



# Sistema de Contabilidad Ambiental y Económica



Sistema de  
Contabilidad  
Ambiental y  
Económica

# Cuentas de los Ecosistemas

Georgina Alcantar

División de Estadísticas

Comisión Económica para América Latina y el Caribe (CEPAL)

Curso Introductorio a las Cuentas Ambientales

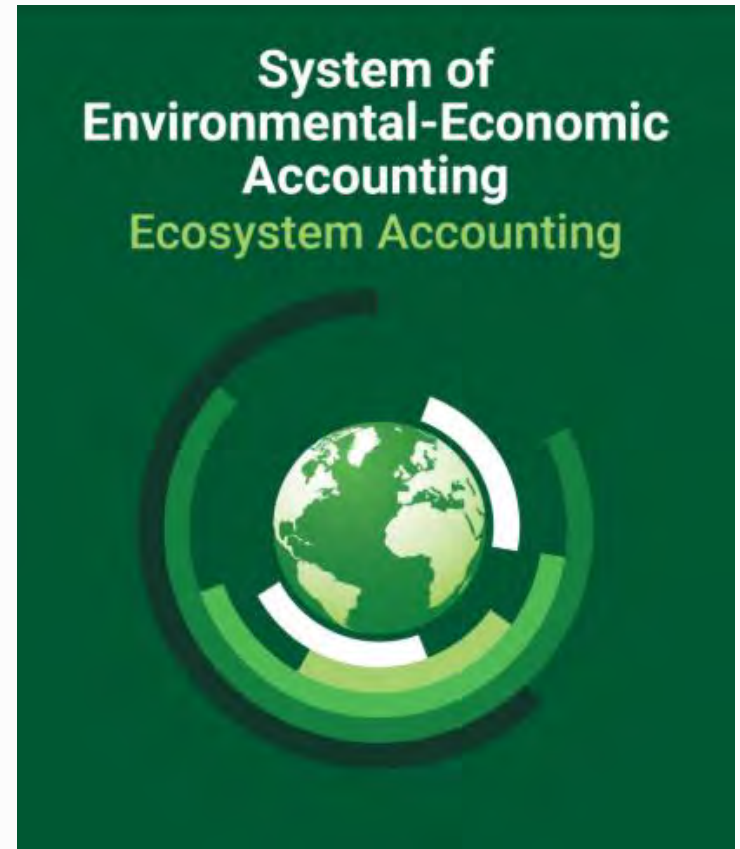
16-18 de julio, Varadero, Cuba - 2024



United Nations

# SCAE-CEE

- Complementa el Marco Central del SCAE
- Marco estadístico integrado para contabilizar los activos de los ecosistemas y servicios ecosistémicos asociados
- Un paso importante en el desarrollo del marco estadístico para las cuentas de ecosistemas
- Es una norma estadística



# Two Different Perspectives

## SEEA Central Framework:

Individual environmental assets/ resources

Timber  
Water  
Soil  
Fish



## SEEA Experimental Ecosystem Accounts:

Ecosystem assets (spatially based)

