



# **System of Environmental- Economic Accounting with focus on the forest**

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Committee on Forests and the Forest industry  
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# Policy Demand: International Context

- Agenda 21/Rio+20 outcome document
- High-Level Panel Report on the Post-2015 Development Agenda and SDG monitoring
- Big data/data revolution
- European legislation
- Aichi targets
- Natural Capital Accounting
- UNEP TEEB, PEI
- REDD+
- Green economy/green growth
- Rowaniemi Action Plan





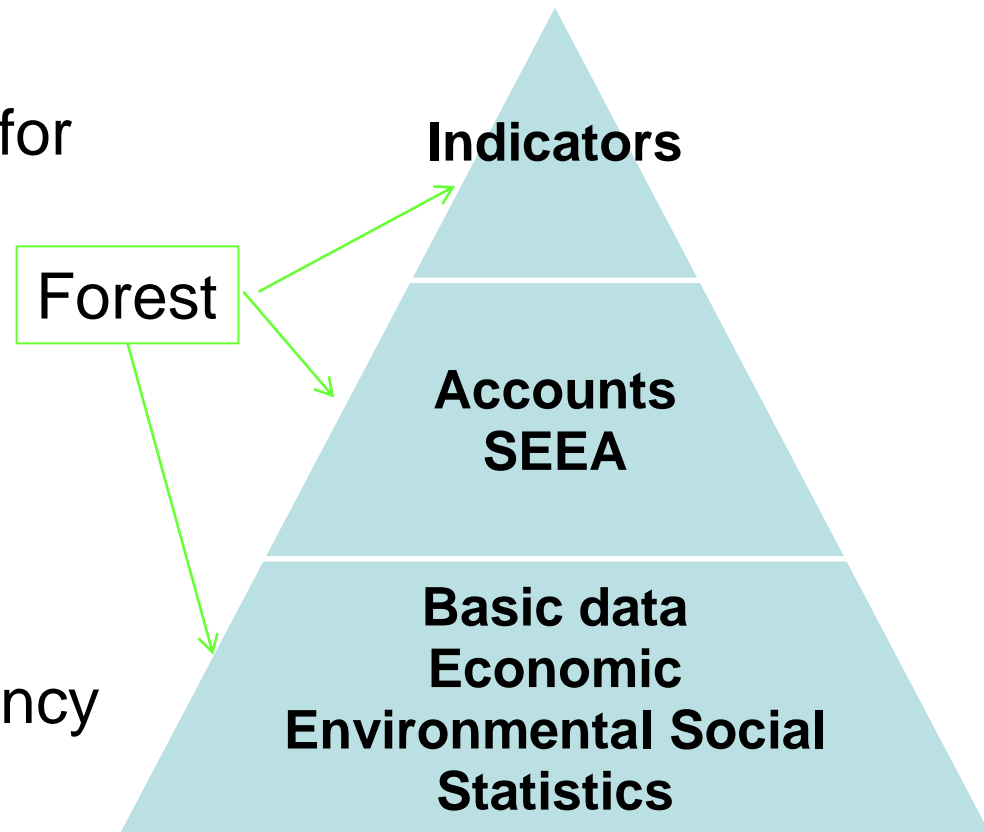
# Open Working Groups: 17 goals

1. End poverty	2. End hunger, achieve food security and improved nutrition and promote sust. agriculture
3. Ensure healthy lives and promote well-being	4. Ensure inclusive and equitable quality education and promote lifelong learning
5. Achieve gender equality and empower all women and girls	6. Ensure availability and sustainable management of water and sanitation for all
7. Ensure access to affordable, reliable, sustainable and modern energy for all	8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work
9. Build resilient infrastructure, promote inclusive and sustainable industrialization	10. Reduce inequality within and among countries
11. Make cities and human settlements inclusive, safe, resilient and sustainable	12. Ensure sustainable consumption and production patterns
13. Take urgent action to combat climate change and its impacts	14. Conserve and sustainably use the oceans, seas and marine resources for SD
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels



