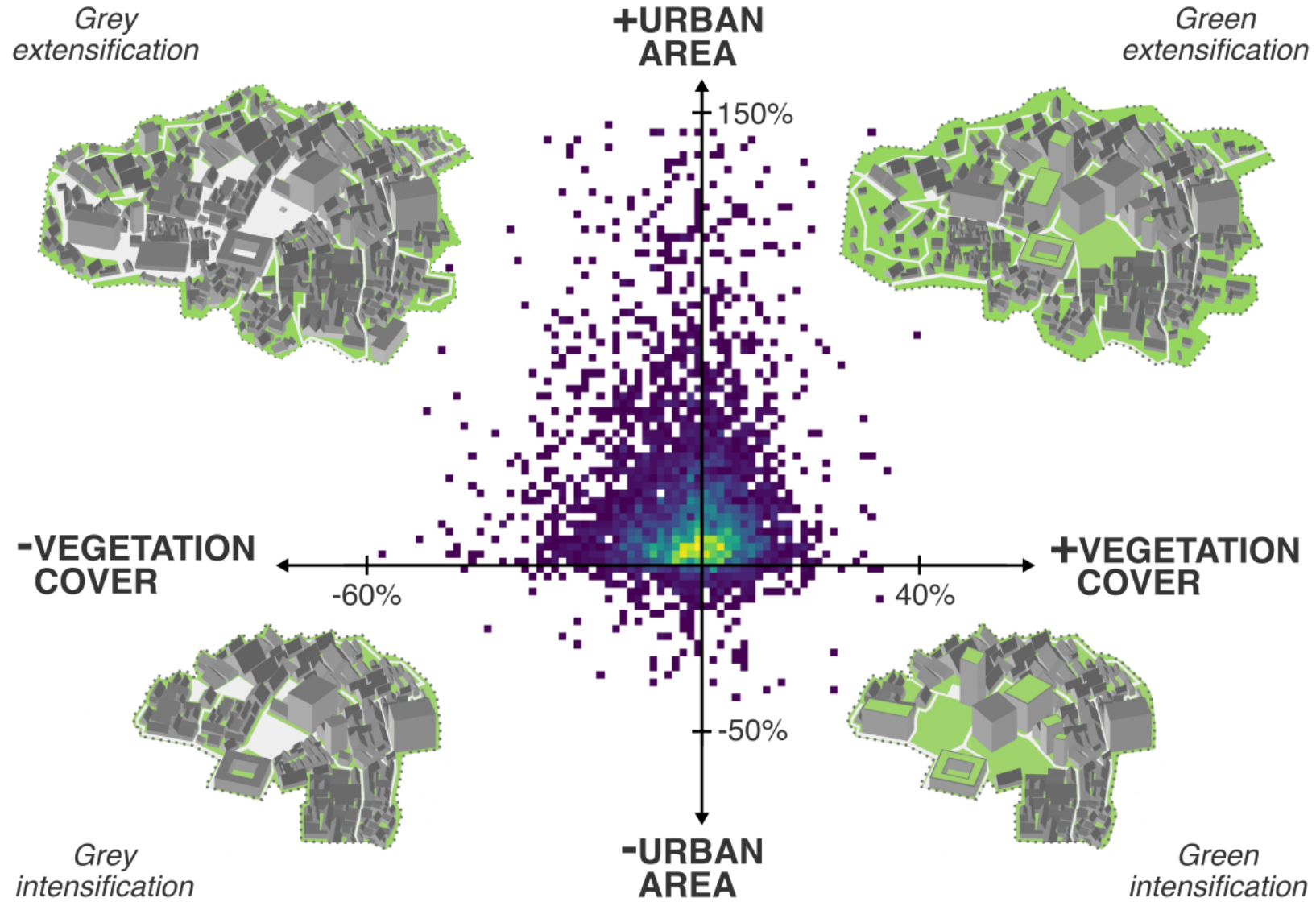
Introduction on urban thematic accounts and valuation knowledge gaps and opportunities

Urban Ecosystem Accounting in the SEEA
MAIA WEBINAR 29 April 2021

David N. Barton, Norwegian Institute for Nature Research (NINA)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817527

GLOBAL URBAN AREA AND VEGETATION COVER CHANGE



Why urban ecosystems?

