ECOSYSTEM ACCOUNTING AND CASE STUDY IN PERU

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Daniel Juhn and Rosimeiry Portela

Ecosystem Values & Accounting Program (EVA)
Moore Center for Science at Conservation International
OUTLINE

• Introduction/Problem Statement

• The SEEA Experimental Ecosystem Accounts
  • What it is, key characteristics, how it relates to Central Framework, components and processes
  • Piloting Experimental Ecosystem Accounting in San Martin, Peru: The Ecosystem Valuation and Accounting (EVA)
    • Key accounts, supply and use
    • Main findings, the way forward, recommendations and lessons learned
  • A Word on the Natural Capital Protocol
INTRODUCTION
IGNORING NATURE JEOPARDIZES PROSPERITY

Economies and societies need nature to thrive.

Impacts and dependencies are ignored
As a result we are losing the natural capital that humans depend on
CURRENT SYSTEMS ARE INADEQUATE

- Every country follows a system of national accounts and every business relies on a balance sheet
- However, they largely omit the benefits from nature
- What we need is to capture and integrate the contribution of nature into the systems that countries and governments use to really make decisions
NATURAL CAPITAL ACCOUNTING

- Measures the value of ecosystems (stocks) and the services they provide (flows)
- Integrates this information into the accounting systems that government and business already use to make decisions
- Provides a more complete view of a country’s assets
ECOSYSTEM ACCOUNTING
SEEA EXPERIMENTAL
ECOSYSTEM ACCOUNTING
(SEEA EEA)

• An integrated accounting framework for ecosystem stocks (assets) and flows (services)
  • Measures the contributions of ecosystem to economic and other human activity
  • Takes a detailed spatial approach (geography and statistics)
SEEA EXPERIMENTAL ECOSYSTEM ACCOUNTING (SEEA EEA)

• A synthesis of current knowledge on ecosystem services, ecosystem condition and related concepts

• “Experimental” because significant measurement challenges remain and further testing of concepts is needed
ECOSYSTEM ACCOUNTING

- **Ecosystem Assets**: Spatial areas containing a combination of biotic and abiotic components and other characteristics that function together
  - Measured as extent (area) and condition (indicators)

- **Ecosystem Services**: The contribution of ecosystems to benefits used in human and economic activity
  - Measured as stock and flows (biophysical and monetary units)
CHARACTERISTICS OF EEA

• Inherently spatial and thus allow easy links to policy and decision making
• A long term monitoring tool that can help understand:
  • Status and health of ecosystems over time (degradation)
  • Benefits derived from ecosystems to different types of beneficiaries
  • Trends in the capacity to derive benefits and how this is changing
  • Understanding of the drivers and actors of change.
CENTRAL FRAMEWORK AND ECOSYSTEM ACCOUNTS

System of National Accounts

Products and Services

Manufacturing / Government / Household

Central Framework

Water
Carbon
Land
Soil
Timber

Aquatic, Biological, and Water Resources

Ecosystem Accounting

Sources + Flows from Nature

Ecosystem Extent
Condition
Ecosystem Services
Supply and Use
Capacity
Biodiversity
Annual water supply (m3/km2/year)

Annual water use (m3/km2/year)

Water Supply-Use San Martin, Peru, 2013

Water Use (T m3/year)
COMPONENTS OF ECOSYSTEM ACCOUNTING

- Ecosystem extent (by ecosystem type)
- Ecosystem condition (by ecosystem type)
- Ecosystem services supply (by ecosystem type)
- Ecosystem services use and benefits (economic units – incl. h/holds)
- Ecosystem services supply and use values
- Ecosystem monetary asset values (by ecosystem type)
- Integrated accounts
  - Combine presentations
  - Extended supply & use table
  - Sequence of sector accounts
  - Balance sheets
PROCESS STEPS IN ECOSYSTEM ACCOUNTING