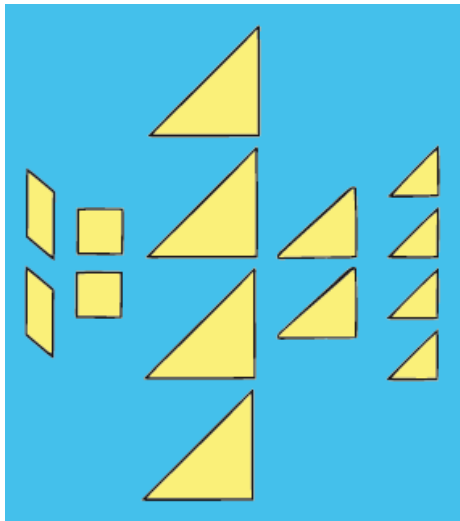
# Integrated information system for SD

- Demand for Integrated statistics which allow coherent understanding for integrated policy
- Requires accounting approach and integrated statistical production process
- Ensure quality of information and consistency between basic data, accounts and tables and indicators

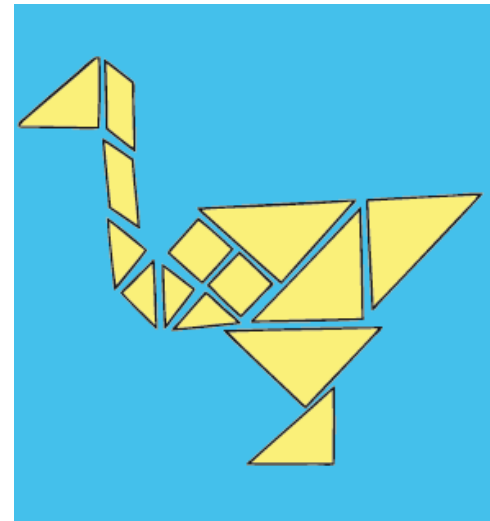
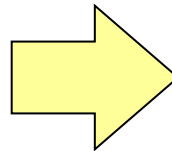




The System of Environmental-Economic Accounting (SEEA) provides the framework for transforming sectoral data into integrated policy-relevant information.



**Sectoral Data**



**Integrated information**

**Integrated information provides a comprehensive picture to support policy making.**



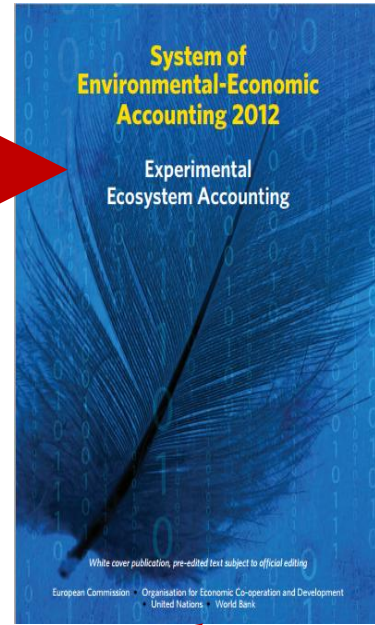
# System of Environmental-Economic Accounting

## SEEA: enabler for the transformative agenda

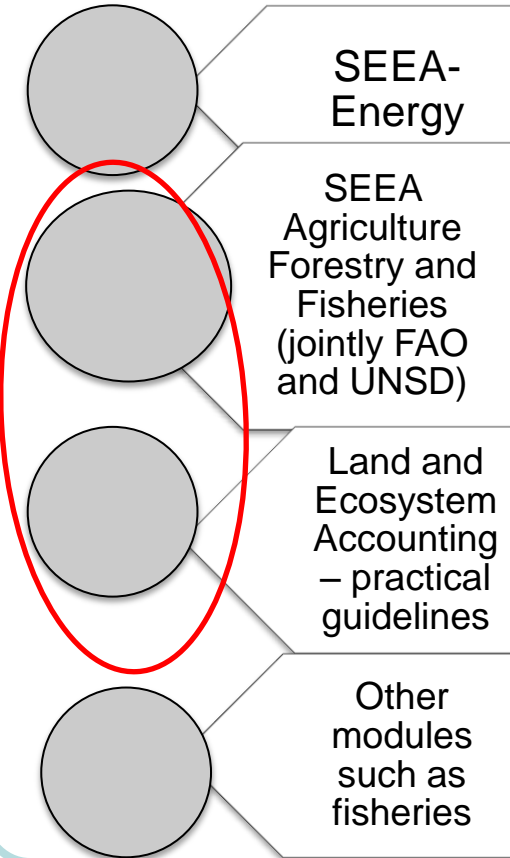
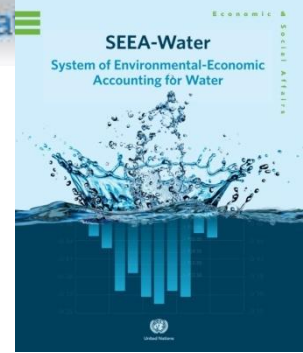
SNA