1) Large and growing proportion of the world population living in cities

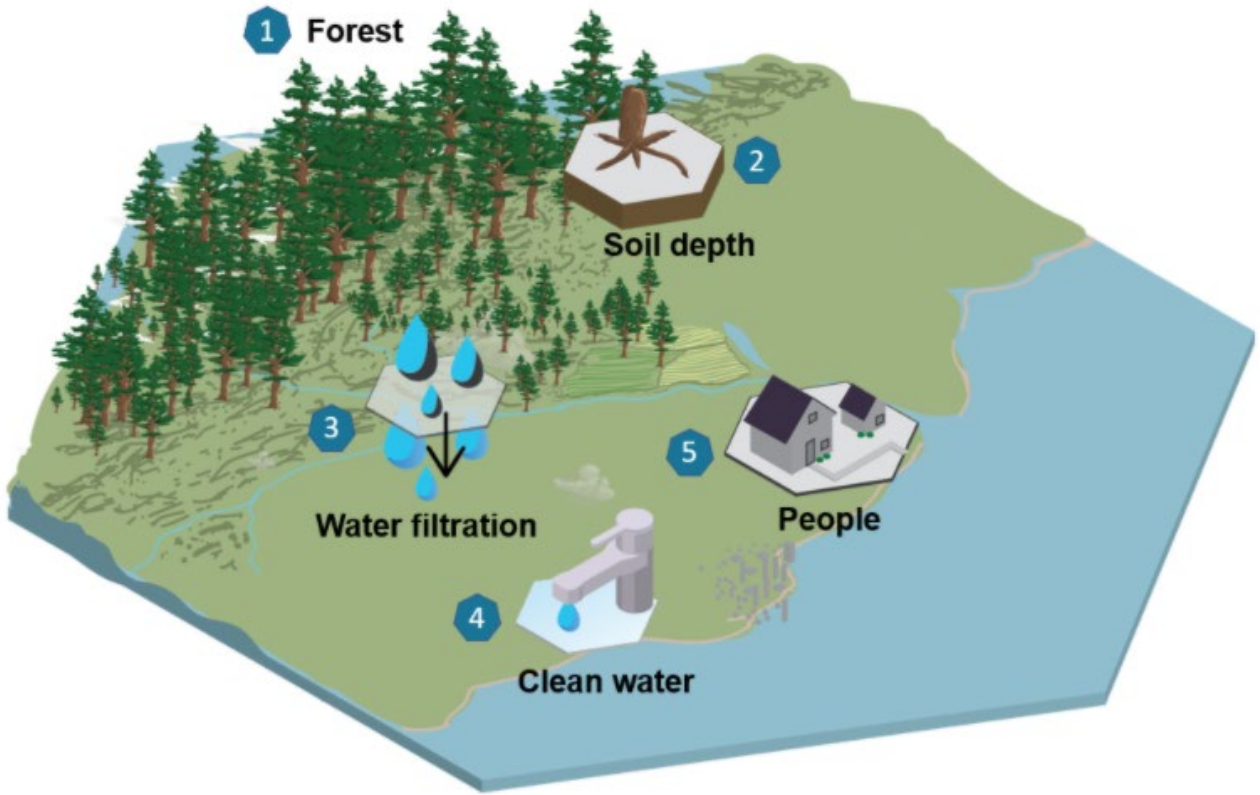
2) Cities contribution to the economy

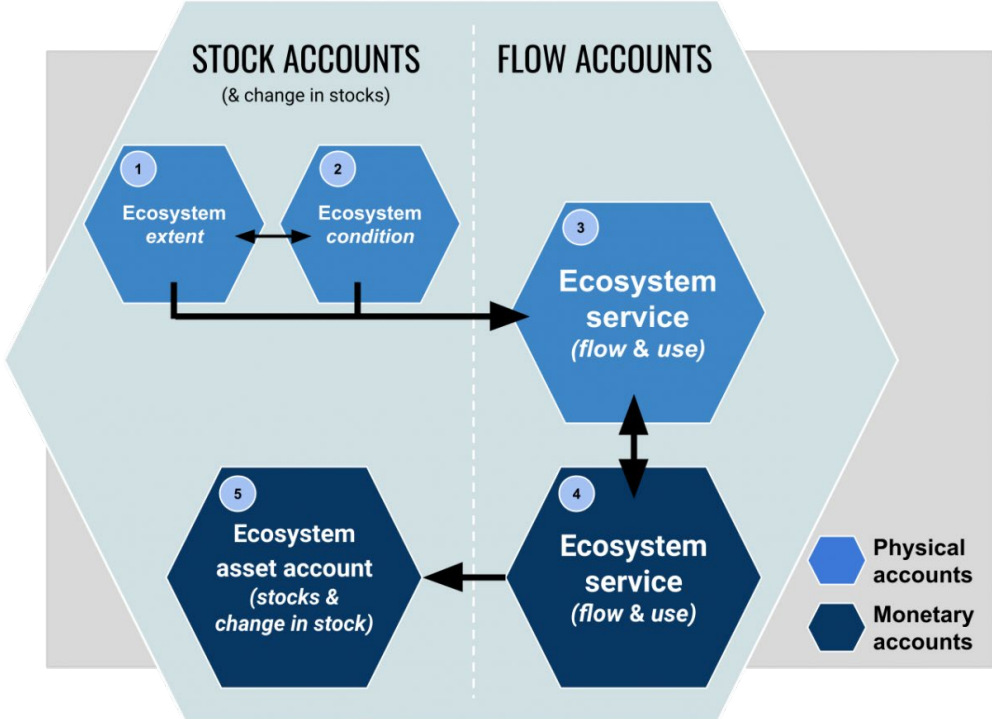
3 Understanding and improving **ecosystems contributions** to economies populations of urban areas

