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## Declaration of concern—an unambiguous rebuttal of the LEO-SCS-002 draft standard

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Dear Reader,

If you have been following the recent developments surrounding Life Cycle Assessment (LCA) in the USA (and unless you are from the USA, chances are you have not), you may be aware of a recent standardization effort

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spearheaded by SCS Global Services and the Leonardo Academy, who according to their websites are either “Setting The Standard For Sustainability” (SCS) or “The Sustainability Experts” (Leonardo).<sup>1</sup> The so-called “draft ANSI standard”<sup>2</sup> LEO-SCS-002 is titled “Life Cycle Impact Assessment Framework and Guidance for Establishing Public Declarations and Claims” and it is currently being revised after the first round of public consultation.<sup>3</sup>

SCS’s elevator pitch surrounding the draft standard and the underlying methodology can be summarized as follows:

- All existing impact assessment methodologies are non-ISO compliant, unscientific, and ultimately misleading.
- There is only one way of doing LCIA—and LCA in general for that matter—and that is by following the draft LEO-SCS-002 standard.

If the above claims look like an exaggeration of the authors of this article, we invite you to read SCS’s presentation at this year’s LCA XII conference in Tacoma, WA (Army et al. 2012). Slide 10 of that presentation sums up their personal view of the LCA world very well.

While we believe that everybody is entitled to voice her/his own opinion, we take issue whenever somebody publicly discredits and attacks established methodologies at every opportunity and at the same time appears to commercially offer the apparently *only* viable solution to the alleged issue. In addition, SCS and the Leonardo Academy seem to be entirely unimpressed by ISO 14040:2006, Section 4.3, item

(g), which unambiguously states that “there is no single method for conducting LCA. Organizations have the flexibility to implement LCA as established in this International Standard, in accordance with the intended application and the requirements of the organization.” Elevating a single LCA/LCIA methodology into the status of a national standard is therefore as incompatible with this internationally agreed-upon key feature of LCA as it is unnecessary.

Nevertheless, we will give the proponents of the draft standard the benefit of the doubt and assume that they have indeed found the philosopher’s stone of LCA in general and of impact assessment in particular. Let us therefore proceed by critically evaluating the draft standard itself.

The main body of the standard spans 36 pages. We do encourage you to read it but have summarized our findings below:

- The core of the draft proposal is motivated by the rejection of presently known and used LCIA approaches based on the allegation that they fail to meet the environmental relevance requirements in ISO 14044 by being too far removed from the category endpoints (see Section 6.2.2, p. 20f of the draft standard). Yet, ISO 14044, Section 4.4.2.2.2 clearly states that “the category indicator can be chosen anywhere along the environmental mechanism between the LCI results and the category endpoint(s),” so having “no environmental relevance” as claimed by the draft standard is virtually impossible if the assessment follows the general inventory–classification–characterization procedure. Accordingly, even inventory flows themselves possess some environmental relevance in the sense of “less-is-better.”
- Chapter 5.3.1 (p. 12) defines the functional unit as “the unit of output or production of the product, system or

<sup>1</sup> [www.scsglobalservices.com](http://www.scsglobalservices.com), [www.leonardoacademy.org](http://www.leonardoacademy.org)

<sup>2</sup> Actually, the title “draft Leonardo Academy standard” or “draft American National Standard” would be more appropriate as the American National Standards Institute (ANSI) only accredits standards developing organization but does not produce any standards itself.

<sup>3</sup> <http://www.leonardoacademy.org/programs/standards/life-cycle.html>

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service,” which “should be scaled to a level of production or operation relevant to the product, system or service” and therefore “scaled to yield all measurable indicator results,” which means that “scaling the functional unit to annual production levels may be required to yield meaningful indicator results.” The role of the *system function*, i.e., the “performance of a product system” (ISO 14044:2006, Section 3.20), in defining the functional unit does not seem to be part of this.<sup>4</sup> Also, it remains unclear why one should not just scale the product system up to a 5-, 10-, 20-, or 50-year production volume to render any and all indicator results “meaningful.”