SEEA  
Central Framework

SEEA  
Experimental  
Ecosystem  
Accounting



United Nations Statistics Division







## SEEA Central Framework

- Internationally agreed statistical framework to measure environment and its interactions with economy
- Adopted as international statistical standard by UN Statistical Commission in 2012
- Developed through inter-governmental process
- Published by UN, EU, FAO, IMF, OECD, WB





## SEEA as an international statistical



- SEEA Central framework adopted by the UN Statistical Commission in 2012
- A long process inter-governmental process led by the UN Committee of Experts on Environmental-Economic Accounting (UNCEEAA)
- Published by UN, EU, FAO, IMF, OECD, World Bank



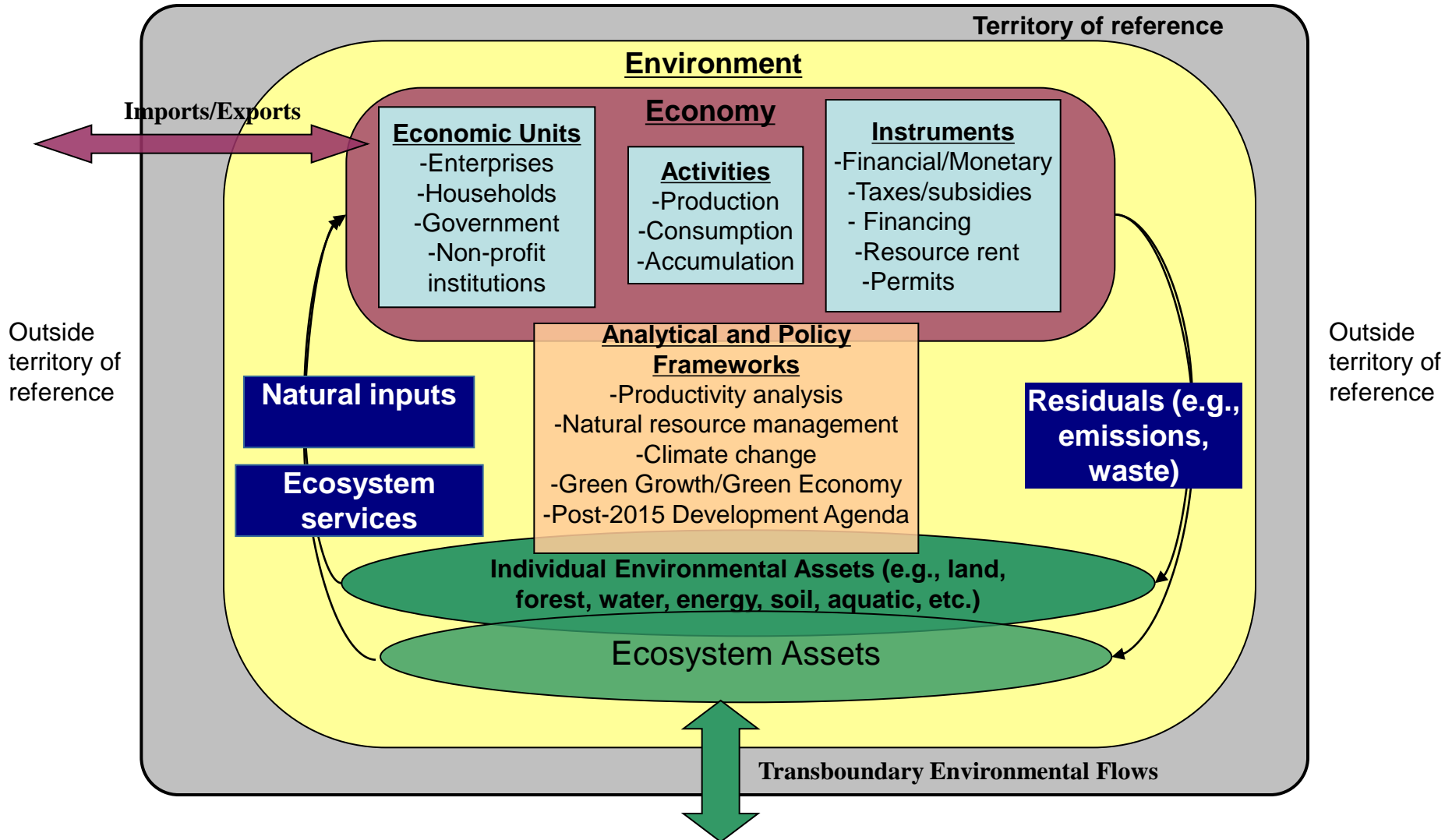


## **SEEA: A Statistical Standard**

- Countries are “encouraged to implement the standard”
- International organizations have obligations to assist countries in implementation
- Implementation strategy adopted by Statistical Commission in March 2013
- Data reporting mechanism will be established



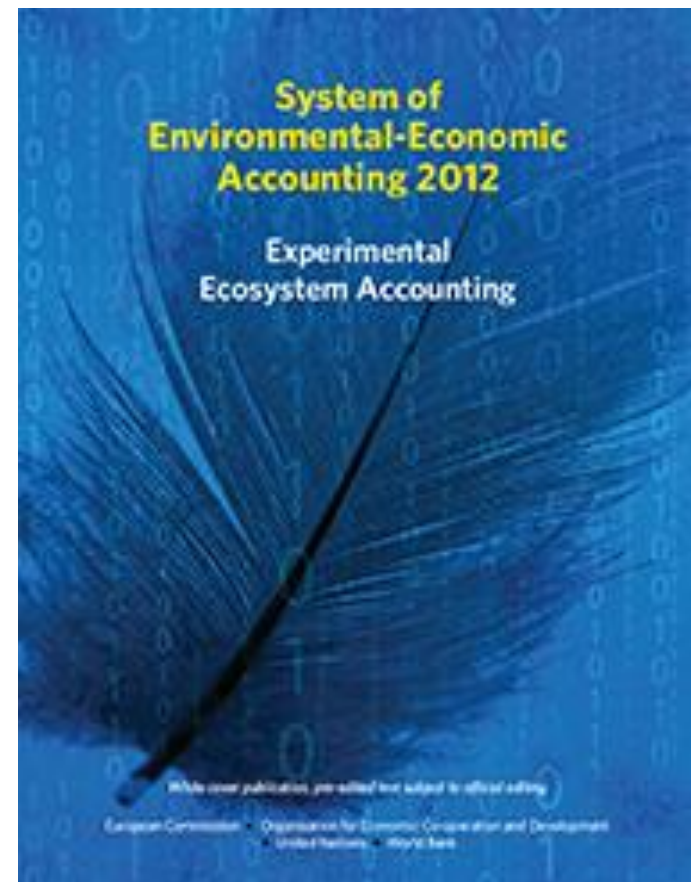
## SEEA Conceptual Framework





## SEEA Experimental Ecosystem Accounting

- Complements SEEA Central Framework
- Integrated statistical framework for accounting for ecosystem assets and associated ecosystem services
- Important first step in development of statistical framework for ecosystem accounting





## SEEA Experimental Ecosystem Accounting

- Ecosystem accounting is a tool to understand and monitor **the contributions of ecosystems to economic activity**
- Ecosystem accounting aims to measure both the contribution of ecosystems to economic production, and to household consumption
- Ecosystems include natural as well as man-dominated systems such as croplands or intensive pastures
- Requires a spatial approach (combination of maps and statistics)



# SEEA Experimental Ecosystem Accounting

Aims at measure the contributions of ecosystem activity in a national accounting framework *monetary* units:

- Ecosystem extent and conditions
- Ecosystem flows
  - **Provisioning services:** the products that can be harvested or extracted from ecosystems
  - **Regulating services:** the regulation of biological, hydrological and climate processes
  - **Cultural services:** the non-material benefits of ecosystems e.g. related to tourism or cultural experiences

