

Delineation of spatial units in Experimental Ecosystem Accounting

Per Arild Garnåsjordet, Statistics Norway

“The Ecosystem assets that are the basis for ecosystem accounting are spatial areas. Consequently the delineation of spatial areas within a country is a fundamental part of ecosystem accounting” (Technical guidance 2015, 2.4 Key boundary and conceptual issues, 2.4.2 The spatial approach to ecosystem accounting.)

The idea is to provide a comprehensive picture of ecosystem assets and the services they supply across the country without gaps and overlaps in measurement.

There are a number of issues to be resolved in a broad units model:

- The appropriate scale for analysis;
- Defining the relationship between the delineation of spatial areas (and hence ecosystem assets) and the generation of ecosystem services, particularly regulating services which may be generated over spatial areas that cross ecosystem types; also cultural services may be generated across ecosystem types of a landscape.
- Connecting the spatial units relevant for measuring the generation of ecosystem services together with the location of beneficiaries of those services;
- The problem of up and downscaling to find the relevant level for aggregation and communication

To have one spatial unit model for all the accounts of extent, condition, supply and use seem difficult enough, but if we are going to deal with capacity, competing baskets of services and policy analysis of trade offs it seems quite unrealistic.

A much more flexible approach is called for. The underlying data structure may be polygons, geographical sampling and modelling. The next step is to determine the amount of services in an area and who are using these services. The task is then to perform the prioritized analysis of trade offs and policy choices and select a reporting unit, matched by maps to the public and the management agencies. The analysis may involve different degrees of complexity (As very well demonstrated in NATURAL CAPITAL, Theory and Practice of Mapping Ecosystem Services, Peter Kareiva et al Oxford 2011). This flexibility will also make it easier to use the large amount of new GIS and satellite data as well as big data platforms.

Reporting units can be of different categories, for example an ecosystem type within an administrative area or within a watershed. Over time the ecosystem may change in both extent, condition, supply of services etc. We may then change the reporting unit to illustrate the most important changes. This type of recalculation to another base level is not uncommon in the production of statistics, and quite feasible with today's computer power.