Policy and management issues

Define account types to be explored

Measurement of indicators over accounting periods

Statistical units and identification of indicators

Accounts Completed
CASE STUDY: PERU
SAN MARTIN, PERU
# KEY ECOSYSTEM ACCOUNTS

<table>
<thead>
<tr>
<th>Ecosystem Accounts</th>
<th>Description</th>
<th>Type of Account</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosystem Extent</td>
<td>Records statistics on the area of ecosystem distributions over an accounting period.</td>
<td>Primary</td>
</tr>
<tr>
<td>Ecosystem Condition</td>
<td>Records statistics on the characteristics that reflect the condition or quality of an ecosystem.</td>
<td>Primary</td>
</tr>
<tr>
<td>Ecosystem Services Supply and Use</td>
<td>Records ecosystem services flows from the ecosystems (i.e. its supply) and flows to beneficiaries (i.e. its use). Measurements are in physical and where appropriate monetary values.</td>
<td>Primary</td>
</tr>
<tr>
<td>Extended Supply and Use Table</td>
<td>The aim of extended supply and use table is to embed the measures of ecosystem service flows into the SNA Supply Use Table</td>
<td>Primary</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>A cross cutting account that records statistics independent of different ecosystem types on biodiversity values. It is a standalone account but also used as input for the ecosystem condition account.</td>
<td>Thematic</td>
</tr>
<tr>
<td>Carbon</td>
<td>Contains information on the stocks and flows of carbon within ecosystems</td>
<td>Thematic</td>
</tr>
<tr>
<td>Water</td>
<td>Contains information on the stocks and flows of water including inter-ecosystem flows</td>
<td>Thematic</td>
</tr>
</tbody>
</table>
### Ecosystem services

<table>
<thead>
<tr>
<th>Ecosystem services</th>
<th>Goods/benefits</th>
<th>Beneficiaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water provision, flow regulation and water purification</td>
<td>Potable and non-potable water, drought and flood attenuation, prevention of erosion and sediment retention.</td>
<td>Public sector (water supply for domestic consumption); Agriculture (rice irrigation); Aquaculture; Energy production (hydropower); Mining industry, Recreation.</td>
</tr>
<tr>
<td>Provision of natural forest products</td>
<td>Timber, non-timber forest products (NTFP), wild food, ornamental and medicinal resources</td>
<td>Food subsisters (rural poor, farmers, other wild food extractors); Foresters; Building material subsisters (rural poor, farmers); Industry (pharmaceutical and orchid growers).</td>
</tr>
<tr>
<td>Climate regulation</td>
<td>Carbon storage and sequestration</td>
<td>Global and local beneficiaries</td>
</tr>
<tr>
<td>Pollination</td>
<td>Pollination of natural and cultivated crops</td>
<td>Farmers.</td>
</tr>
<tr>
<td>Cultural services</td>
<td>Recreation, inspiration, education, spiritual rituals, art and photography</td>
<td>Tourists operators (ecolodges, hotels, indigenous communities)</td>
</tr>
</tbody>
</table>
Palm swamp
Humid ridge forest
Humid low ridge/hill forest
Humid montane forest
Humid terra firme forest
Humid floodplain forest
Herbaceous wetlands
High elevation grass/shrubland
Wetlands
Water bodies

Millions PEN

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180

2009
2011
2013

ESTIMATED ECOSYSTEM SERVICE FLOWS (PEN) BY ECOSYSTEM TYPE
HIGH VALUE ECOSYSTEMS
CONTRIBUTION OF ECOSYSTEMS TO THE REGIONAL ECONOMY WAS ESTIMATED AS 191 MILLION PERUVIAN SOL (ABOUT US$58 MILLION), WHICH WOULD REPRESENT THE EIGHTH BIGGEST SECTOR IN SAN MARTÍN.

8TH OUT OF 32 SECTORS
CUENTAS EXPERIMENTALES DE LOS ECOSISTEMAS
EN SAN MARTÍN - PERÚ

Reporte técnico para el MNAM, INEI, y ABA

INDICADORES Y OTROS MÉTODOS USADOS EN LAS CUENTAS EXPERIMENTALES DE ECOSISTEMAS
EN SAN MARTÍN - PERÚ

Reporte técnico para el MNAM, INEI, y ABA

Available on the WAVES Knowledge Center [here](#)
POST ACCOUNT POLICY APPLICATIONS

Index and indicators to make decisions

• Ecosystem Benefits Index (EBI)
• Environmental Performance Index (EPI)

Indicators and analyses for specific sectors

• Ecotourism
• Rice and Palm Swamp
• Hydroenergy
RECOMMENDATIONS & LESSONS LEARNED 3

• Follow SEEA ecosystem accounting framework guidelines
• Formalize institutional arrangements and leverage strong partnerships
• Utilize multi-disciplinary teams and expertise
• Ensure accounts are developed to inform key policies and decisions
• Ensure time and resources for post account applications
• Maintain a research component
• Develop extent, condition and biodiversity accounts nationally, and build ecosystem services supply and use accounts at the region level
• Data
NATURAL CAPITAL PROTOCOL
TRANSFORMING THE FUTURE OF BUSINESS + MARKETS
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