Forest cover  
Carbon stock  
Biodiversity

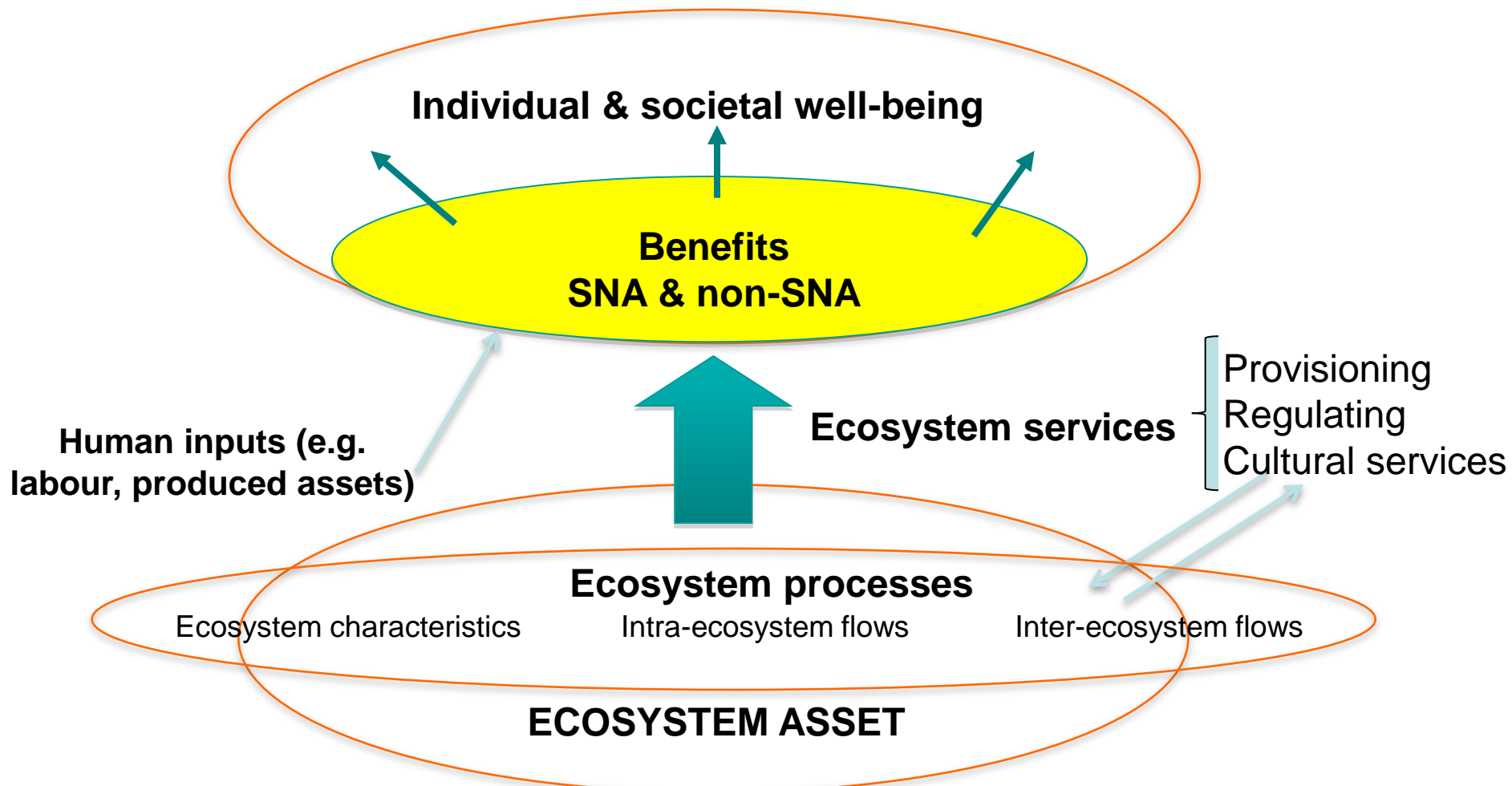
Timber  
Non-wood products  
food  
medicines etc

Carbon sequestration  
Flood protection  
Water filtration and re  
Soil retention and for

