



PE INTERNATIONAL

Harmonization of LCA Methodologies for Metals – Frequently Asked Questions (FAQs)

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1 WHY DO A LIFE CYCLE ASSESSMENT (LCA)?

Life cycle assessments are completed for a variety of reasons. The ISO standards state the LCA can assist in the following:

- identifying opportunities to improve the environmental performance of products at various points in their life cycle
- informing decision-makers in industry, government or non-government organizations (e.g., for the purpose of strategic planning, priority setting, product or process design or redesign)
- the selection of relevant indicators of environmental performance, including measurement techniques
- marketing (e.g., implementing an ecolabelling scheme, making an environmental claim, or producing an environmental product declaration).

More specifically, metal industries generate LCA data for their materials and products in order to supply accurate information about environmental performance both internally and to the external marketplace. This information can be used to create comparative assertions, support environmental claims, develop marketing campaigns, inform stakeholder, improve performance, amongst other applications.

2 WHAT IS LCA? LCI? LCIA?

Definition of Life Cycle Assessment (LCA) from ISO 14040: Life Cycle Assessment is the compiling and evaluation of the input and outputs and the potential environmental impacts of a product system during its lifetime.

LCA is comprised of 4 phases:

- 1. Goal & Scope Definition**
 - *Determination of scope and system boundaries*
- 2. Life Cycle Inventory (LCI)**
 - *Data collection, modeling & analysis*
- 3. Life Cycle Impact Assessment (LCIA)**
 - *Analysis of inputs and outputs using indicators*
- 4. Interpretation**
 - *Sensitivity analysis, dominance analysis, etc.*

3 WHAT IS HARMONIZATION AND WHY IS IT IMPORTANT FOR LCAs?

In the context of LCA, harmonization refers to the consistency of methodological choices amongst a set of studies. This includes decisions on how to allocate co-products, which LCIA categories to include, how to define system boundaries, how to treat end-of-life recycling, and other decisions that LCA practitioners must make. Harmonization is important because it enables comparison of results across different studies, helps establish credibility for LCA databases, and ensures consistent messaging within an industry.

4 WHAT IS THE “HARMONIZATION OF LCA METHODOLOGIES FOR METALS” DOCUMENT?

It is a guidance document offering recommendations on a harmonized approach to LCA methodologies within the metals and minerals industry.

5 WHO WAS INVOLVED IN THE DEVELOPMENT OF THE “HARMONIZATION OF LCA METHODOLOGIES FOR METALS” DOCUMENT?

Associations participating in this initiative (listed by commodity they are representing) include: Copper (ICA, ECI), Nickel (NI), Zinc (IZA and ILZRO), Aluminum (AA and IAI), Steel (World Steel Association), Stainless Steel (ISSF), Molybdenum (IMOA), Cobalt (CDI), Lead (ILA and ILZRO, ILMC), Manganese (IMnI). PE INTERNATIONAL provided technical guidance and co-authored the document along with the organizations listed above.

6 WHAT IS THIS GUIDANCE BASED ON? E.G., ACADEMIC RESEARCH? INDUSTRY EXPERIENCE?

This harmonization effort began with a comparison of existing methodologies used by participating associations. Of the ten commodities represented in this effort, eight have already conducted LCAs while the other two commodities have either recently initiated these efforts or are currently planning their first such effort. Existing methodologies used by associations were compared by PE INTERNATIONAL and the participating associations which highlighted several areas of alignment in existing methodologies as well as areas which were either less aligned or could benefit from discussions and alignment across the associations. Results of the comparison of existing efforts by commodity associations along with discussions regarding industry-wide challenges and opportunities for collaboration resulted in the focus of this effort being on the following topics: treatment of co-products; scoping; end-of-life recycling; and life cycle impact assessment (LCIA). The document was then created through a series of discussions among the participating organizations which resulted in the creation of draft documents which were then further reviewed and revised throughout 2012 and 2013. Efforts were taken in the creation of the document to ensure alignment with ISO 14040/44.

7 WHO IS THE INTENDED AUDIENCE FOR (I.E., WHO CAN/WILL USE) THE “HARMONIZATION OF LCA METHODOLOGIES FOR METALS” DOCUMENT?

This new guidance is intended for use by associations and companies within the metals and minerals industry to support engagement and communication with:

- *Regulators*
- *Life cycle database providers*
- *LCA practitioners*
- *Industry groups related to metals and minerals sector.*

8 WHY WAS THE “HARMONIZATION OF LCA METHODOLOGIES FOR METALS” DOCUMENT CREATED?

The main intent of the document is to create a ‘common voice’ for the metals and minerals industry on life cycle methodologies when engaging with various stakeholders. It is envisaged that this new guidance will also inform the development of new or updated LCAs within the industry.

