System of Environmental Economic Accounting
The SEEA and the geospatial information

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Seventh Session of the Committee of Experts on UN-GGIM
The 2030 Agenda for Sustainable Development “Where is the Data?”
Tuesday, 1 August 2017
10:00 am - 4:00 pm
Venue: Conference Room 3 (CR-3)
SEEA and the SDG indicators

- The **SNA and SEEA** are statistical standards that can be used to monitor a number of environmental-economic SDG Indicators in an integrated way.
- The **Ecosystem Accounting and geospatial information** is in particular relevant for SDGs 6, 14 and 15.
Indicators based on standards

- Higher quality
- International comparability
- Comprehensive basis for (dis)aggregation

Standards for Statistics

- Aligned Definitions and Classifications
- Improved capacity to compare and/or combine statistics from different sectors
- Basis for coherent and comprehensive data sets
- Integration of statistical and geospatial information
SEEA Experimental Ecosystem Approach

• Measures the contributions of ecosystems to economic and other human activity in an accounting framework

• An integrated measurement framework for ecosystem stocks (assets) and flows (services):
  > It covers “natural” as well as human-dominated systems such as croplands and intensive pastures
  > It takes a detailed spatial approach (maps and statistics)

• 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

• An integration framework explicitly recognizing and incorporating the geographic perspective

• Link to policies
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
Use of geospatial data for improving environmental data
Spatial areas for ecosystem accounting in ecosystem extent accounting

- Basic spatial units (BSU): small spatial area, a geometrical construct.
- Ecosystem Assets (EA): individual and contiguous ecosystems.
- Ecosystem Types (ET): aggregation of EAs of the same type.
- Ecosystem Accounting Area (EAA): aggregation of EAs and ETs relevant for policy at a scale fit for a specific purpose.

Overlay of units (UK)
Hierarchical (nested-grid) aggregation

- Ecosystem Accounting Area (EAA)
- Ecosystem Assets (EA)
- Basic Spatial Unit (BSU)
- Country
  - State
  - Region
  - Statistical Areas
  - Parcel
    - Grid cell (e.g. 20m x 20m or 100m x 100m)
The use geospatial information

Geospatial information is used for construction of ecosystem accounts:

Maps

Ownership

Use

Cover

Tables

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<tr>
<th>Cover</th>
<th>Urban and associated</th>
<th>Rainfed herbaceous cropland</th>
<th>Forest tree cover</th>
<th>Inland water bodies</th>
<th>Open wetlands</th>
<th>Total</th>
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<td>Use</td>
<td>Infrastructure</td>
<td>Permanent crops</td>
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Units

Opening Stock
Additions to Stock
Managed expansion
Natural expansion
Reductions to stock
Managed regression
Natural regression
Closing stock

Spatial units
Classifications
Examples
SDG Indicator 15.3.1

- Proportion of land that is degraded over total land area
- UNCCD is the custodian agency
- Land cover is one sub-indicator to 15.3.1 and there are several classifications in existence:
  - IPCC (6 categories)
  - Global Land Cover SHARE (11 categories) – global land cover database created by FAO
  - SEEA (15 categories) – classification developed for the purposes of statistical standard
  - European Space Agency Climate Change Initiative Land Cover (22 categories)
Combining maps through overlaying them

7.3.1 Land by use category Roerdalen

Source: analysis. Legenda, see previous figures.
Europe: aggregated assessment of cropland condition

Australia: using different sources for land cover and land use map

Areas calculated for land cover and land use include:

Land cover: A: forest – 39.0 ha, B: water – 3.5 ha, C: residence – 1.8 ha, D: irrigated crop – 13.5 ha, E: other crop – 3.8 ha, F: grassland – 68.0 ha.

Land use: Agriculture (grazing) – 129.6 ha

Source: Australian National University, Experimental Ecosystem Accounts for the Central Highlands of Victoria, 2016.
Australia: carbon account

Figure 5.1 Spatial distribution of carbon stock density in the Central Highlands study area in 2015

Source: Australian National University, Experimental Ecosystem Accounts for the Central Highlands of Victoria, 2016.
Indonesia: physical ecosystem services accounts

Source: Sumarga et al., 2014
Conclusion
The way forward?

• Integration of geospatial information in ecosystem accounting
  > The National Spatial Data Infrastructure (NSDI) is crucial for the development of the ecosystem accounting

• Engaging in a dialogue between the statistical and geospatial community to ensure coordination of work in particular closer collaboration between the United Nations Committee of Experts on Environmental-Economic Accounting and the United Nations Expert Group on the Integration of Statistical and Geospatial Information

• Potential contribution of the geospatial community to the development of ecosystem accounting:
  > SEEA EEA review process planned for 2016-2020
  > Furthering of the research agenda in topics, such as spatial units and their delineation, and land cover classification
THANK YOU
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