Forests  
Lakes  
Agricultural areas

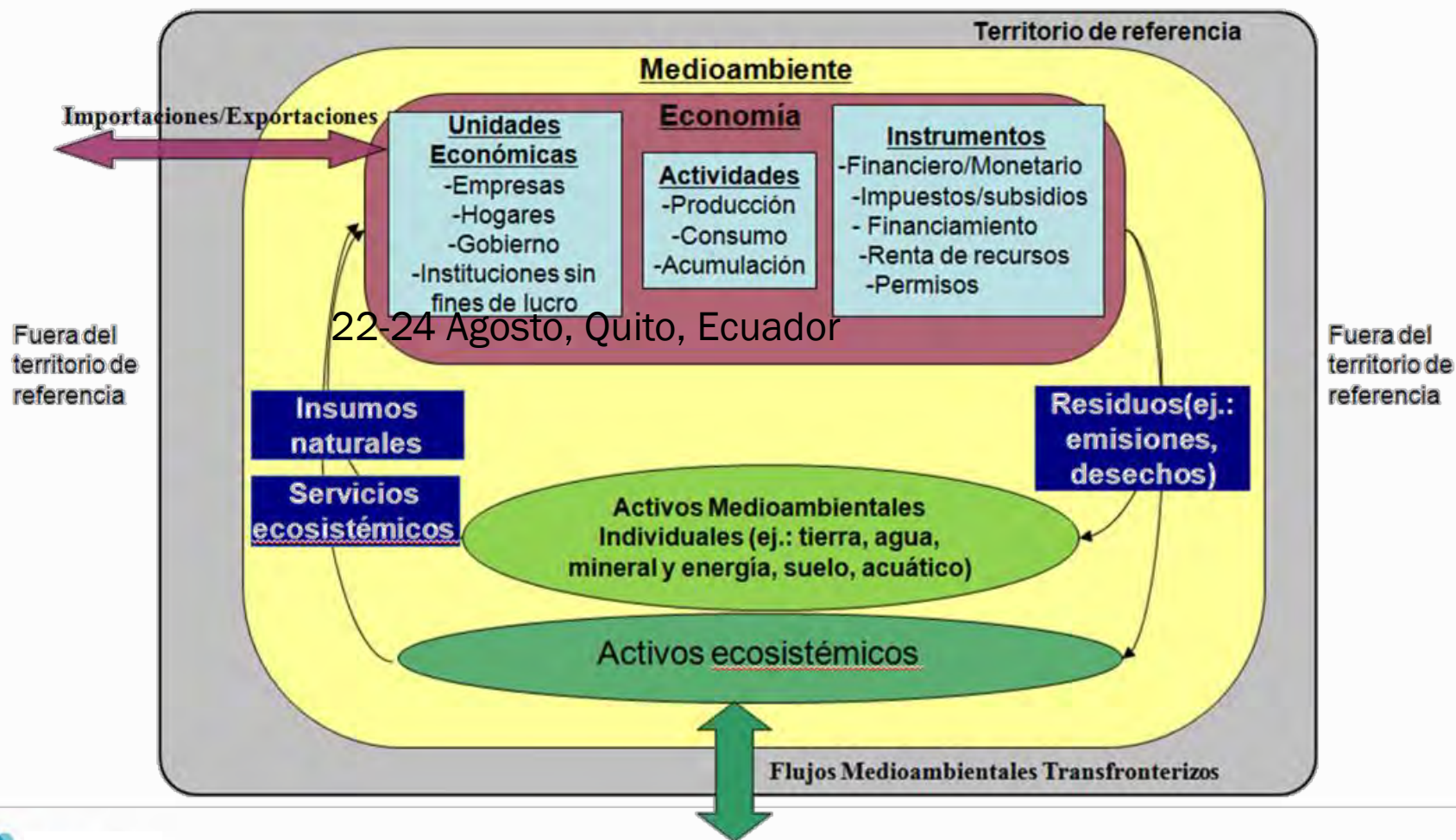
Ecosystem Assets are environmental assets viewed from a systems perspective

# Relationship to SEEA Central Framework

- Extends range of flows (production boundary) for accounting compared to SNA and SEEA in physical and monetary terms
- Many flows from Central Framework also included in Experimental Ecosystem Accounting (e.g. flows of timber), but extension of EEA is to attribute flows to spatial areas
- Some Central Framework natural input flows are excluded from Experimental Ecosystem Accounting (e.g. mineral and energy resources)

