Virtual Expert Forum on SEEA Experimental Ecosystem Accounting 2020

Session 1: Ecosystem extent and condition

Consolidated breakout notes from day 2

1. Condition indicators - Conclusions 1

- *A minimum list with condition variables / indicators? what level of detail?*
  - global minimum set of indicators may be possible
    - for broad ecosystem types
    - based on RS
    - the purpose has to be clearly defined (at national and/or international level consistently across countries)
    - it can make data poor countries happy, data rich unhappy
  - lists should be compatible across ecosystem types (at least within EFGs)
  - variables alone are next to useless → reference levels matter equally and it is context dependant
  - compositional state (biodiversity) is a bottleneck, it is typically national data
    - more work should be devoted to biodiversity harmonizing biodiversity data and creating harmonized indicators.

1. Condition indicators - Conclusions 2

- *Who develops it? And how? Which criteria ?*
  - working groups by biomes / EFGs could work, but demand considerable resources, and it might be challenging to keep the coherence
  - international organizations working on specific topics should be better involved
  - Importance of sharing experiences → the collection of case studies (Discussion Paper 2.2, a scientific paper has just been published) was useful, it should be continued

- *How should it be applied? (any prescriptive aspect? as a source of inspiration? as a basis for simple thumb rules? → e.g. "one indicator per category")?*
  - cannot be prescriptive
  - rules of thumb seem to be accepted

2. Reference conditions

- Difficult to put the theory on defining ecosystem reference conditions into a practical condition account. If we keep on continuing with these academic discussions, the technical recommendations on reference conditions risk to become obsolete.
- Consider a more neutral approach to define a reference condition: e.g. a reference condition is a condition against which to measure ore evaluate the past, present or future condition but we don’t refer to particular states such as the natural, intact, integer state as they only provoke more discussion.
- Difficult to separate choosing a reference from the purpose.
- Instead, guidance could focus more on breaking down purposes of condition accounts over methods of defining and describing reference conditions

3. Principles of aggregation

1. Indicator selection & aggregation to be underpinned by clear conceptual framework (=> learn from others, e.g. consumer price index v PPP & OECD/Eurostat handbook on composite indicators, IUCN conceptual model per ecosystem type)
2. Need to understand the nature of the data that underpin your condition measurements (uncertainty, spatial scale, representativeness etc) – can they be aggregated?
3. Ecological thresholds need to be considered, use a system of red flags when these are surpassed in addition to an index?
4. Complement overall index with selection of condition variables or sub-index linking to critical ecosystem service flows (thus underpinning ES capacity)?
5. Important to achieve coherence across scales but consider that ‘no-one-size-fits-all’ (i.e. take account of national and local conditions and priorities)

4. Ecosystem conversions

1. Conceptual points
    - Importance of concept of permanence of change in identifying conversions
    - Common to measure observed changes in land cover rather than focus on detailed thresholds for changes in ecosystem types – need work on combining extent and condition measurement
    - Need to clarify links to ecosystems services and valuation
    - Consider potential for different measurement options at different scales (EA vs landscape)
    - No clear answer on natural vs anthropogenic reference condition choice for a converted EA
2. Policy use
    - Conversions relevant in many contexts including urbanisation, climate change, biodiversity
    - A link to changes in mix of ecosystem services would be very useful
    - Careful on assumptions of which conversions are “good” or “bad”

5. Mosaic landscapes

- Useful to have condition indicators/indices specific to particular services (e.g., pollination) or biodiversity values
  - This will also affect spatial scale at which mosaics are relevant
- Two options for condition indicators to account for mosaic structure surrounding target ‘EA’ or other spatial unit
  - Grid-based approach to calculate proportion (or even better, spatial structure) of ETs/habitats/land-use within each cell
  - Buffer distance from discrete patch (length will be specific to particular service or biodiversity value)
- Mosaic structure as condition indicator linked to ‘EAs’ rather than as a larger spatial unit

Other challenges

- Need to account for interactions among mosaic components
- Gradients present a similar but distinct challenge as mosaics
- Incorporating freshwater as part of mosaics (and other linear features)

6. Socio-economic factors (breakout 1)

Yes – making link to socio-economic is important

- Yes ideally also when delineating EAs: management / ownership - > if not directly possible, perhaps eventually? (condition will likely also differ)
- Process would be by overlaying with additional maps
- Issues identified:
  - distinguish between data rich and data poor situations.
  - indigenous people + those that do not own land…
  - legal ownership is not same as economic ownership
  - micro-macro level distinction may be different