- Chapter 5.3.2 then proceeds by giving advice on how to define a “reference baseline” to compare your product to in a Type III Environmental Product Declaration. It is unclear to the authors of this article how this aligns with ISO 14025, whose Section 4, item (b) unambiguously states that “declarations are not comparative assertions” by themselves.
- After having arbitrarily scaled the product flow up to where the system yields “meaningful” indicator results, the authors then propose to boil down their own list of 28 impact categories as much as possible by applying environmental relevance cutoffs that are intended to separate “core” from “phantom” impacts. These latter impacts of the shady kind are deemed to be easily identified as they have “no known or measurable mid-points/endpoints” (Section 6.2.3, pp. 21f).
- They further supplement this advice with a more pragmatic approach, which is as simple as it is untouched by scientific evidence: the definition of *Minimum Units of Measure* (Table 3, p. 22). This arbitrary collection of metric and imperial units is portrayed to possess the capability to distinguish environmentally relevant from environmentally irrelevant impacts based on the numerical value of 1. The draft standard therefore recommends that “indicator results should not be reported in units less than those listed in this table; results less than 1 reported in these minimum units are considered to be not environmentally relevant and should not be included in the final impact profile” (p. 23, first paragraph). Example? “For example, Stratospheric Ozone Depleting Chemicals (ODCs) are regulated as kilograms because kilograms of emissions are required to affect the concentration of stratospheric ozone. Reporting grams or micrograms of these ODCs is not considered an environmentally relevant category indicator result” (p.

24, Section 6.3.2). Likewise, Energy Resource Depletion below 1 GJ is to be excluded, Land Use impacts have to be at least equal to “100% acres disturbed,” ecotoxicity is cut off at 1 kg 1,4-dichlorobenzene equivalents, and Water Depletion appears to be a moving target in this regard as you are free to omit any water consumption either below 1 gal or 1 l, which is a difference of a factor 3.8. It eludes the authors of this article what the environmental “relevance” of an acre is compared to, e.g., a hectare, or why the emission of 999 g of 1,4-dichlorobenzene in the product system does not concern the draft standard’s authors.

- Apart from the audacity of this approach, it remains unclear to the authors of this article what the value of this exercise is as the insignificance or even absence of a certain impact in a product system is a valuable piece of information, especially in Type III EPDs which are published by companies in order to generate competitive advantages. A standard that prohibits the reporting of minor or even avoided impacts seems counterproductive at best. In essence, the above approach would mean that EPDs from the same product category could report somewhat differently composed environmental profiles based on the environmental relevance or irrelevance of single impact categories for the specific product system under study. Hence, it would undermine the core idea of being able to compare EPDs of company A to company B based on an identical set of metrics.

If the above is not enough reason for concern, a quick query using the search phrase “life cycle” and the freeware Publish or Perish™ renders a total of eight publications by the SCS/Leonardo collective over a time span of 18 years.<sup>5</sup> Yet, publications in peer-reviewed, ISI-listed scientific journals with relevance to the research area of Life Cycle Assessment are notably absent. This seems odd to say the least, especially since the proponents accuse all other LCA practitioners of creating “unscientific” results.

You may now ask yourself why we are even addressing this draft standard in an article. Everybody with at least some experience in the field will quickly identify the above shortcomings of the standard, so there is reasonable hope that the standard will either be revised until it is completely aligned with ISO 14040/44, in which case it would not really add anything of value, or that it does not get published at all. While we share that hope, there are plenty of organizations and institutions out there who currently either support the approach, meaning they spend significant resources on its advancement, or that are not yet supporting it but at least are intrigued by the allegations brought forward by its proponents. These are the

<sup>4</sup> This is addressed rather broadly by subsequently mandating that the Product Category Rule includes “equivalencies” to “account for differences in useful lifetime, durability or functionality among products, services or systems in a given category.”