# SCAE – Marco Conceptual

Cuentas ambientales = Ampliación de las cuentas nacionales



22-24 Agosto, Quito, Ecuador

# ¿QUÉ SON LAS CUENTAS DE LOS ECOSISTEMAS (CEE)?

# CEE – una ilustración

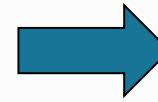
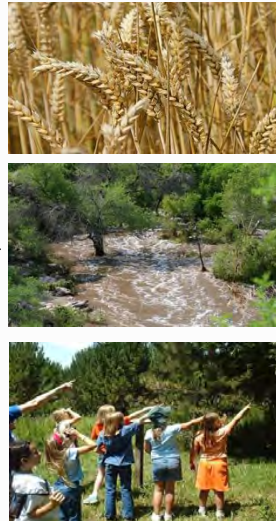
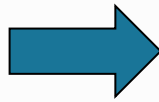
**Tiempo 1**

Activos

Servicios

Economía y bienestar

Regeneración



Resíduos y degeneración





# CEE – una ilustración



# Ecosystem assets: definition

Ecosystem assets are spatial areas containing a combination of **biotic and abiotic components** and other characteristics that function together:

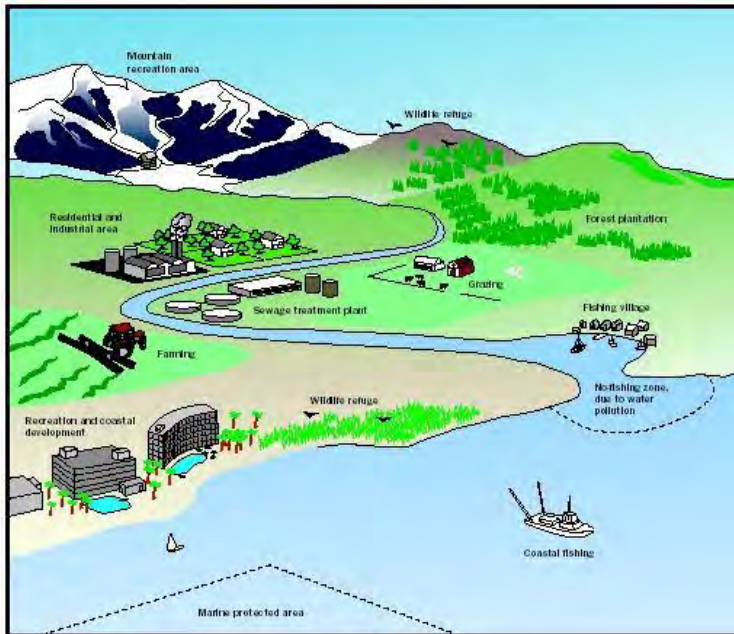
- Ecosystems are considered assets because they support **not only economic production**, but also our **well-being, health and security**.
- Potential ecosystem assets include **forests, wetlands, agricultural areas, rivers and coral reefs**.
- Example: A **forest** is an area that:
  - > Can be located on a map (spatial)
  - > Contains trees, shrubs, grasses, soil biota, birds, mammals, insects... functioning together with
  - > The soil, water, geology (rocks), sunlight, wind...

# Ecosystem accounting is spatial

- Ecosystems are different and function differently depending on **where** they are
- Their capacity to supply services depends on their **location**
- The benefits of many services depends on whether or not the ecosystems are **accessible**
- Therefore...Ecosystem accounting needs to integrate **spatial** and **non-spatial** data
- For example, wetlands in northern Canada may have the **capacity** to purify water, but there is no population there to benefit from it.

# El SCAE-CEE: Dos dimensiones nuevas

1. Características espaciales
2. Visión integrada de múltiples asuntos



- Tierra
- Agua
- Carbón
- Biodiversidad
- Nutritivos
- Contaminación
- Actividades humanas
- Servicios de ecosistemas

Las CEE tienen un enfoque en recursos naturales (renovables) vivientes

# Algunas definiciones (anteriores)

1. **Los activos ambientales** son elementos naturales de la Tierra, vivos o inertes, que en conjunto constituyen el ambiente biofísico que puede proveer beneficios a la humanidad
2. **Los ecosistemas** son complejos dinámicos de comunidades de plantas, animales y microorganismos, y su entorno inerte, que interactúan como unidades funcionales

