Assets in Ecosystem Accounting

Daniel Clarke

United Nations Statistics Division

Dept. of Economic and Social Affairs

clarke@un.org

Purpose

- To measure and monitor changes in natural capital first as balances (opening and closing) <u>in physical terms</u>

- For cases of degradation, look at monetary valuation for the purpose of integrating with consumption of capital in the SNA

- Ecosystem services are the benefits (flows of value) enjoyed by society <u>from the assets</u>

- The reason for measuring these changes is their exclusion creates important limitations for the national accounts for understanding economic growth and well-being because it ignores the context of growth or value added at the expense of depletion of natural capital

Identifying the assets

- Essential elements in terms of capacity for delivering ecosystem services include
    - the sustained diversity within systems and the regeneration or enhancement of components or processes within the systems through normal processes of localized interactions.
    - In other words, diversity and regenerative/growth capacity are two fundamental requirements that should underlay monitoring of assets over time
    - What we are after is essentially measures to identify dysfunction, non-sustainability or declining health (controlling for natural dynamics – e.g. seasonal variations - in the systems).

Ecosystem Assets

- **Biomass/carbon**
  - Balance of flows of net primary production and removals – i.e. carbon balance
- **Biodiversity**
  - Functional index(?)
- **Land**
  - Landscape ecological potential, e.g. green landscape, fragmentation,…
- **Water resources**
  - Measure of stress – incorporates both quality and quantity
- **Soil resources**
  - A non-renewable stock depleted through erosion
  - Potentially can include other (relative) measures of fertility – acidity/alkalinity
  - This is a challenging case because soil is, itself, a complex system

- Addl' measures of quality of the system:
  - Healthy populations/degree of disease prevalence (related to regeneration capacity)
  - Degree of autonomy (external dependence or artificiality of system)

Link to economic aspects (perspective of the economy)

- **Biomass/carbon**
  - Appropriated by the economy in the form of biological resources
  - The primary production is a free input (public good) from the perspective of the market
- **Biodiversity**
  - Not traditionally recognized as an economic asset but with some exceptions related to genetic resources for pharmaceuticals
- **Land**
  - Markets exist for land and value is determined according to its characteristics, properties & patterns – thus the concepts are basically the same.
  - From the ecosystem perspective, the measures of value are different
- **Water resources**
  - Same concept from both perspectives: value is inevitably a combination of quality and quantity
- **Soil resources**
  - Not traditionally separately identified (from land) as an economic asset – taken as a characteristic of land

- Addl' measures of quality of the system:
  - Healthy populations/degree of disease prevalence
    - Similar to the concept of human capital for economic enterprises
  - Degree of autonomy (external dependence or artificiality of system)
    - Similar to debt (or lack of) for an enterprise

Question for the experts

- Can the statistical units (SELUs) be described in terms of these core assets for ecosystem capital accounts?