Tourism  
Number of visits



# Linking ecosystem assets and well-being through ecosystem services







# Approach for developing SEEA Experimental Ecosystem Accounting

1 • Land Cover Accounting

2 • Land Use Accounting

3 • Framing the Measurement of Ecosystem Conditions

4 • Carbon Accounting

5 • Biodiversity Accounting

6 • Water Accounting

7 • Accounting for Ecosystem Services

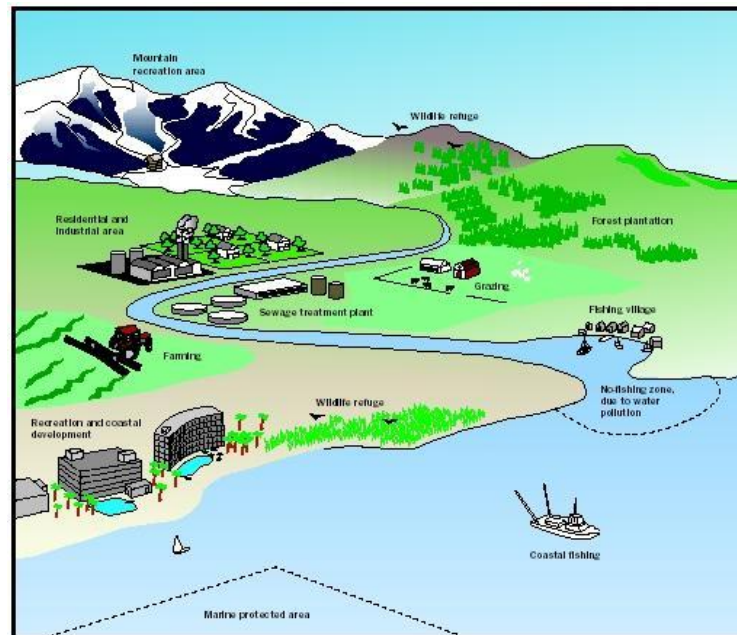
8 • Integrating Ecosystem Accounting with National Accounts



The SEEA Experimental Ecosystem Accounting brings in two new dimensions:

1. Spatial characteristics expressed in spatial units
2. Integrated or holistic view of multiple characteristics for each unit

Minimum dataset scheme  
Unifying themes



- Land cover
- Timber
- Water
- Carbon
- Biodiversity
- Nutrients
- Pollution
- Human activities
- Ecosystem services