# Relación con el Marco Central del SCAE

- Amplia gama de flujos (frontera de producción) para la contabilidad, comparado con el SCN y el SCAE en términos físicos y monetarios
- Muchos de los flujos del Marco Central también se incluyen en las CEE (por ejemplo: flujos madereros), pero la extensión de las CEE consiste en atribuir flujos a áreas espaciales
- Algunos de los flujos de insumos naturales están excluidos de las CEE (por ejemplo: recursos minerales y energéticos)

# CEE – Algunos principios

- La contabilidad experimental ambiental es una **herramienta para entender y monitorear las contribuciones de los ecosistemas** a la actividad económica y humana
- Los ecosistemas incluyen **tanto los sistemas naturales como los dominados por el hombre** como cultivos o pastizales de uso intensivo
- Requiere un **enfoque espacial** (combinación de mapas y estadísticas)

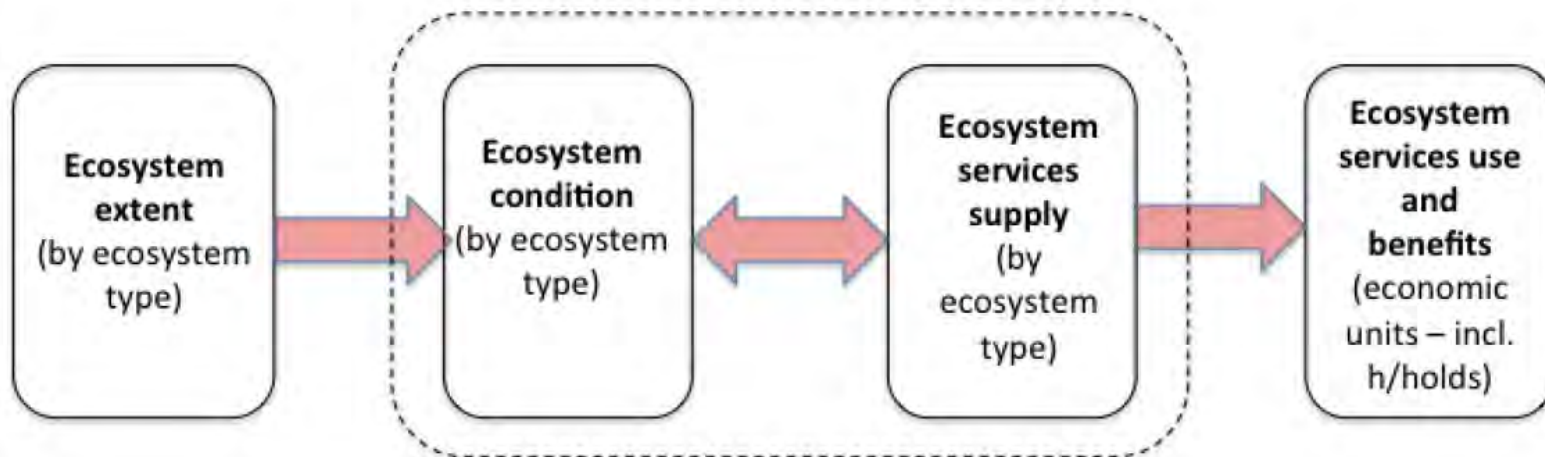
# Modelo conceptual de las CEE



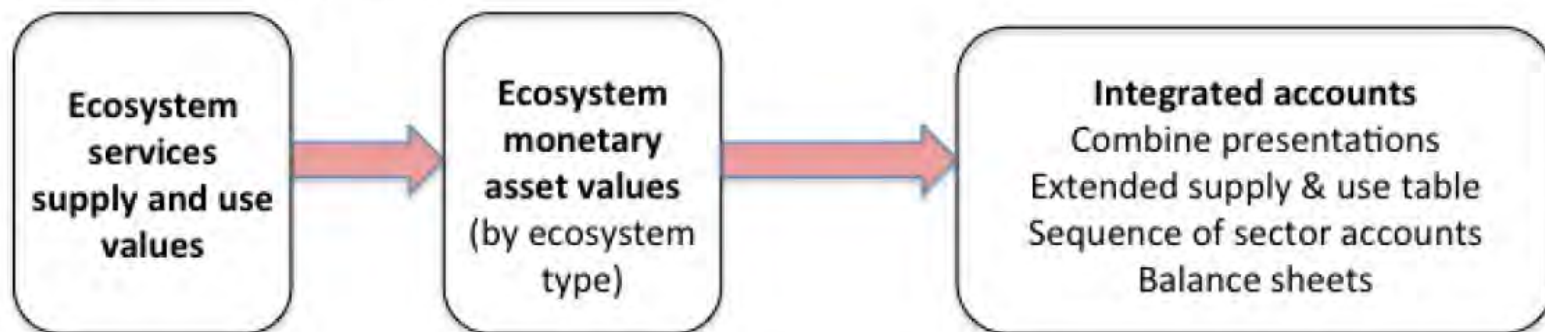
(FUENTE: DENU 2015)