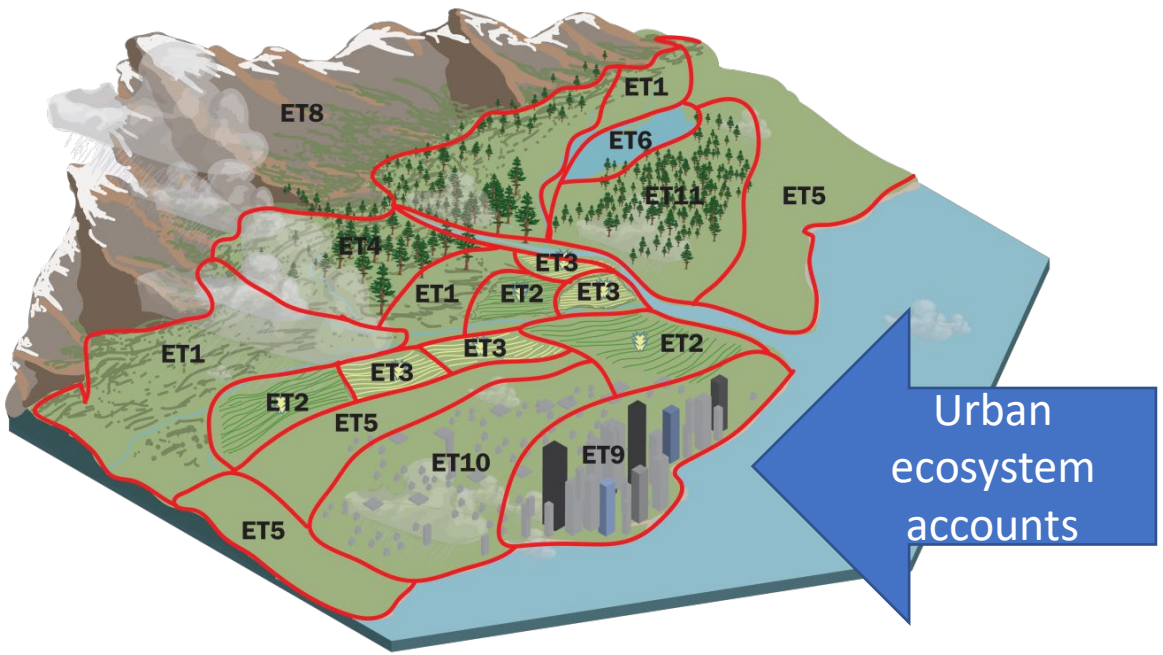
Source: Remote Sens. **2020**, *12*(1), 23; https://doi.org/10.3390/rs12010023