Image source: <http://www.waterencyclopedia.com/La-Mi/Land-Use-Planning.html>

The EEA is focused on living (renewable) natural resources<sup>18</sup>



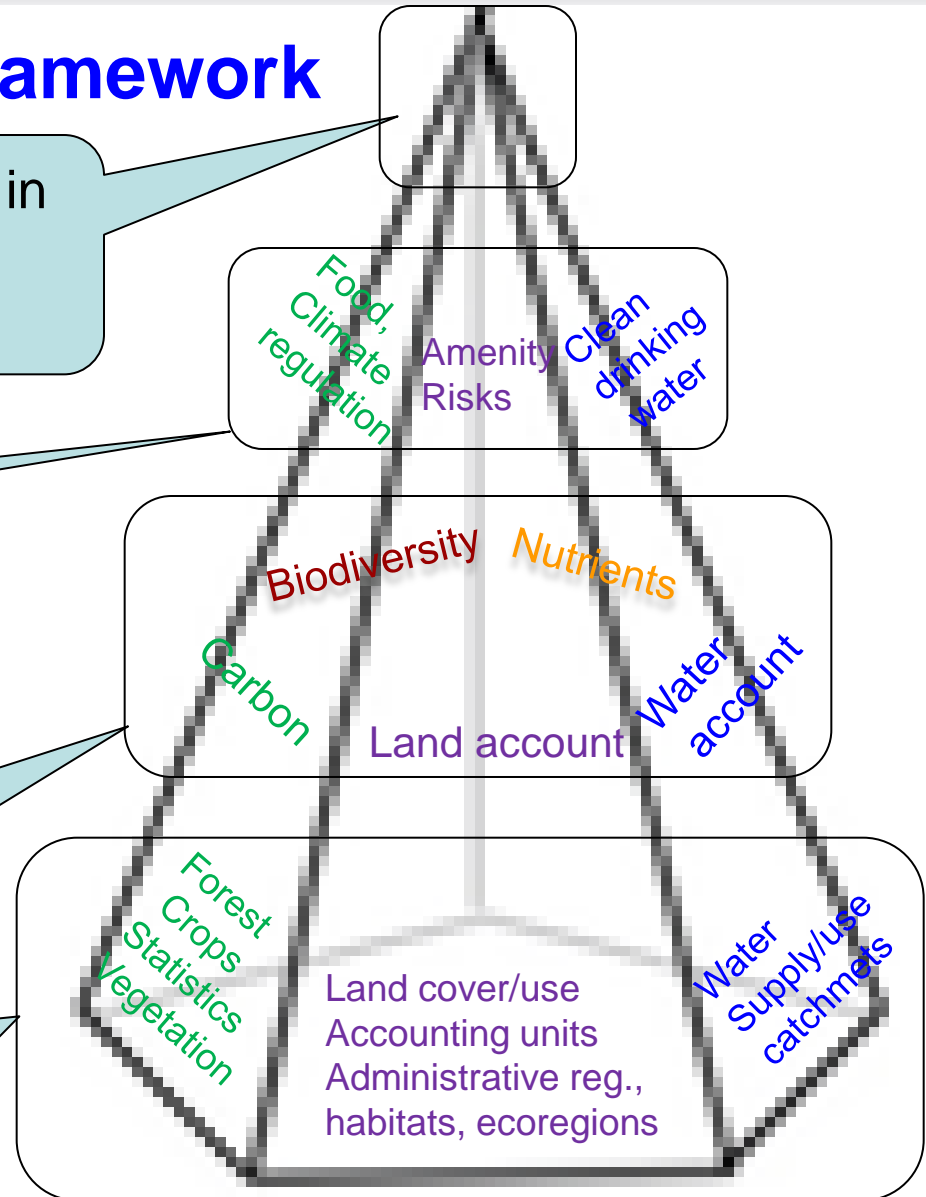
## SEEA-EEA integration framework

Integration of ecosystem services in macroeconomic aggregates, like GDP and NDP

Ecosystem services in monetary and physical terms

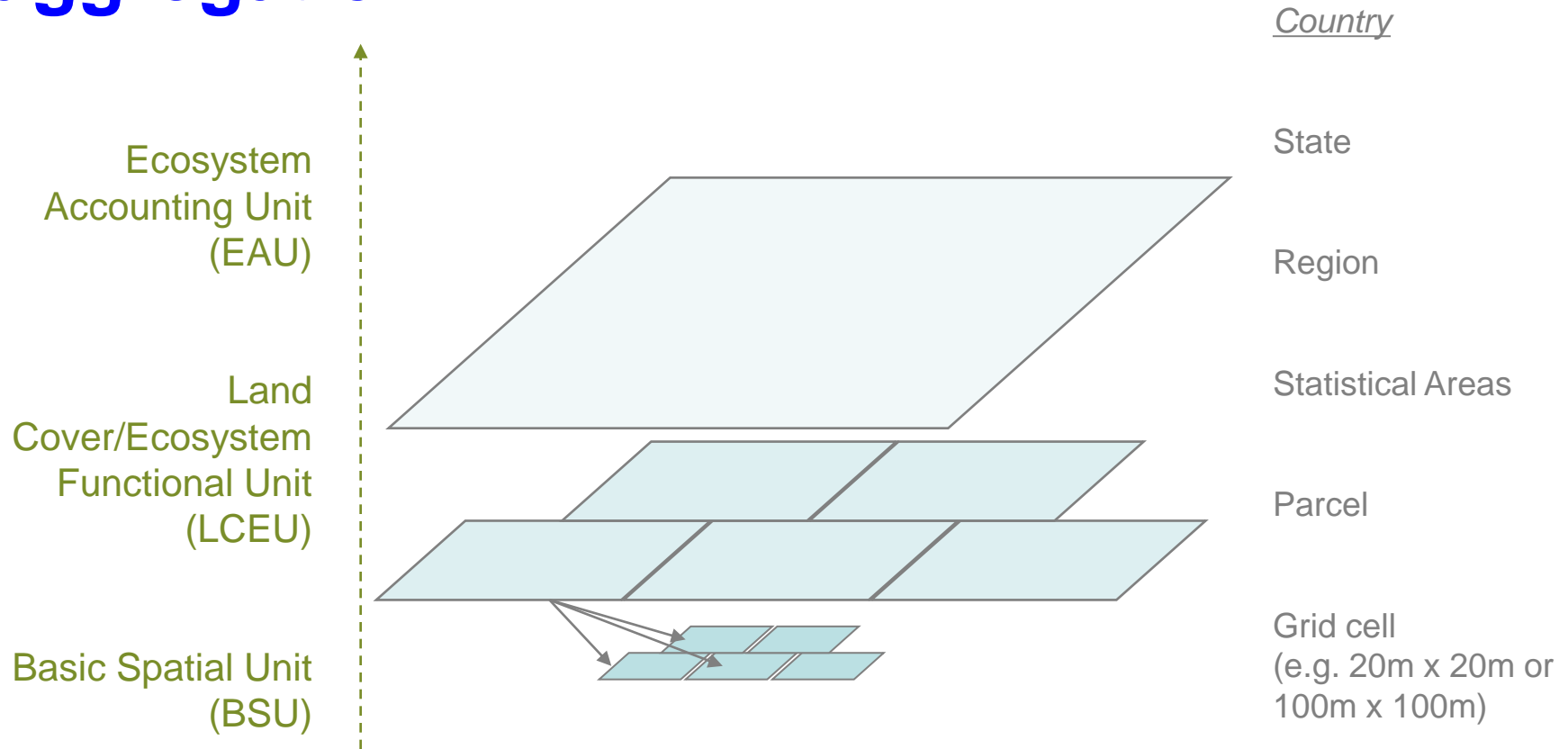
Consistent physical and monetary asset accounts