# Pasos generales en las CEE



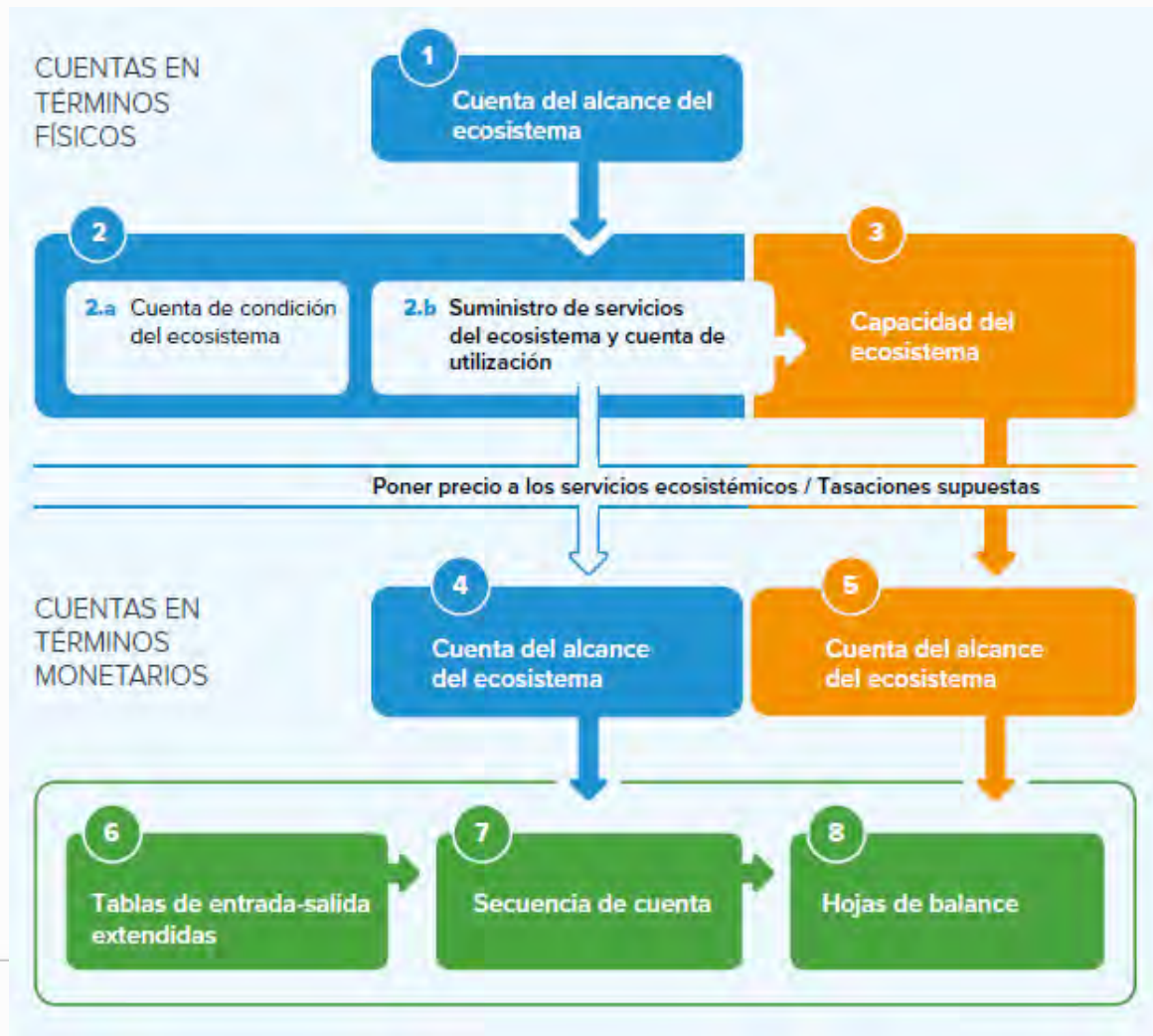
## *b. Steps in monetary terms*



# CEE – cuentas específicas

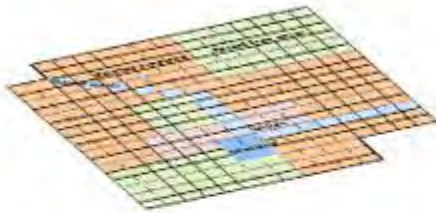
Accounts for ecosystem assets	Ecosystem extent account
	Ecosystem condition account
	Ecosystem monetary asset account
Accounts for ecosystem services	Ecosystem services supply and use table – physical terms
	Ecosystem services supply and use table – monetary terms
Integrated accounts*	Combined presentations
	Extended supply and use table
	Sequence of accounts for institutional sectors
	National and sector balance sheets

