

# BONSAI WG on Global Impact Assessment (GIA)

---



## Minutes of first meeting; 2015-03-30 16:00-17.15 CET

via skype. Minutes by Marie de Saxcé/Bo Weidema

### Abbreviations used

LCA: Life Cycle Assessment  
LCC: Environmental Life Cycle Costing  
LCI: Life Cycle Inventory  
LCIA: Life Cycle Impact Assessment  
LCSA: Life Cycle Sustainability Assessment  
WG: Working Group

## 1. Presentation round of the members:

Present: Anne-Marie Boulay [anne-marie.boulay@polymtl.ca](mailto:anne-marie.boulay@polymtl.ca) (AMB)  
Peter Fantke [pefan@dtu.dk](mailto:pefan@dtu.dk) (PF) for Michael Hauschild [mic@ipl.dtu.dk](mailto:mic@ipl.dtu.dk)  
Massimo Pizzol [massimo@plan.aau.dk](mailto:massimo@plan.aau.dk) (MP)  
Serenella Sala [serenella.sala@jrc.ec.europa.eu](mailto:serenella.sala@jrc.ec.europa.eu) (SS)  
Olivier Jolliet [ojolliet@umich.edu](mailto:ojolliet@umich.edu) (OJ)  
Henderson Andrew D [Andrew.D.Henderson@uth.tmc.edu](mailto:Andrew.D.Henderson@uth.tmc.edu) (ADH)  
Bo Weidema [bweidema@plan.aau.dk](mailto:bweidema@plan.aau.dk) (BW)

## 2. Topic and content of the first deliverables

This is the first meeting of the WG. For the topic and work plan, BW referred to the description in the right-hand column of the document “On the relation between the work plans on LCIA of BONSAI and UNEP/SETAC”, according to which:

The WG is permanent working group of BONSAI, i.e. without time limit. However, it will define its short-term deliverables for one year at a time. The main focus of the WG is methodological harmonisation and database building.

The first planned deliverable is 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. The taxonomy shall include models for damage assessment (willingness-to-pay), considering global and inter-generational equity and competing interests, values and worldviews.

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.

Important future tasks are also:

- the harmonisation of the nomenclature between data on pressures from human activities (LCI data) and LCIA impact pathways, ensuring that all impact pathways link correctly to the contributing LCI data, including missing LCI data for known contributions that cannot currently be assigned to any specific human activities.
- the identification of the most meaningful level of spatial resolution for each specific impact pathway.
- the inclusion of time lags between the different steps in each specific impact pathway.

In the longer term the WG should continuously refining the pathway modelling and data, involving domain experts for the different impact pathways.

BW stressed the practical database-building focus of the WG, implying that this is not (only) an academic exercise.

PF commented that not all current footprints are based on LCA data and asked how this should be addressed. BW explained the wider scope of the BONSAI project as providing footprint data, where the term “footprint” is to be understood as a popular synonym for LCI or LCIA results. Thus, the BONSAI project combines the collection of data for LCI and LCIA, and even seeks to combine LCA and LCC to provide the possibility to perform a complete LCSA.

AMB asked if the intention was to provide characterization<sup>1</sup> factors or models or also to break down the impact pathway descriptions into e.g. separate fate, exposure and effect parts. BW replied that it in some cases it may be enough to have one model from LCI pressure indicator to endpoint, but in many cases it is preferable to break down the impact pathway in more detail, especially when the same midpoint is feeding into several separate impact pathways, as for example with “global warming” where the same radiative forcing midpoint may be used by several pathways towards different endpoints (sea level rise, human diseases, impact on nature, etc.).

---

<sup>1</sup> A characterisation model is a model that describes a relationship between an LCI analysis result and its subsequent impact(s) as represented by the impact category endpoint(s). A characterisation factor is a factor derived from a characterisation model, applied to convert an LCI analysis result to the common unit of the (impact) category indicator (ISO 14040) by describing the relative contribution to the impact category endpoint from one or more LCI pressure indicators (ISO 14040: elementary exchanges) or other (intermediate) impact category endpoints.

