

System of Environmental Economic Accounting

# Natural Capital Accounting in support of land degradation neutrality

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## **Overview**

- What is NCA and the SEEA
- Experiences from EU
- Link with UNCCD Assessments / LDN
- NCAVES project
  - >Mexico
- Conclusions





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## WHAT IS NATURAL CAPITAL ACCOUNTING AND THE SEEA



# Limitations of Traditional Accounts

National accounts do not cost depletion or degradation.

Narrow view of environment -> only asset when owned and yielding benefits

Do not capture all economic contributions of nature (e.g. regulating services)

-> Decision makers don't have key information necessary to effectively pursue and track sustainable development.

-> Need for SEEA / NCA !





# System of Environmental-Economic Accounting (SEEA)

When doing NCA, applying SEEA as measurement framework

- Work started in late 1980s
- Rio 1992 / Agenda 21 -> recognized the need for satellite accounts
- The **SEEA Central Framework** was adopted as an international statistical standard by the UN Statistical Commission in 2012
- The SEEA Experimental Ecosystem Accounting complements the Central Framework and represents international efforts toward coherent ecosystem accounting





## **SEEA** accounts

<b>SEEA-CF</b> (Central Framework)	<ul> <li>Assets</li> <li>Physical flows</li> <li>Monetary flows</li> </ul>	<ul> <li>Minerals &amp; Energy, Land, Timber, Soil, Water, Aquatic, Other Biological</li> <li>Materials, Energy, Water, Emissions, Effluents, Wastes</li> <li>Protection expenditures, taxes &amp; subsidies</li> </ul>
SEEA Water; SEEA Energy; SEEA Agriculture, Forestry and Fisheries	Add sector detail	<ul><li>As above for</li><li>Water</li><li>Energy</li><li>Agricultural, Forestry and Fisheries</li></ul>
<b>SEEA-EEA</b> (Experimental Ecosystem Accounting)	Adds spatial detail and ecosystem perspective	Extent, Condition, Ecosystem Services, Thematic: Carbon, Water, Biodiversity



### From data silos to integrated information





# Why use an accounting framework for the environment?

- Presents environmental and economic information together in a consistent way
- Allows for environmental data to be integrated with existing System of National Accounts measures
- Provides:

International comparability
Broad credibility
Replicability

• Transforms data into information



## 80 countries and counting SEEA Around the World







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## EXAMPLES ECOSYSTEM ACCOUNTING IN EU



### **Ecosystem extent account - EU**



Source: EEA, 2015a, *European ecosystem assessment: Concept, data, and implementation*, EEA Technical Report No 6/2015, European Environment Agency

### - RESULTS -

# EEA: Net changes in ecosystem extent inside and outside of Natura 2000 (=protected) areas, 2000-2012



Source: EEA, CLC accounting layers 2000, 2006, 2012.

EEA May 2019: <u>https://www.eea.europa.eu/publications/natural-capital-accounting-in-support/</u>

### **Ecosystem condition account - EU**





## Assessing ES Crop pollination





### Pollination demand



Pollination potential

### Crop pollination



wild insect pollinators

## Crop pollination



Useful for the integrated narratives

IPBES: "decline of wild pollinators in North West Europe"



# Supply table for the EU

Nature-based recreation Crop provision Timber provision Global climate regulation Flood

Vear 2012 million FLIR	Ecosystem type									
					<b>—</b>			_	σ	<del></del>
	ban	opland	assland	athland d shrub	oodlanc d forest	arsely getated nd	etlands	/ers and (es	astal an ertidal eas	Tot
Ecosystem service	- L	C	G	He an	an K	Sp ve lar	≥	Riv Iak	Co int ar	
Crop provision		20,560								20,560
Timber provision					14,540					14,540
Global climate regulation	20	150	850	20	13,330	20	0	NA	NA	14,390
Flood control	90	1,020	3,130	360	11,390	0	330	NA	NA	16,320
Crop pollination		9,720								9,720
Nature-based recreation	80	4,070	7,480	3,100	30,720	1,350	2,300	1,020	280	50,400
Total	190	35,520	11,460	3,480	69,980	1,370	2,630	1,020	280	125,930
Value in EUR/km <sup>2</sup>	880	22,090	22,610	19,250	44,010	23,410	26,890	9,320	14,530	28,740

NA: not assessed

Values rounded to the nearest ten

# 56,370 euro/km<sup>2</sup> of green urban area





# Trends for ecosystem services





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# NATURAL CAPITAL ACCOUNTING AND LAND DEGRADATION NEUTRALITY



# **Complementary frameworks**

Technical Recommendations in support of the System of Environmental-Economic Accounting 2012



- SEEA more detail on individual ES and on land units
- Links to the economy (pressures)
- O SEEA