# Conexiones entre las cuentas



# Cuenta de extensión del ecosistema

Maps



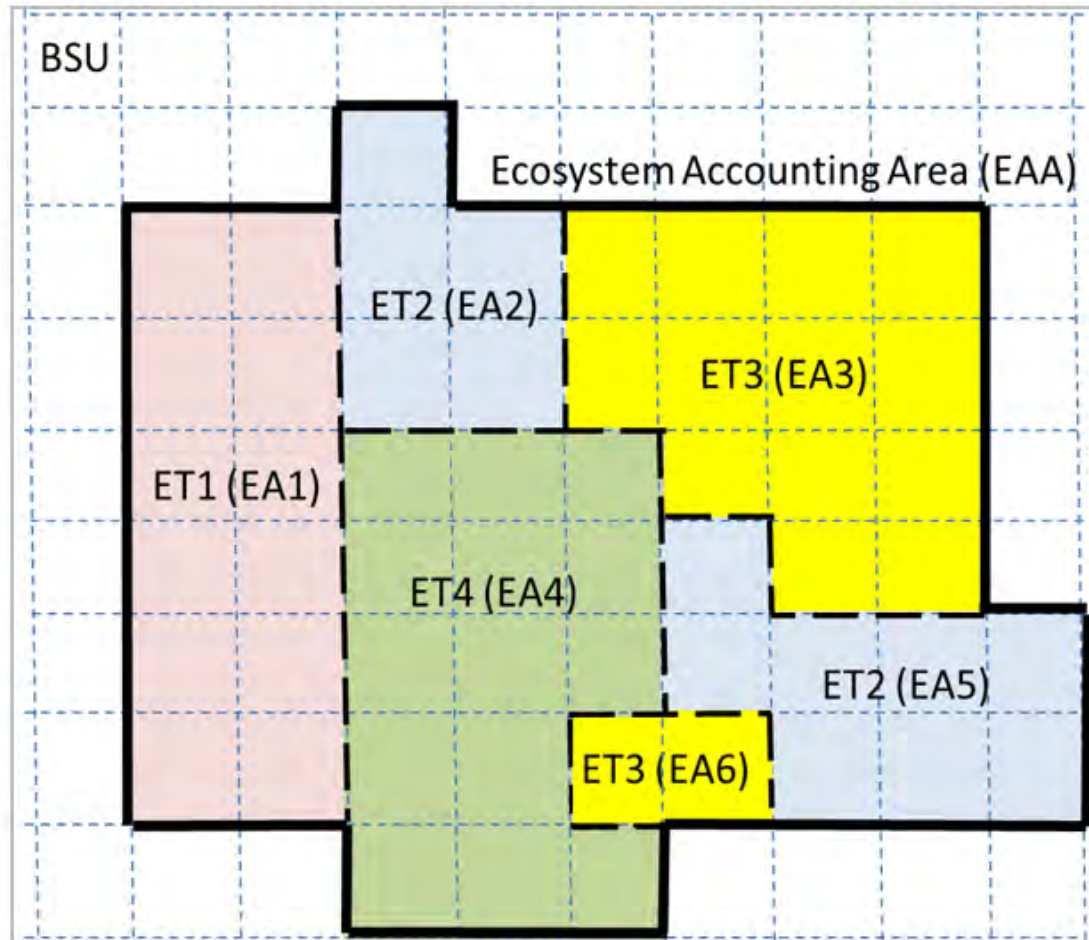
Ecosystem type



**Spatial units**  
**Classifications**

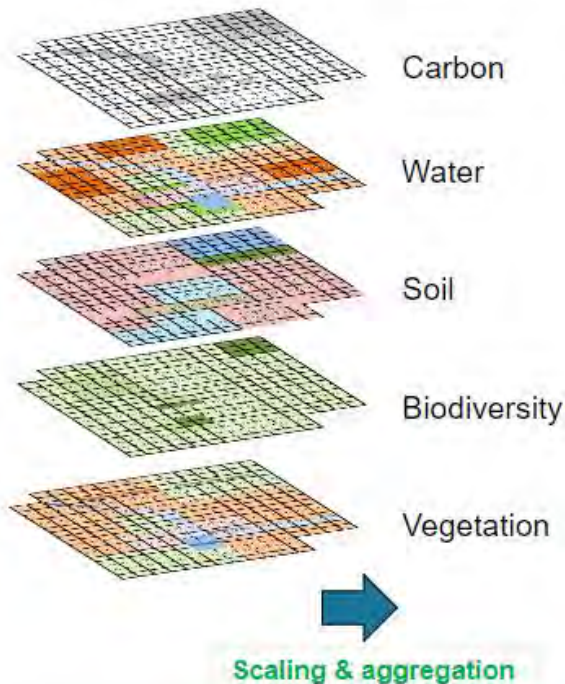
	Type of Ecosystem Unit															
	Artificial surfaces	Herbaceous crops	Woody crops	Multiple or layered crops	Grassland	Tree-covered areas	Mangroves	Shrub-covered areas	Regularly flooded areas	Sparse natural vegetated areas	Terrestrial barren land	Permanent snow and glaciers	Inland water bodies	Coastal water and inter-tidal areas	Sea and marine areas	TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
<b>Opening extent</b>																
Additions to extent																
Managed expansion																
Natural expansion																
Upward reappraisals																
Reductions in extent																
Managed regression																
Natural regression																
Downward reappraisals																
Net change in extent																
<b>Closing extent</b>																