ADH asked how the provision of data is foreseen for those impact pathways where the modelling is less well known. When there is no evidence that there is a relationship -> In the goal of completeness, where do you see the scientific basis? BW replied that when no known models exist, we may have to develop the relationships based on whatever rough understanding that exists. For example, if the level of a disease is known to be influenced by human activity, but it is not known exactly which human activities are involved, then it may be OK to simply assign it temporarily to an "unknown activity" in order to ensure complete coverage of impacts rather than to leave the impact completely uncovered.

### 3. Agreement on the scientific basis for the work

BW has suggested in his blog: <http://lca-net.com/blog/towards-complete-set-sustainability-indicators/> that the scientific basis of the work may be the UNEP/SETAC LCIA framework from Jolliet et al. (2003), that ensures a coverage of all possible endpoints, and also that we should be seeking to align with the current developments in the context of the UN process of harmonising the statistics on sustainable development indicators (UNECE 2014).

A member (PF?) asked why UNEP/SETAC has not followed this framework in their current work, but only cover some of these endpoints, and for the rest only has "cross-cutting issues"? OJ replied that UNEP/SETAC has chosen to focus on some of the impacts and endpoints from a feasibility perspective, and that this is not to be seen as being in conflict with the completeness of the overall 2003 framework, which is still valuable for being exhaustive.

A general concern was raised on the trade-off between scientific robustness and completeness. BW pointed out that completeness is important for sustainability assessment, but users that want to focus on a more limited set of indicators for a specific footprint should also be able to find these data in BONSAI.

AMB asked what practical approach would be applied in case there was neither models nor data, e.g. for the water impacts? BW answered that the principle should be to start top-down with the known impacts and then work backwards to the extent possible to link these to causal mechanisms.

In general, the UNEP/SETAC LCIA framework was accepted as a scientific basis for classifying endpoints (Areas of Protection). It was also agreed that for general acceptance and outreach it would be wise to coordinate with the UN process on statistics on sustainable development indicators.

### 4. Other seed documents and initiatives

Besides the obvious link to the UNEP/SETAC and the UNECE already mentioned, one member mentioned the 2008 article "Environmental impact assessment taxonomy providing comprehensive coverage of midpoints, endpoints, damages, and areas of protection" by Jane Bare and Tom Gloria (Journal of Cleaner Production 16:1021-1035) as a first attempt to systematically cover all the different impact pathways. BW immediately sent this to the members by mail together with an Excel spreadsheet containing BW's attempt at further developing this taxonomy with particular focus on social impact pathways. An important difference to the Bare-Gloria taxonomy is the addition of a limited number of

“environmental mechanisms” instead of the “Mode-of-action” in the Bare-Gloria taxonomy. BW also pointed out that on purpose no distinction has been made between biophysical and social impacts, and that also LCC indicators have been included, cf. the draft Chapter 3 and 4 of the UNEP/SETAC cross-cutting issues document (sent as attachment to these minutes).

BW pointed to the current wikipedia list of environmental issues [http://en.wikipedia.org/wiki/List\\_of\\_environmental\\_issues](http://en.wikipedia.org/wiki/List_of_environmental_issues) which is a very unorganised (basically alphabetical) clutter of concepts, and suggested that one way of interacting with the general community would be to suggest a more structured version of this list (and the Wikipedia descriptions of impact assessment in general).

## 5. Form of deliverables (Scientific articles, reports, wikipedia contributions?)

PF: My preference and bias is towards scientific papers. But if we need to provide data for others, placing these on a website may be more relevant. If editing Wikipedia, I would be worried about having to spend time negotiating with non-experts or political interests.

BW: The question is to what extent do we want to share with the rest of the community, and also receive feedback that way. On one hand it is lively and provides inspiration. On the other hand it can be frustrating.

OJ: I also tend to be biased towards scientific papers, as this is also what we get credit for.

SS: It would be interesting to start classifying the list of environmental issues provided by Wikipedia, and add some structure to this.

MP: How to make a new Wikipedia page?

BW: You can make an alternative page and submit it as a proposal to the talk page of the original page. If the alternative page is approved by many, it can be used to replace the former one.

PF: If we submit to the Wikipedia community, it is going to be modified endlessly, do we not want to keep a stable version for ourselves?

BW: What we want as a stable version would be what we publish in a scientific paper, maybe in the supplementary materials, and possibly on our own BONSAI website. This does not exclude also to seek interaction via Wikipedia.