Raw data collection, processing and harmonization





# Hierarchical (nested-grid) aggregation





## Ecosystem accounting table

LCEU	Ecosystem service													
	Crop production		Fodder production		Drinking water extraction		Hunting		Air quality regulation		Forest carbon sequestration		Recreational cycling	
	Total	Mean (SD)	Total	Mean (SD)	Total	Mean (SD)	Total	Mean (SD)	Total	Mean (SD)	Total	Mean (SD)	Total	Mean (SD)
	Mtons MEQ	kg MEQ ha <sup>-1</sup> yr <sup>-1</sup>	ktons dm	kg dm ha <sup>-1</sup> yr <sup>-1</sup>	10 <sup>3</sup> m <sup>3</sup> water	m <sup>3</sup> water ha <sup>-1</sup> yr <sup>-1</sup>	kg meat	kg meat km <sup>-2</sup> yr <sup>-1</sup>	tons PM <sub>10</sub>	kg PM <sub>10</sub> km <sup>-2</sup> yr <sup>-1</sup>	ktons C	kg C ha <sup>-1</sup> yr <sup>-1</sup>	10 <sup>3</sup> trips	trips ha <sup>-1</sup> yr <sup>-1</sup>
<b>Pasture</b>	-	-	521	12,041 (1,573)	9,110	3,099 (2,231)	9,100	21 (17)	405	911 (532)	-	-	1,872	103 (78)
<b>Cropland</b>	2.46	36,314 (1,785)	-	-	14,855	3,082 (2,422)	14,732	20 (17)	715	956 (534)	-	-	2,631	99 (73)
<b>Forest</b>	-	-	-	-	4,577	3,214 (2,624)	8,100	24 (20)	686	2,040 (1,221)	55	1,563 (263)	1,472	126 (94)
<b>Water</b>	-	-	-	-	3,289	9,460 (3,698)	-	-	40	624 (569)	-	-	147	110 (92)
<b>Urban</b>	-	-	-	-	7,862	4,321 (3,527)	-	-	285	547 (562)	-	-	2,735	70 (57)
<b>Heath</b>	-	-	-	-	219	1,293 (821)	678	32 (25)	45	2,062 (1,111)	-	-	30	82 (59)
<b>Peat</b>	-	-	-	-	0	0 (0)	70	13 (3)	7	970 (345)	-	-	3	92 (44)
<b>Other nature</b>	-	-	-	-	1,187	3,093 (2,567)	1,513	25 (20)	69	1,155 (710)	-	-	226	128 (93)
<b>Provincial total</b>	2.46		521		41,099		34,193		2,252		55		9,116	



## Why an accounting approach?

- Organizes the information in an integrated way to ensure that the forests are presented side-by-side with economic information and other relevant information
- Linkages of forests with other sectors
- Measurement of forest degradation and identification of the causes
- Evaluation of trade-offs
- Allows evidence-based decision on budget allocation to forest and other sectors impacting forests





## Issues in implementation

- Implementation is a strategic exercise - 2020
  - Stakeholders mechanisms and roles and responsibilities of various stakeholders is key and a challenge
  - Integrates existing monitoring initiatives in an integrated informations system (e.g. Redd+, green growth/green economy, WAVES, TEEB, etc.) and develops sustainable information
  - Links of statistics and geospatial information (conventional and traditional data sources)
  - Impacts of non-forest policies on forest
- Incremental – can be done step-by-step