SYSTEM OF ENVIRONMENTAL ECONOMIC ACCOUNTING

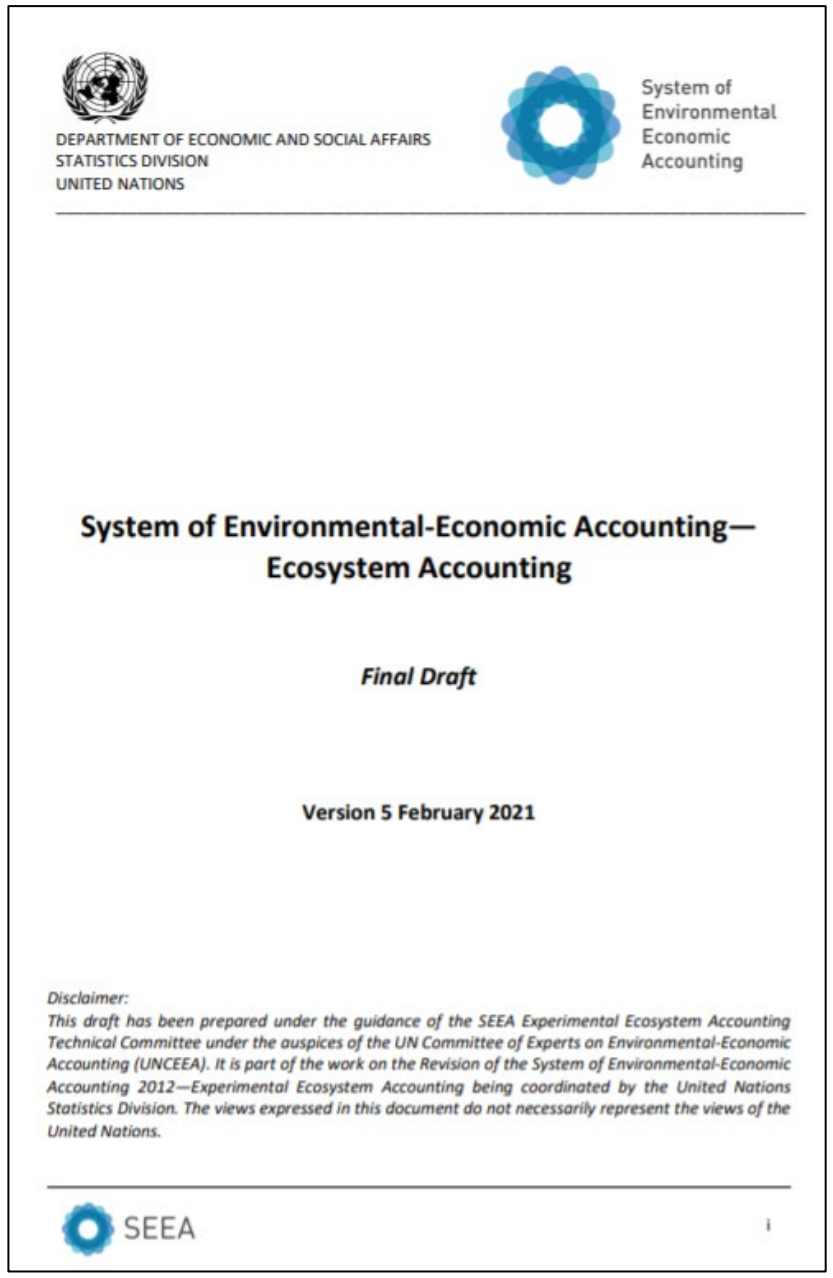
SEEA Ecosystem Accounting







Source: https://seea.un.org/ecosystem-accounting



DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION
UNITED NATIONS

System of Environmental Economic Accounting

System of Environmental-Economic Accounting—Ecosystem Accounting

Final Draft

Version 5 February 2021

Disclaimer:
This draft has been prepared under the guidance of the SEEA Experimental Ecosystem Accounting Technical Committee under the auspices of the UN Committee of Experts on Environmental-Economic Accounting (UNCEEA). It is part of the work on the Revision of the System of Environmental-Economic Accounting 2012—Experimental Ecosystem Accounting being coordinated by the United Nations Statistics Division. The views expressed in this document do not necessarily represent the views of the United Nations.

