Preface

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Social life cycle assessment: what are we trying to do?

The body of work set out in these proceedings reveals the range of approaches currently being explored to elucidate the social benefits and impacts of supply chains which provide services and products. However, this wide range underlines the point that the social Life Cycle Assessment (sLCA) community has yet to agree on the purpose and objectives of sLCA, much less found anything resembling an agreed approach and methodology. Therefore, rather than trying to give an overview of the current state of

sLCA, this brief introduction presents some thoughts on why a common purpose has yet to emerge and how such a purpose might be developed, addressing questions such as "How close should social LCA be to environmental LCA?". Furthermore, bearing in mind that tools like LCA are intended for functional purposes not just for research, they must be designed with the user in mind; "What are we trying to do anyway?" is a relevant question. Parallel to environmental LCA (eLCA), the purpose of sLCA is to enable design of products and supply chains with improved social performance. However, behind that statement lie a number of conceptual and practical problems.

System Approaches to Sustainability

The concept of sustainability is commonly viewed as having three groups of components: techno-economic; environmental or ecological; and societal or social (e.g. Mitchell et al. 2004; Blewitt, 2008). It is also well established that the principles which comprise sustainability must be applied at a system level (e.g. Clayton and Radcliffe, 1996). Amongst the system-level analytical tools for assessing sustainability and guiding sustainable development, LCA is characterised by its focus on the supply chains delivering particular goods and services. Application of life cycle thinking to the techno-economic and environmental aspects of supply chains is well developed and the two facets are sometimes considered together, for example through the use of eco-metrics (e.g. Biswas et al., 1998; Clift, 2003; Prior et al., 2012).

Attention to the societal aspects of supply chains has been slower to enter the LCA arena. Following the proposition that life cycle sustainability assessment must include the third component, the first efforts to develop social life cycle assessment were directed at finding ways to include social impacts which parallel environmental LCA, for example using impact categories and indicators (e.g. Jørgensen et al., 2008; Dreyer et al., 2010). The UNEP guidelines on sLCA (Benoît and Mazijn, 2009) embody this approach, although they are "still very much in the developmental phase" (Paragahawewa et al., 2009). However, the social consequences of supply chains are qualitatively different from their environmental impacts, leading to the question of whether it is really appropriate to model social LCA on environmental LCA.

Environmental LCA is a scientifically-based analysis but is not a conventional application of the 'normal science' approach (in the sense defined by Ravetz, e.g. 1993) because its predictions are not amenable to Popperian empirical testing. Rather, eLCA has features in common with Risk Assessment (which was one of the original building blocks of LCA) and economic modelling (which also underpins the eco-metrics approach): eLCA uses the best understanding and models currently available to estimate expected outcomes but with no expectation that the predictions can be validated. This applies to mid-point impacts (i.e. contributions to pre-defined impact categories such as global climate change) and even more strongly to end-points (i.e. the human and economic consequences of the environmental impacts). The inherent

uncertainties position eLCA as a form of 'post-normal science' (Ravetz, 1993): a tool to support managerial and policy decisions rather than for scientific analysis. Thus any attempt to assess actual outcomes in social LCA (see below) sets sLCA apart from eLCA.

Social 'Good' and 'Bads'

There are also fundamental differences between sLCA and eLCA in the way the supply chain is perceived and therefore in the way the assessment is framed. Environmental LCA frames the assessment in terms of 'bads', i.e. the resource inputs and environmental impacts incurred in delivering a product or service. By contrast, sLCA is developing beyond merely detecting social 'bads' in supply chains. Supply chains can be seen not just as a one-way flows of resources from supplier to consumer, leaving impacts in their wake, but as channels by which benefits can flow back from the 'consumer' (of food or land use, for example) to the other agents in the chain. This perspective is essential in examining the meaning and interpretation of 'sustainable production and consumption' (Clift et al., 2013). It is exemplified by the international Fair Trade movement.

Adapting social LCA (or life cycle sustainability analysis) to this view of supply systems represents a methodological challenge going beyond the issues of system modelling. Urban food cultivation, an activity which has attracted academic attention in recent years, provides an example. At least in the 'global North', urban cultivation has little significance for nutrition or food security, primarily because the quantities of food which can be produced are nugatory by comparison with consumption (Martin et al., 2014) but nevertheless provides social benefits which are felt mainly at local level, rather than distributed along a supply chain, and which constitute the drivers for the activity. The common activity is a basis for development of social capital. It is questionable whether the benefits or relative disadvantages of urban cultivation can be captured by an approach based in LCA as currently conceived.

