Implementation of Simplified Ecosystem Capital Accounts for Europe

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EEA’s involvement in ecosystem accounting

Land cover accounts for Europe 1990-2000 (26 countries), 2006

Updated for year 2006 (34 countries), next update: for year 2012

Ecosystem accounting and the cost of biodiversity losses — the case of coastal Mediterranean wetlands, 2010, a report for TEEB

Activities within thematic processes: UNEP/water JRC/ES mapping WB/WAVES ...

Activities within SEEA process, UNCEEA, EB

Fast Track implementation of ecosystem capital accounts, 2010-2012 (with Eurostat)


http://www.cices.eu
Summary of Discussion up to 1st December 2009
Ray Holmes-Young and Marion Pettschke (e-forum moderators)

Jean-Louis Weber

“fast track implementation of simplified ecosystem capital accounts in Europe”

• Based on:
  – **European experience**: Land cover accounts (EEA), MFA/NAMEA, expenditures (Eurostat)
  – Current reflection on experimental ecosystem accounts in the UN **SEEA process**
  – The **EU policy demand**: Beyond GDP, Resource Efficiency, environmental policies (Nature protection/Environmental liability directive, Water framework directive...)

• Objectives:
  – Accounts for **27 EU countries**, top-down, downscalable
  – **Annual** accounts 2000-2010 to match the policy making agenda
  – **Integrated** accounts of all ecosystems (wetlands, forests, cropland, sea, atmosphere-climate...), connected to the SNA via the SEEA Part1.
  – **Integrating transactions** between ecosystems, scales, countries...
  – **Use of existing monitoring data** (land cover, vegetation index, meteo, biodiversity, data inputs to other programmes, environmental reporting...)
  – **Use of official statistics** for socio-economic data (e.g. crops and timber harvests...)
  – Best use of **geographical information** (e.g. when possible, 1 km x 1 km grid)
  – **Physical accounts first**, by 2012, followed by monetary accounts (on ad hoc basis)

⇒ make it **relevant** but simple (feasible, transparent, verifiable...), experiment & adjust
The basic questions when accounting

- Do gains compensate for losses?
- Loss of stock e.g. by deforestation
- Gain in stock e.g. by afforestation
- Has the quality of the stock been maintained?

Stock at time 1 ➔ Stock carried over ➔ Stock at time 2

Source: Roy Haines-Young
Integration of quantities and qualities & Measurement of Ecosystem Capital Capability

**Carbon/Biomass**
- Basic Balances (Standard resource accounts)
  - Stocks, Supply & Use (tons, joules)

**Water**
- Stocks, Supply & Use (m³, joules)

**Green Infrastructure Services**
- Stocks, Formation & Consumption, (weighted ha/ km)

**Ecosystem Capital**
- Non additive

**Accessible Basic Resource Surplus**
- Accessible Basic Resource Surplus (tons, joules)
- Accessible Basic Resource Surplus (m³, joules)
- Accessible Basic Resource Surplus (weighted ha or km)

**Ecosystem Capability Accounts**
- Composite index of change in ecosystem capability
  - Intensity of use index
  - Change in condition index (incl. stability of carbon stocks age)
  - Change in condition index (incl. pollution)
  - Change in condition index (incl. biodiversity, disease prevalence...)

**Ecosystem capability, degradation or enhancement measured in Ecosystem Capability Units**
- Carbon/Biomass Ecosystem Capability
- Water Ecosystem Capability
- Green Infrastructure Capability
- Overall Ecosystem capability

**Current ecosystem condition composite index of ecosystem n, year (t)**

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Main data flows to compile ecosystem capital accounts

Data input
- Socio-economic statistics by regions
- Monitoring data, rasters
- Monitoring data, point & area samples
- Standard coefficients

Data assimilation (1 km² grid)
- Disaggregate & map
- Aggregate & map
- Extrapolate
- Multiply

Accounts integration, analysis and reporting

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From ecosystem physical degradation to capital consumption, ecological debts and sustainable benefits

Consumption of ecosystem capital (unpaid costs) & ecological debts (in $)

Economic statistics & national accounts

Ecological sustainability of Value Added supported by ecosystem services

Remediation costs

Degradation

Balance sheet of ecological debts & credits (ECU)

Sustainable use coefficients

Landscape Ecological Potential change 1990-2006, by ecosystem landscape units

(J-L Weber and E. Ivanov, 2011)
Preliminary results:
The Net Ecosystem Carbon Balance 2000 (provisional results – 5 June 2012)

Tree felling, 1999
Xmas storm
Greenhouses, plastic sheets
Intensive agriculture
Mixed agriculture
Forest

NB: over-estimation of NPP in the South
Preliminary results:
Accessible water adjustment for risks of water stress (« dry days index »)
based on the number of days when no water was available for plants in 2001, 1 km² grid

Source: Blaz Kurnik, EEA, 2011
Preliminary results:
Landscape Integrity & Systemic Services: Landscape Ecological Potential

Corine land cover map (CLC is derived from satellite images)
Green Landscape Index (derived from CLC)
Nature Value (Naturilis, derived from Natura2000 designated areas)
Fragmentation (Effective Mesh Size (MEFF) derived from TeleAtlas Roads and CLC)

Landscape Ecological Potential (LEP) 2000, by 1km² grid cell
LEP 2000 by NUTS 2/3
Preliminary results:
Final index for forest species population:
Number of species with population “increase” and “stable” minus number of species with “population decrease”
Preliminary results:
Species biodiversity index: “Art.17” reporting to the EC on Future prospects (after 2006)

Jean-Louis Weber, Rania Spyropoulou, Emil Ivanov & Oscar Gomez
Preliminary results:
Ecosystem Capital Accounts: Landscape/Biodiversity Capacity Account
Species/biodiversity change mean indexes pre- and post 2006, by ecosystems

Jean-Louis Weber, Rania Spyropoulou, Emil Ivanov & Oscar Gomez
Merci de votre attention!

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