SEEA i

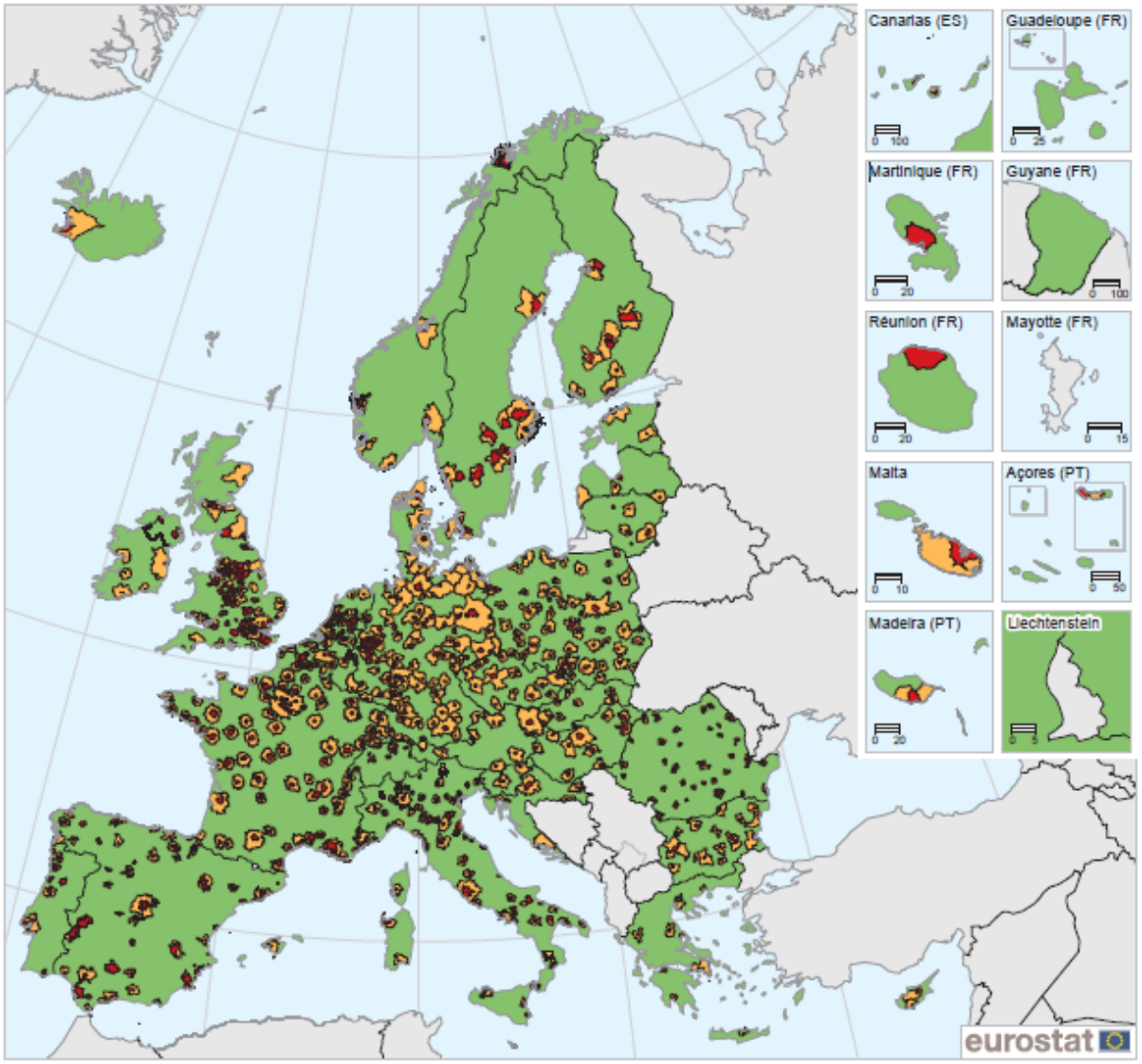
Monetary and thematic accounts (SEEA EA ch.8-13) follow internationally accepted accounting principles, but are not a UN standard

https://unstats.un.org/unsd/statcom/52nd-session/documents/BG-3f-SEEA-EA_Final_draft-E.pdf

Why national urban ecosystem accounting? contributing to municipal SDG reporting on municipal (ecosystem) services to city inhabitants

Planning based definitions of urban accounting area

Source: Barton et al. (2018)



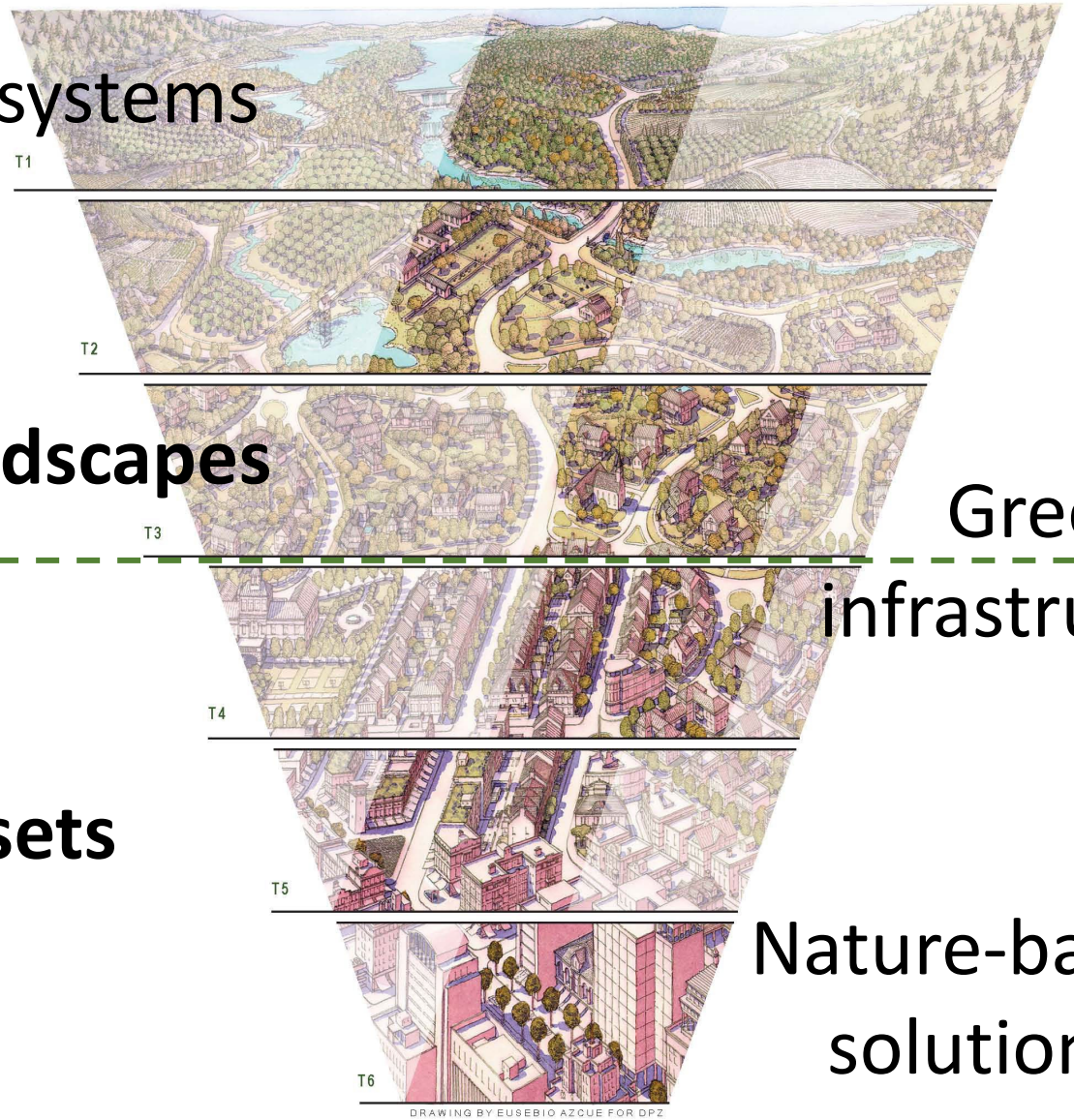
Accounts can be compiled for cities based on administrative boundaries (i.e., local government boundary), functional boundaries (e.g., based on commuting flows as defined by census data), or morphological criteria, such as the extent of the built-up area plus a buffer zone. Chapter 13.2 SEEA EA

