BONSAI WG on Global Impact Assessment (GIA)

Minutes of third meeting; 2015-12-03 16:00-17:30 CET

By GoToMeeting. Minutes by Bo Weidema

Members present

Present: Andrew D. Henderson (ADH; left early), Anne-Marie Boulay (AMB), Serenella Sala (SS), Peter Fantke (PF), Tom Gloria (TG), Catherine Benoit (CB), Bo Weidema (BW), Olivier Jolliet (OJ; joined late)
Excused: Massimo Pizzol (MP)
Not present: Ricardo Teixeira (RT)

1. Election of coordinator

This point was postponed for the next meeting. ADH has previously indicated interest, but will have to check with his new employer (US EPA). BW will continue as interim coordinator.

2. The taxonomy spreadsheet

2a.   Comments by members on the approach and content

BW explained the current taxonomy spreadsheet that is available in the dropbox. Although the layout is now a matrix, it is still to be read as a taxonomy in the sense that:
- the entries (in column D and the column headers) represent activities or environmental mechanisms in terms of either pressure indicators, midpoint indicators or endpoint indicators (as indicated in column B). Activities that are traditionally modelled in the technosphere have also been included, which implies that there are now also fields that represent feedbacks from nature to the technosphere (rows 1-3), as mentioned in the example in the minutes from the previous meeting.
- column C seeks to group the entries in an exhaustive and non-overlapping classification. Pressures are divided relative to mass inputs or outputs (resource dissipation or overconsumption; emissions), human time usage, monetary expenditure, the more direct physical pressures, and finally the social pressures which – maybe more surprisingly – appear all to fit into two categories of mechanisms: rent seeking and violence, in the more broad sense of these terms, as explained in Chapter 5 of the draft article (on the etherpad)

The matrix format now allows to indicate, by entries in the fields in the matrix body, how one activity influences another (column activities influence row activities) and thus to provide exhaustive descriptions of impact pathways.

AMB and CB asked for an explanation of the overall purpose of the taxonomy spreadsheet. BW referred to the minutes of the first meeting of the WG, where the objectives and work plan is outlined. The first planned deliverable is described as "a conceptually complete taxonomy for all known causes for loss of natural and manmade resources, loss of ecosystem health, and loss of human well-being"… "Following the first deliverable, the WG should:

- identify how the existing LCIA methods and data fit within the developed taxonomy, and what issues (categories, pathway descriptions, data) are currently missing a pathway description,
- ensure consistency in impact pathway modelling with a basis in the UNEP/SETAC criteria for desirable properties of impact pathway descriptions (table 4.2 in Jolliet et al. 2003),
- ensure that all pathways are covered by impact assessment datasets, even when these have to be based on very rough cause-effect relationships, in accordance with the precautionary principle,
- ensure that all raw and calculated data as well as all relations between data are provided with uncertainty and data quality indicators."

PF raised the issue that the terminology currently used in the spreadsheet is influenced by existing impact assessment methods in a way that may not be helpful. He used the example of "Human toxicity, non-carcinogen, non-respiratory" or "Respiratory inorganics", where human toxicity should also include inhalation exposure of e.g. volatile chemicals (maybe not clear when using "non-respiratory"?!) and where respiratory inorganics also include the organic fraction of PM and emitted organic aerosols and ozone as organic precursors forming secondary PM (not clear from "inorganics?!) and maybe dermal absorption and ingestion also play a role here. PF asserted that have a lot of overlaps, gaps, and unclear definitions in the current table coming from existing methods. BW agreed that the current spreadsheet contains terms that are less appropriate and run counter to the aim of being non-overlapping. He mentioned a similar example with NOx being both an ozone precursor and a nutrient carrier. So to avoid overlaps there should in principle only be one category of "Substance emission" rather than the current list that includes pointers to the midpoints ("Substance emission, nutrients"; "Substance emission, odorous"; "Substance emission, ozone and ozone precursors", etc.).

It was questioned why "Inadequate physical exercise" was grouped under "Overconsumption" and BW acknowledged that this may be a reminiscence coming from the link to "Overnutrition" and asked for suggestions for a better classification.

CB asked how fixed the current classification was, and BW answered that the current state is only a very first draft that should evolve over time.

(ADH left the meeting at this point)

2b. Plans for next steps

Two approaches had been suggested in the meeting invitation:

- To provide a definition of each of the impact categories, and a description of the mechanism behind each of the X's in the spreadsheet, preferably with reference to existing impact models and literature.
- To further describe and check the suggested impact pathways for completeness, starting:

- either from a known amount of a pressure (source) and follow it forward to its sink, checking that the entire amount of the pressure is modelled all the way to its sinks (accounting for the marginal impacts, not only the total impacts).
- or from the sink to the source, starting e.g. with the known total impact on nature/biodiversity and track the causes backwards to their origin, checking that these origins account for the full (marginal) impact.

The two approaches could very well be integrated.

It was suggested that providing one or more examples demonstrating such an impact pathway analysis could be a good first step, also to align the format for such descriptions.

It was decided that each WG member would in the first round contribute an impact pathway analysis, as follows:
- **AMB volunteered to do one in the area of water (in January).**
- **CB volunteered to do one starting with the pressure indicator "Excessive work".**
- **BW will contribute (before January) an impact pathway description starting with the midpoint "Undernutrition" (as an example of a top-down application of the procedure)**.
- **PF and SS would choose the subject for their contribution later.**
- **TG volunteered to contribute a perspective from similar work in the area of risk assessment.**
- RT (not present) had previously expressed interest in applying the procedure top-down, starting from data on the current total impact on ecosystems. Also MP (not present) had previously indicated willingness to contribute. **BW will follow-up with RT and MP.**
- OJ (joined late, when most other participants had let the meeting) presented an example starting with the emission of phenol, showing in a matrix the cumulative transfer fractions to different media, midpoints and endpoints. **OJ volunteered to provide (before Christmas) a similar matrix for respiratory inorganics** (in cooperation with PF).

OJ pointed out that the impact pathway descriptions could be done as a subset of the overall taxonomy matrix, i.e. as an impact pathway matrix that only contained the relevant rows and columns for the specific impact pathway. The unit of each field in the matrix will be [unit of row]/[unit of column].

3. Scientific article writing
BW has contributed text for Chapter 2 (definitions) and Chapter 5 (The nature of impact mechanisms and pressures). The members had currently no comments on these chapters. **PF, OJ and MP have previously agreed to take responsibility for some of the other chapters. BW will follow-up on this.**

The etherpad remains open for any member to contribute at any time.