# Áreas espaciales



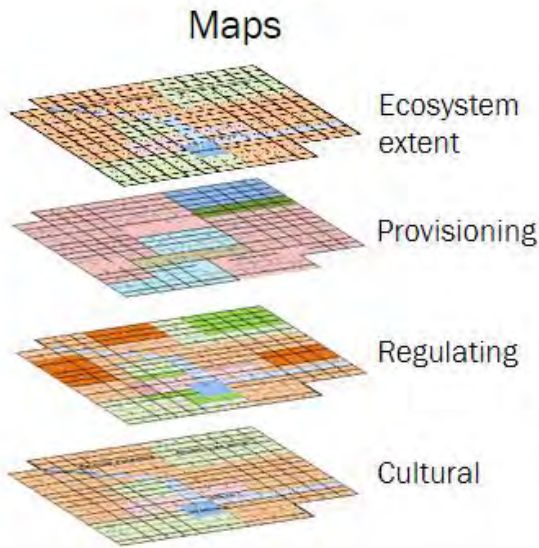
# Cuenta de la condición del ecosistema

## Maps



Type of Ecosystem Unit	Ecosystem characteristics						
	Vegetation	Water resources	Soil	Carbon	Biodiversity	Air	...
Artificial surfaces							
Herbaceous crops							
Woody crops							
Multiple or layered crops							
Grassland							
Tree-covered areas							
Mangroves							
Shrub-covered areas							
Regularly flooded areas							
Sparse natural vegetated areas							
Terrestrial barren land							
Permanent snow and glaciers							
Inland water bodies							
Coastal water and inter-tidal areas							
Sea and marine areas							

# Cuadro de oferta de servicios ecosistémicos



	UNITS	Type of economic unit						Type of Ecosystem Unit															TOTAL SUPPLY
		Agriculture, forestry and fisheries	Electricity, gas supply	Water collection, treatment and supply	Other industries	Households	Accumulation	Rest of the world - Imports	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
<b>Ecosystem services</b>		<b>A</b>						<b>B</b>															
Provisioning services																							
Regulating services																							
Cultural services		<b>C</b>						<b>D</b>															
<b>Products</b>																							

# Cuadro de oferta de servicios ecosistémicos - ejemplo

Ecosystem service		Units	Land cover type								Provincial total
			Urban	Pasture	Cropland	Forest	Heath	Peat	Surface Water	Other nature	
Provisioning	Hunting	kg meat	-	9,100	14,732	8,100	678	70		1,513	34,193
	Drinking water extraction	10 <sup>3</sup> m <sup>3</sup> water	4,071	7,026	11,227	3,117	214	-	478	862	26,995
	Crop production	10 <sup>6</sup> kg produce	-	-	1,868	-	-	-	-	-	1,868
	Fodder production	10 <sup>6</sup> kg dry matter		533	251						784
Regulation	Air quality regulation	10 <sup>3</sup> kg PM <sub>10</sub>	272	404	717	700	45	7	40	69	2,254
	Carbon sequestration	10 <sup>6</sup> kg carbon	875	8,019	273	50,664	393	149	-	1,056	61,429
Cultural	Recreational cycling	10 <sup>3</sup> trips	2,690	1,863	2,611	1,565	30	3	139	220	9,121



# Cuadro de utilización de servicios ecosistémicos

	UNITS	Type of economic unit							Type of Ecosystem Unit								TOTAL USE				
		Agriculture, forestry and fisheries	Electricity, gas supply	Water collection, treatment and supply	Other industries	Households	Accumulation	Rest of the world - Exports	1 Artificial surfaces	2 Herbaceous crops	3 Woody crops	4 Multiple or layered crops	5 Grassland	6 Tree-covered areas	7 Mangroves	8 Shrub-covered areas		9 Regularly flooded areas	10 Sparse natural vegetated areas	11 Terrestrial barren land	12 Permanent snow and glaciers
<b>Ecosystem services</b> Provisioning services Regulating services Cultural services		<b>E</b>							<b>F</b>												
<b>Products</b>		<b>G</b>							<b>H</b>												

# Asuntos adicionales

- Cuentas temáticas
  - > Biodiversidad
  - > Carbón
  - > Agua
- Valuación

# Muchas gracias

Para mayor información:

CEPAL: <http://www.cepal.org/es/temas/estadisticas-ambientales>

UNSD: <http://unstats.un.org/unsd/envaccounting/seea.asp>