9 WHAT IS THE SCOPE OF THE DOCUMENT? I.E., WHAT IS INCLUDED/NOT INCLUDED?

The document focuses on Life Cycle Inventory and Assessment methodologies within the metals and minerals industry. Within these topics, the participating organizations chose to focus more specifically on several areas that were identified as either being less aligned or which could benefit from discussions and alignment across the associations. Specifically the topics covered in the document are as follows: treatment of co-products; scoping; end-of-life recycling; and life cycle impact assessment (LCIA). It should be noted that the participating associations in this effort have indicated that this is a ‘living document’, that is, that it may be expanded on in the future to include other related topics as appropriate.

10 WHAT ARE THE KEY FINDINGS OR RECOMMENDATIONS IN THE “HARMONIZATION OF LCA METHODOLOGIES FOR METALS” DOCUMENT?

- *System boundaries should be set to include end-of-life disposal and recycling and, whenever possible, the product use phase*
- *Co-product allocation methods should consider the type and properties of co-products being produced*
- *Recycling allocation should use the end-of-life recycling approach, which accounts for the recyclability of the material*
- *The life cycle impact assessment stage should report the well-established and scientifically-defensible impact categories, with the understanding that inclusion of other impact categories will be periodically reevaluated by the metals industry, or may be mandatory based on certain standards.*

It should be noted that the participating associations in this effort have indicated that this is a ‘living document’, that is, that it may be expanded on in the future to include other related topics and associated recommendations as appropriate.

11 WILL THE DOCUMENT BE UPDATED OR EXPANDED UPON IN THE FUTURE?

The participating associations in this effort have indicated that this is a ‘living document’, that is, that it may be expanded on in the future to include other related topics and associated recommendations as appropriate. The participating associations have agreed to convene from time to time to explore additional areas of harmonization and potential updates or additions to the document.

12 CAN MY ASSOCIATION OR COMPANY GET INVOLVED IN THIS INITIATIVE?

Yes. This is an ongoing initiative by the participating associations and one which will benefit from further collaboration from within the metals and minerals sector. For organizations outside of the metals and minerals sector, direct participation in the development of further guidance is not anticipated, however the participating associations welcome your comments and input on the effort.

13 DO PARTICIPATING ASSOCIATIONS HAVE TO ADOPT THE PRACTICES DESCRIBED IN THE DOCUMENT?

No. This document provides recommendations for the associations to base their methodological decisions on when conducting LCA studies

14 HOW SHOULD THE DOCUMENT BE USED?

The intention of the document is to highlight commonly recommended approaches as well as potential situations where deviations from these approaches may be most appropriate. For example, an association conducting an LCI may choose to discuss, or report on, why they made certain methodological choices and can reference this document as the justification for these decisions.

15 HOW CAN I REFERENCE THIS DOCUMENT IN MY WORK/RESEARCH?

PE INTERNATIONAL, 2014, *Harmonization of LCA Methodologies for Metals*.

Online reference:

<http://www.icmm.com/page/102613/harmonization-of-life-cycle-assessment-methodologies-for-metals>

(Document is available for download at the above link as part of the ICMM Materials Stewardship Toolkit)

16 DOES THIS HARMONIZATION EFFORT INCLUDE GUIDANCE ON THE SOCIAL IMPACTS/BENEFITS OF METALS AND MINERALS?

No. This effort is focused on life cycle inventory and assessment methodologies which do not directly include social impacts/benefits.

17 HOW CAN I USE THIS GUIDANCE WHEN CONDUCTING A PRODUCT LCA?

Although the emphasis of the guidance is with respect to production of raw metal materials, the recommendations are also applicable to metal products. In particular, the sections on system boundaries and end-of-life recycling discuss topics that are important for LCAs of metal products. Guidance is provided on how to select life cycle phases, define the functional unit, and account for the end-of-life fate of the product. However, given that each product LCA is unique, practitioners should always consult best practices within the given application in order to ensure consistency.

18 HAVE METALS OR MINERALS ASSOCIATIONS ALREADY CONDUCT LIFE CYCLE ASSESSMENTS? ARE THE METHODOLOGIES ALIGNED?

To date, many metals or minerals associations have conducted LCAs. Of the commodities represented in the guidance document, most had previously completed an LCA while the others are currently conducting or planning an LCA. As part of this harmonization effort, a comparison of the existing methodologies being used by the participating associations was conducted. This effort highlighted several areas of alignment in existing methodologies, as well as areas for on-going discussions to achieve further alignment across the industry.