Source: Eurostat 2016. https://ec.europa.eu/eurostat/documents/3217494/7596823/KS-01-16-691-EN-N.pdf

Why urban ecosystem accounts ?(/2)

different policy, planning & communication purposes

Ecosystems

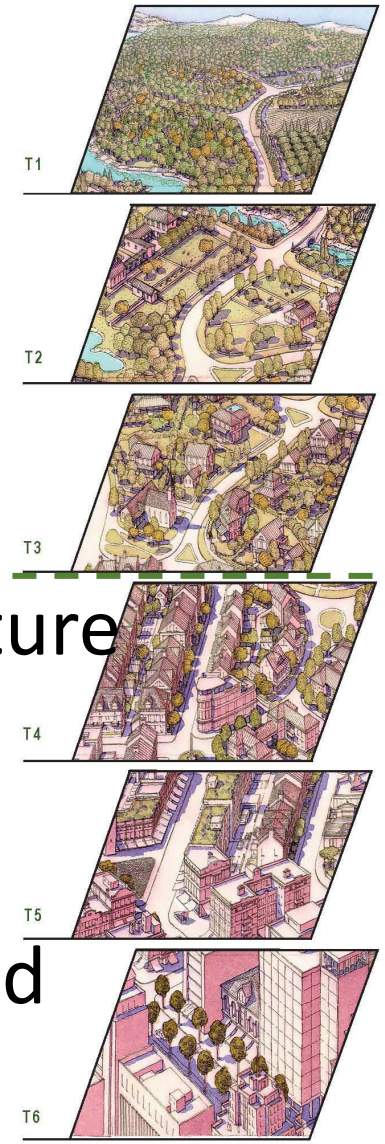


Landscapes

Green infrastructure

Assets

Nature-based solutions



PURPOSES:

Planning

Zoning

Regulating

Permitting

Utilities pricing

Asset damage

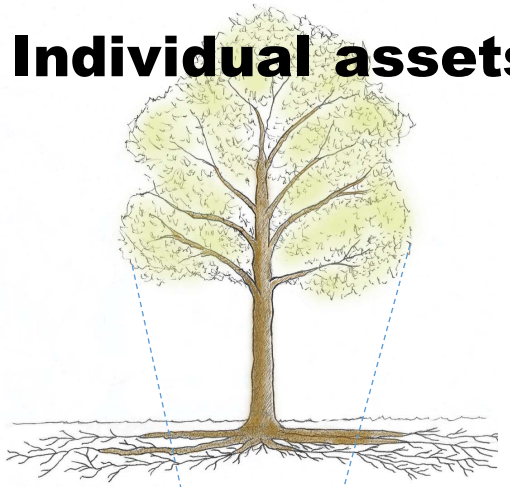
Illustration source: Duany Plater-Zyberk & Company. https://transect.org/