<sup>5</sup> Query was performed with version 3.7 on October 8, 2012.

people we want to reach, and here are some general recommendations by this group of authors for the immediate future:

- Read the standard ([www.leonardoacademy.org/programs/standards/life-cycle](http://www.leonardoacademy.org/programs/standards/life-cycle)) and engage in its public revision process.
- Request a copy of the previously received ~450 comments from the public consultation period (LCIA\_standard@leonardoacademy.org). The above listed shortcomings are not comprehensive at all.
- If you feel inclined, voice your concerns about the standardization process and the lack of underlying consensus to ANSI (info@ansi.org). The American Center of Life Cycle Assessment has done so without any result,<sup>6</sup> but continued pressure will help bring these concerns the attention they deserve.
- Before taking any actions with regard to the draft standard, wait until it has been finalized and published. We expect significant changes over the next couple of months, which would render all case study results futile.
- To the authors, we recommend that they first publish a detailed description of each of the 28 impact categories separately in peer-reviewed scientific journals like the *International Journal of Life Cycle Assessment*, *Journal of Industrial Ecology*, *Environmental Science & Technology*, or the like. This is the appropriate venue to advance science; a national standard is not.

As the title of this article suggests, the authors are deeply concerned about the current draft standard as its above shortcomings and drawbacks are obvious and undeniable. In summary, we are mainly concerned about the following issues:

1. The general damage that could be done to the credibility of the internationally standardized Life Cycle Assessment methodology by the allegations brought forward leading to confusion among commissioners and users of current and future LCAs and EPDs,
2. The fact that the current draft standard is in breach of the relevant ISO standards and applies arbitrary choices to avoid some of the intrinsic limitations of LCA, e.g., the relative approach based on a functional unit, which poses an unnecessary threat for the global and unanimous consensus that ISO 14040 and 14044 represent the one and only “constitution” of LCA as recently described in a recent editorial in this journal (Finkbeiner 2012),

3. The fact that the approach described in the draft standard is far from being representative of any kind of consensus on Life Cycle Assessment in the North American or global LCA community,<sup>7</sup>
4. The fact that the described approaches have not been tested by the international LCA community and their scientific rigor and technical validity still remains to be assessed and that no independent pilot studies have been conducted to check the practicality of these indicators and the availability of characterization factors,
5. The fact that the US government may be obliged to refer to the standard for regulatory and procurement purposes in lieu of any other US standards on Life Cycle Impact Assessment or EPDs,<sup>8</sup> and last but not least
6. The fact that US companies may then be forced to perform two separate LCAs to create a US and an internationally accepted EPD since any EPDs produced using the proposed standard will not harmonize with standards anywhere else on the globe. This leads to additional costs for US companies, which poses a competitive disadvantage.

So regardless of your agenda, if you feel uncertain about whom or what to trust in this obviously confusing and convoluted matter, we humbly ask you to consider this joint declaration of academics, industry professionals, and consultants as somewhat of a yardstick. While members of our group may sometimes disagree on the preferred approach to some of the interesting LCA research topics or may compete for research funds or industry projects, we put all differences aside to address this issue with a common and unapologetic voice. With this, we rest our case and thank you very much for your kind attention.

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<sup>7</sup> Note that ANSI’s main objective is “the enhancement of global competitiveness of US business and the American quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems and promoting their integrity” ([www.ansi.org/about\\_ansi/introduction](http://www.ansi.org/about_ansi/introduction)).

<sup>8</sup> Pursuant to OMB Circular A119, federal government agencies are required to use voluntary standards for regulatory and procurement purposes when appropriate ([www.ansi.org/about\\_ansi/introduction](http://www.ansi.org/about_ansi/introduction)).

<sup>6</sup> [http://lcacenter.org/pdf/ACLCA\\_Position\\_Draft\\_ANSI-SCS02.pdf](http://lcacenter.org/pdf/ACLCA_Position_Draft_ANSI-SCS02.pdf)