• Conceptual framework land as natural capital that provides ecosystem services; stocks and flows

• Scope

affected areas (+ conservation areas)

- Spatially explicit land units
- LDN balance sheet

- Help with resilience + degradation assesment
- Accounts used to underpin indicators
- Assess trade-offs ("like for like") + scenario analysis



FOR LAND DEGRADATION NEUTRALITY A Report of the Science-Policy Interface

- LDN provides policy context
- Response hierarchy



# SEEA accounts and UNCCD assessments

•	Land account:		
	> Land cover / land use	SO1-1	SDG 15.3
•	Ecosystem condition account		
	> SOC (condition account)	SO1-3	SDG 15.3
•	Carbon account:		
	> NPP	SO1-2	SDG 15.3
	<ul><li>Above ground carbon</li></ul>	SO4-1	
•	Ecosystem services supply and use accou	unt	
	> Additional indicators (individual ES	5)	
•	Biodiversity (species) account	SO4-2	
•	Integrated presentations		
	> Socio-economic information	SO2	
S	Envir. Protection expenditure accounts	SO5-1-4	



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# NATURAL CAPITAL ACCOUNTING AND VALUATION OF ECOSYSTEM SERVICES PROJECT (NCAVES)



## **Overall objectives**

- Advance the knowledge agenda on Natural Capital Accounting, in particular ecosystem accounting
- By initiating pilot testing of SEEA Experimental Ecosystem Accounting, with a view to:
  - Improving the measurement of natural biotic resources, ecosystems and their services at the (sub)national level
  - Mainstreaming biodiversity and ecosystems in (sub)national level policyplanning and implementation
  - Contributing to the development of internationally agreed methodology and its use in partner countries.



# NCAVES

- Implementing partners
  - United Nations Statistics Division
  - United Nations Environment Programme
  - SCBD
- Sponsor
  - European Union
  - Partnership Instrument
- Five partner countries
  - Brazil, China, India, Mexico, South Africa
- Project duration
  - 4 years from 2017-2020





## **Example from Mexico**

Applying the S-world model (Wageningen University) Tier 2 estimates (using national data sources)

New data from Inegi

- Soil profile database (4400 profiles)
- 1:250.000 soil map

Same data on Rainfall, Temperature, Topography, Land Cover, and Vegetative cover.





### Accounts tier 1 and tier 2

#### Three indicators:

- C-stock (kg/ha) -
- Soil fertility (-) -
- Water holding capacity in mm. -



#### Soil fertility indicator:

- 1. Expert inventory (12 persons, 5 variables)
- 2. Relative importance of each factor by experts for agreed list
- 3. Calculate indicator as:

$$I_{fert} = \sum_{i=1}^{5} C_i \frac{(v_i - v_{min})}{(v_{max} - v_{min})}$$

1 1151						
OBJECTID *	NAME_1	ZONE_CODE	AREA	MEAN	STD	SUM
1	Aguascalientes	1	0.349375	112.169516	42.740043	564324.835775
2	Baja California	2	6.687986	64.332042	23.681726	6195625.95751
3	Baja California Sur	3	6.307986	72.483634	26.906888	6584050.902629
4	Campeche	4	4.849931	207.607413	139.637055	14499094.09343
5	Chiapas	5	6.061875	162.613501	63.319673	14194695.089423
6	Chihuahua	6	21.828264	89.892151	35.054168	28255530.175494
7	Coahuila	7	13.991597	89.677446	33.140087	18068122.242899
8	Colima	8	0.462778	145.178478	68.310721	967469.377235
9	Distrito Federal	9	0.090972	242.615771	205.893542	317826.6605
10	Durango	10	10.996111	99.072662	40.619894	15687561.529037
11	Guanajuato	11	2.509931	110.426912	39.797733	3991159.893595
12	Guerrero	12	5.467014	123.246451	48.552871	9702576.890869

Tier 2

(Inegi data)

# Conclusions

- NCA and UNCCD assessments have a lot in common
- Further coordination and collaboration is important
  - > National statistical system (SEEA) with
  - > Relevant line ministries and
  - > Technical agencies
- SEEA Revision Process provides important opportunities
- Objective is to have a agreed international framework by 2020





## **Revision of the SEEA EEA**

- Elevation to an agreed methodological document
- Engagement with various stakeholders
  - > Science community
  - > Environmental economics
  - > Geospatial community
  - > National Accounts
- Timeline by end of 2020 endorsement by UN Statistical Commission by March 2021
- Process aligned with the Post-2020 biodiversity framework, review of SDG and Climate change process
- Seek for broad involvement of partners and experts in the process
  - > CBD, IPBES, UNFCCC, UNCCD, EU, Academia, etc...





## **THANK YOU**

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