Social Impact Assessment

An alternative approach is to base sLCA on Social Impact Assessment (SIA), in much the same way as environmental LCA derives from Risk Assessment. Figure 1, based on Epstein and Yuthas (2014), shows a 'logic model' (also known as an 'impact chain' or 'results chain') used in planning and assessing a programme whose objectives include social change. The five components of the logic model are:

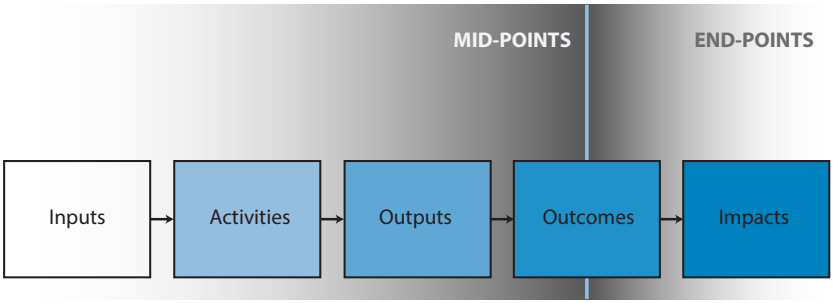

Figure 1: Basic logic model for Social Impact Assessment (after Epstein and Yuthas, 2014) with mid-points and end-points for Environmental LCA.

- Inputs including the resources available to and constraints on the programme;
- Activities: the processes, events and actions to be undertaken to complete the programme;
- Outputs: the deliverables from the programme;
- Outcomes: the direct effects on the population targeted by the programme;
- Impacts: the ultimate goal of the programme: "systematic and fundamental progress on a social issue" (Epstein and Yuthas, 2014); impacts should be included in the logic model even if there is no obvious way to measure them.

The logic model in Figure 1 reveals both the common ground and the differences between the methodologies of environmental and social LCA. If the word "programme" is replaced by "supply chain" or "life cycle", the parallels between the components of the logic chain and the phases of eLCA are striking. Mid- and end-point impacts in eLCA can be positioned in the impact chain as shown. However, these parallels apply to the structure of the analysis, not to its execution: whereas, as noted above, eLCA is predictive and not verifiable, the logic model is used in SIA serves to help define the outcomes and impacts which should be measured directly. Identification of possible "social hot-spots" (e.g. Benoît-Norris et al., 2012) can help to identify the outcomes and impacts to be prioritised for attention but should not fully substitute for direct observation. As Jørgensen et al. (2008) pointed out for sLCA, "it is important to remember that the quality of site specific data is very dependent on the auditing approach and, therefore, not necessarily of high accuracy, and that generic data might be designed to take into account the location, sector, size and maybe ownership of a company and thereby in some cases give a reasonable impression of the social impacts that can be expected from the company performing the assessed process". This suggests a further analogy between eLCA on the one hand and SIA on the other: analysis of "hot-spots" can identify where primary data are essential while secondary average or generic data can be used elsewhere.

It is tempting to pursue the analogy between eLCA and SIA further: for example, planned direct outcomes of a programme might be treated in the same qualitative way as impacts in an attributional eLCA, whereas indirect impacts – improvements in social practices inspired but not directly caused by the programme – might be treated by consequential analysis. However, it is probably advisable to leave the comparisons at this point: they are close enough to suggest that there will be value in developing social Life Cycle Assessment by applying ideas from Social Impact Assessment rather than trying to force sLCA into the mould of environmental LCA.

Conclusions

Social Life Cycle Assessment has a number of features which make it different from environmental LCA, of which the most fundamental is that eLCA is predictive and not amenable to empirical verification whereas sLCA relies on observation (which may include qualitative observation) of outcomes and impacts. Aspects of Social Impact Assessment might be used as a basis for developing sLCA, in much the way that Risk Assessment (RA) guided the development of eLCA. Analogies can be identified between the structures of RA and eLCA, although the two forms of assessment differ in execution. Social LCA is more likely to develop as a useful tool if it is not forced into the mould of environmental LCA. More fundamental examination of the purpose of sLCA is needed, preparatory to exploring how this purpose may be met – but that is precisely the purpose of this conference.

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