ADH: Could we not use blogging, like the one Bo made, as a more stable documentation? Can we blog on the BONSAI website.

BW: Currently we do not have a BONSAI blog, but as soon as there are enough people that want to use such a feature, we can indeed make it.

In conclusion, the deliverable should be publishable as scientific papers, but this does not exclude simultaneous exposure and interaction with the community through attempting to edit Wikipedia.

## 6. Expected contributions from members

The immediate goal is to have a taxonomy paper ready for publication within a year. We need people to contribute and we need one person who coordinates, without this meaning

that individual members wait to be asked. The Coordinator role and other significant contributions may be financed<sup>2</sup>.

ADH indicated availability starting from June, possibly also for coordination role.

OJ: Not as coordinator, but would like to contribute regarding the connection of the social indicators with human health. Have already worked some on this but does not have time to finalise and publish on this on my own.

SS: My position would not allow me to coordinate. Would be interested in contributing especially to ensure the link to the UNEP/SETAC work. How should the link be to the taxonomy work ongoing in UNEP/SETAC.

BW: The UNEP/SETAC work is focussing on the consistency between the different existing methods. What they develop is not a taxonomy in the proper sense of the term<sup>3</sup>.

OJ: If we share unpublished works in this WG, it must be understood that this can only be published in agreement and with reference to the group (or to those who contributed).

MP: Yes, I want to contribute, but I am not yet clear on what.

PF: I need to discuss it with Michael, since he was the one that expressed interest to be part of the group. In principle interested in contributing to the taxonomy and work with the footprint community. Could possibly coordinate, but he would need to know when, how much work? After summer anyway.

AMB: Next 6 months are tight, at least until mid-summer. I would like to link to the work from Bare and Gloria and look more at the different proposals, and link to the water impact pathways of course.

BW: Since everyone are rather busy until June, I suggest that I will temporarily act as coordinator until then to push the work further, and that we decide on who should take over as coordinator in June.

**The next step for everyone would be to comment on the distributed papers**, and in particular on the Excel sheet. Commenting, adding missing issues, ideas, impressions, etc.

A more detailed work plan would also be made. Those who are interested in taking over as coordinator should in particular try to contribute to this. The most efficient way to organise this could be by making an outline of the scientific paper, and in this indicate by bullets and descriptions what work is required. Anyone can then sign up for specific contributions there. **BW will launch a shared workspace for this in the form of an etherpad.**

## 7. Other experts

BW: Are there other experts that we want to invite to participate at the current stage?

---

<sup>2</sup> BONSAI does not currently have a lot of income, so requests for paid work requires a detailed workplan and measurable deliverables. Anyone interested should contact BW about this.

<sup>3</sup> [http://reinout.vanrees.org/\\_downloads/2003\\_cib.pdf](http://reinout.vanrees.org/_downloads/2003_cib.pdf)

OJ: Greg Norris and Catherine Benoit Norris → Social environment  
AHD: Wes Ingwersen and his group at EPA → working on an LCA ontology, cf. paper sent around by AHD: “A new data architecture for advancing life cycle assessment” (Int J Life Cycle Assess DOI 10.1007/s11367-015-0850-6)  
SS: Tom Gloria and Jane Bare, since we refer to their work.

**BW will invite.**

## **AOB. Next meeting**

As most WG members are present at the SETAC SETAC Europe 25th Annual Meeting, some only Thursday-Friday and most will be engaged in other meetings during the daytime, BW volunteered to organise the next meeting as a breakfast meeting on Friday morning.

**The next meeting will take place as a physical meeting 7:00-8:00h Friday 8<sup>th</sup> of May 2015, in the breakfast area of Hotel Barcelona Princess, Av. Diagonal 1, Barcelona.**

SS will circulate information about an EXPO in Italy that could be a venue for another face-to-face meeting.

## **References**

Jolliet O, Brent A, Goedkoop M, Itsubo N, Mueller-Wenk R, Peña C, Schenk R, Stewart M, Weidema B P. (2003). Final report of the LCIA Definition study. Life Cycle Impact Assessment Programme of The UNEP/SETAC Life Cycle Initiative. Paris: United Nations Environmental Programme. <http://lca-net.com/p/1100>