Heterogeneous urban blue-green infrastructure

https://nina.earthengine.app/view/urban-nature-atlas

Urban ecosystem assets & landcover types

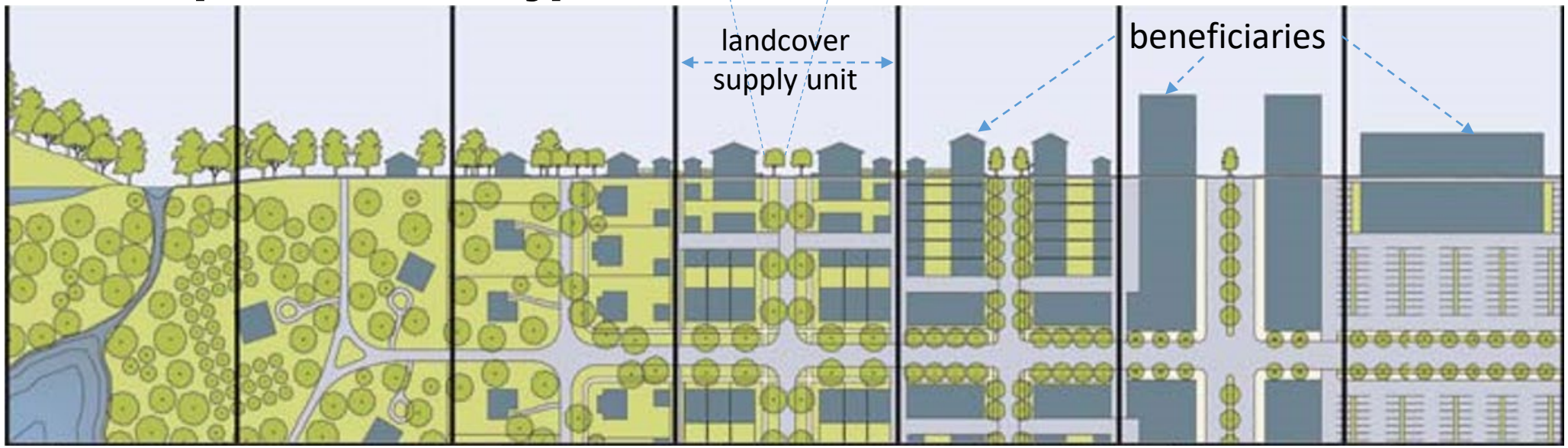
Individual assets



Landscape: landcover types

Condition (structure)

Extents



Source illustration tree : BYM(2012) Arbeid nær trær

Source illustration landscape: © DUANY PLATER-ZYBERK & COMPANY https://transect.org

Two approaches to urban condition accounting: assets & landcover

Table 13.6: Example – condition account presentation using landscape approach

		Example ecosystem types in urban areas															
Example condition variables		Compact high-rise		Open high-rise		Compact low-rise		Open low-rise		Sparsely built		Paved		Cropland		Grassland	
Variables	Unit of measure	Opening stock	Closing stock	Opening stock	Closing stock	Opening stock	Closing stock	Opening stock	Closing stock	Opening stock	Closing stock	Opening stock	Closing stock	Opening stock	Closing stock	Opening stock	Closing stock
Water quality	g/l																
Air pollutant concentrations	ppm																
Soil contaminant concentrations	g/kg																
Soil sealing / Imperviousness	%																
Greenness	%																
Canopy cover	m^2																
Street trees	km																

Table 13.7: Example – extent account presentation using the individual asset approach

	Example ecosystem types and assets in urban areas																	
	Example urban ecosystem assets									Natural and semi-natural types								
	Allotment garden	Street trees	Sports field	Playground	Cemetery or religious grounds	Public park or garden	Green roof	Private green space (e.g., yards)	Beach	Cropland	Grassland	Shrubland	Forest	Barren	Wetland	Inland water	Total	All other (grey) areas	**Total EEZ**
Opening extent (km2)																			
Additions to extent																			
Reductions in extent																			
Net change in extent																			
Closing extent (km2)																			

Differential national and municipal accounting purposes and requirements

USERS:

International agencies

National governments

Finance sector

Inudstrial sectors

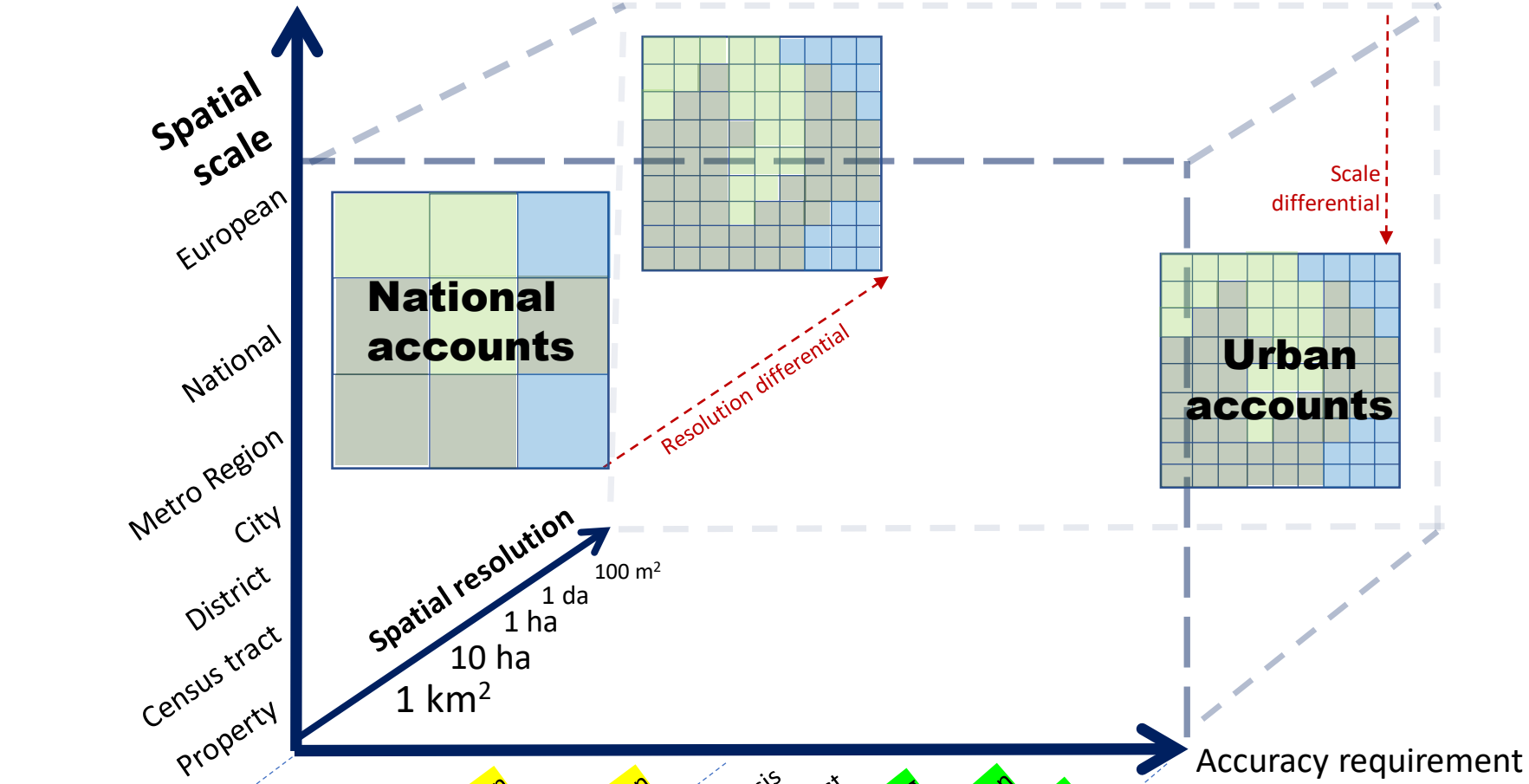
Land & water authorities

Local governments

Producers & utilities

Civil society -managers

Landowners - residential



PURPOSES:

Awareness ES importance

Performance – trend detection

Benchmarking- sector comparison

Planning scenario analysis

Zoning benefit-cost

Project permitting

Utilities pricing & taxation

Damage compensation

National accounts **Municipal policy & planning**

Source: adapted from Zulian, G. et al. (2017)

SEEA EA Research and Development Agenda Monetary Ecosystem Service Accounts

- **connections** between exchange value-based estimates from the ecosystem accounts and complementary approaches to valuation (ch12.)
- valuation concepts in **different decision-making** contexts, considering also complementary valuation methods
- taking into account the **location of users and variations in institutional arrangements**;
- application of **value transfer techniques** for accounting purposes;
- approach to the measurement of **future flows** and prices of ecosystem services as input to the calculation of **net present values for ecosystem assets**;

Photo: David N. Barton

Specific research challenges for urban ecosystem accounts

- aligning NSO and municipal govt. accounting purposes
- urban accounting and asset boundaries
- highly modified ecosystems – restoration & nature-based solutions
- high spatial and temporal resolution mapping
- hybrid extent-condition accounts
- **valuation – health, zero rent municipal services, open access amenities**

Photo: David N. Barton

European Commission

MAIA
Mapping and Assessment for Integrated ecosystem Accounting

Thanks

Mapping & Assessment for Integrated ecosystem Accounting
http://maiaportal.eu/

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817527

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