6. Socio-economic factors (breakout 2)

- Level of detail / resolution required depends on decision-context (local / national / international i.e. a use focus)
- (less imp.) EA: is there a tension between economics (ES first) vs. ecological perspective?
  - Sometimes: ecologists want more classes (technical challenge: only relevant when you can label them),
  - Issue: then you would need to know the services first as well + risk of missing out
  - No -> trade-offs (depending on resolution / use of the accounts)
- GET: anthropogenic ETs those primarily shaped by human activity (urban + industrial landscapes .. water storage reservoirs)
  - All EAs are shaped in some way by human influence … use as many categories required for the task …
  - Spatial data can be enhanced by non-spatial information
- Socio-economic information is so different will be difficult to standardize -> perhaps use SDGs (with their request for breakdown)

7. Integration with land accounts (1)

- Each classifications, ecosystem, land cover and land use have their own purposes
- There are strong relationship between the land cover/land use and ecosystem accounts. In practice, land cover helps to delineate the ecosystem extent and then bring in issues of species and other ecological variables to delineate the extent
- Economic contribution of ecosystems is linked to services and thus to use
- It would be helpful to have nested classification within each ecosystem we could look at land cover and then use (including ownership)
- Land use - difficult to get data but very important to keep the link the economic accounts
- Communication – spatial planning based on ecosystems and land cover are not the same (e.g. zone away important biodiversity or ES areas)
- We need all three classifications as they respond to different needs, very closely related but there is not a one-to-one correspondence

7. Integration with land accounts (2)

- Keep the information as disaggregated as possible and aggregate as needed depending on the three classifications
- The BSU is the most ecologically refined level of disaggregation of the ecosystem extent accounts
- Capacity accounts are important to link the ecosystems with the ownership, institutional arrangements and activities as in the SEEA CF land accounts etc.
- The classifications are complementary and important in their own right and are computed for different purposes, may use different data sources and have different definitions (e.g. LULUCF, or ecosystems, etc.) and give different results
- Look at a piece of land and describe what is there in terms of the physical characteristics linked to the ecosystems, land cover and institutional arrangements
- There is an issue of timing of developing these classifications – land cover is usually available more frequently
- One option would be to measure the characteristics of each pixel and aggregate as needed

8. Conceptual and methodological relationship between BSUs, EAs and ETs

1. Preferred focus of measurement, Methods of aggregation, description of relationship between the units ? It depends. The answer depends on the data characteristics and the use to which these accounts are going to be put
   - The configuration of the EA can be important, but sometimes not so much. This depends on many variables, including the scale of the accounting area, policy question, data availability, time frame, etc.
   - Sometimes seasonality can be more important than spatial scale
   - Sometimes ET is sufficient to measure values and condition, but sometimes something relevant to the asset themselves may influence the condition and values. E.G., the configuration (size and shape of the patches), the EA/ET of a different type in between (e.g. corridors), etc.
   - Integrated landscape management will require information on the patches. There needs to be a link to the actual ecosystem assets. The configuration of the assets can be important.
   - Sometimes individual EA should not be weighted the same when aggregating to the ET

2. In some cases, reporting ET is sufficient for some users (NSO), but insufficient for others (academia).
   - For some, providing data and trends at the finest level is "Beautiful but not practical."
     - We may need to also take shortcuts to answer policy questions, stating the limitations.
   - In other cases, multi level BSUs at different scale can be devises (having a data cube environment with stacked data layers based on different data course, for ex.et the 3, 30 and 300 meter resolution).
     - BTW the usefulness of the BSU was never questioned. Really worth our while getting the BSU base structure well set up.
     - Given that some assets are really small or thin, could be lost at some scales . For example, there are thousand of Prairie Potholes in the Canadian Prairies that are critical wetland areas , but require a resolution of <10 to be detected. Same goes with headwaters, hedgerows, etc.
     - The accounts can provided answer to specific stakeholders, or provide global answer for a large area.
   - Notwithstanding toe potential reporting aggregate (ET), data should not be burned in synthetic layers. To allow to report on different questions.
   - Reporting both on the EA and ET may lead to reporting different values (difference between the sum of assets and that of the type). Statistical discrepancy. Normal issue in national statistics.

3. Upscaling / downscaling? Not a matter of scale. It all depends on the data availability, data quality characteristics (fitness for purpose of the data), policy question.
   - Also, upscaling is not equal to aggregating. Both may be required.
   - Sometimes people spend so much time on precision, whereas it would have been as useful to look at the type in general , and then distribute data from type to asset (e.g. carbon seq.)