

# ILCD Handbook Public Consultation Workshop

## International Reference Life Cycle Data System (ILCD)

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### Abstract

**Introduction** The European Commission is supporting the development of the International Reference Life Cycle Data System (ILCD). This consists primarily of the ILCD Handbook and the ILCD Data Network. This paper gives an insight into the scientific positions of business, governments, consultants, academics, and others that were expressed at this public consultation workshop.

**Workshop focus** The workshop focused on four of the topics of the main guidance documents of the ILCD Handbook: (1) general guidance on life cycle assessment

(LCA); (2) guidance for generic and average life cycle inventory (LCI) data sets; (3) requirements for environmental impact assessment methods, models and indicators for LCA; and (4) review schemes for LCA.

**Workshop participation** This consultation workshop was attended by more than 120 participants during the 4 days of the workshop. Representatives came from 23 countries, from both within and outside the European Union.

**Workshop structure** Approximately half of the participants were from business associations or individual companies. Another 20% were governmental representatives.

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Others came predominantly from consultancies and academia.

**Results** This public consultation workshop provided valuable inputs into the overall ILCD Handbook developments as well as for further development. This paper focuses on some of the main scientific issues that were raised.

**Keywords** Guidance · Handbook · Impact assessment · International Reference Life Cycle Data System (ILCD) · Inventory · Public consultation · Review · Workshop

## 1 Introduction

In its integrated product policy communication, the European Commission stated “*LCA is the best framework for assessing the potential environmental impacts of products, but the debate is ongoing about good practice*”. The communication committed to the development of a platform and a handbook to facilitate quality assurance and coherence of life cycle methods and data, as well to support the availability and exchange of associated data.

In 2005, the European Commission’s Joint Research Centre (JRC) together with its Directorate General for Environment (DG ENV) jointly established the European Platform on life cycle assessment (LCA). Among other deliverables, the European Platform on LCA is coordinating and supporting the development of the International Reference Life Cycle Data System (ILCD).

The ILCD consists primarily of the ILCD handbook and the ILCD data network, see Figs. 1 and 2.

The ILCD is based on best consensus and current practice. It is developed through extensive consultation coordinated by the European Commission’s services. This helps to ensure independence of specific private or national interests. As part of this extensive consultation process, a public workshop was hosted from June 29th to July 2nd, 2009 in Brussels, Belgium.

The following sections outline what was done before the workshop and then provides a detailed summary. The focus here is on the main scientific issues discussed. Further details on the Platform and on the ILCD, including how the issues raised in the consultations have been addressed in the Handbook, are available at <http://lct.jrc.ec.europa.eu>.

## 2 Preparation of the drafts

Initial drafts of the ILCD Handbook’s main guidance documents were developed over 3 years by 16 experts financed through support contracts by the European Commission and working closely with its services. This has involved extensive interaction and consultation.

An initial invitation-only consultation involving circa 100 key stakeholders was conducted to help develop advanced drafts. This invitation-only consultation was supported by formal agreements established on a voluntary basis via the European Platform on LCA. It involved over 34 governments and national life cycle database representatives, 16 European/international business associations, developers of many of the main life cycle tools and databases including for impact assessment, as well as services of the European Commission (EC) and the United Nations Environment Program (UNEP).

A public consultation was then launched on the advanced drafts. This consultation was open to all, irrespective of nationality or affiliation. This consultation started with the 4-day workshop. The consultation period for written inputs closed at the end of August, 2009.

It should be noted that organizations participating in the consultations do not necessarily endorse the ILCD.

## 3 Workshop participation

The public consultation workshop on the four ILCD handbook guidance documents was held in Brussels from June 29th to July 2nd, 2009. The opening and closing sessions of the workshop were jointly chaired with the UNEP. Technical sessions were co-chaired by European Commission services together with several non-EU national life cycle project representatives. In total, there were more than 120 participants in the workshop from a total of 23 countries. This included China, USA, Japan, Brazil, South Africa, Malaysia, Switzerland, as well as many from the 27 European Union (EU) countries. More than 50% of the participants came from an industry or business background. Circa 20% were from governmental institutions, see Fig. 3.

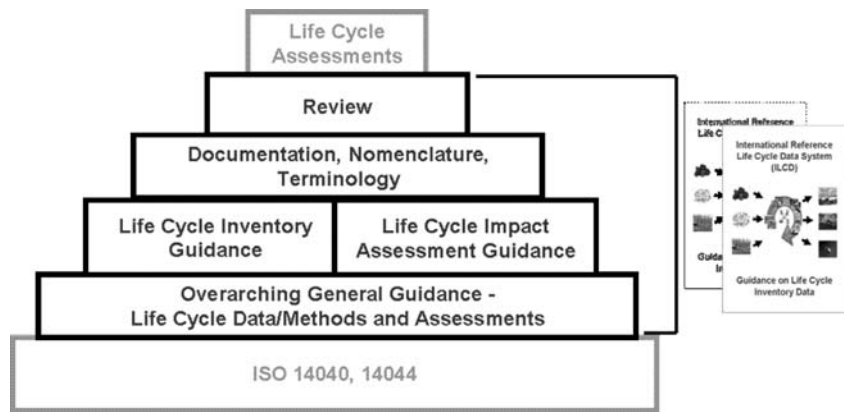
## 4 Workshop structure

The public consultation workshop consisted of six sessions:

- Opening UNEP and EC speeches, followed by ILCD introduction
- General guidance for life cycle assessment
- Guidance for generic or average life cycle inventory data sets
- Guidance on life cycle impact assessment
- Review schemes for LCA
- Summary of workshop, closing keynote speeches by UNEP and EC, and next steps

Each session started with a technical presentation given by European Commission staff. These staff then responded

**Fig. 1** Overview of the key documents of the ILCD handbook and relationship with ISO 14040-44 (black indicates the focus of this workshop)



to questions with clarifications. The chairs moderated subsequent discussions to facilitate the exchange of opinions from different stakeholder perspectives.

**5 Summary of discussions**

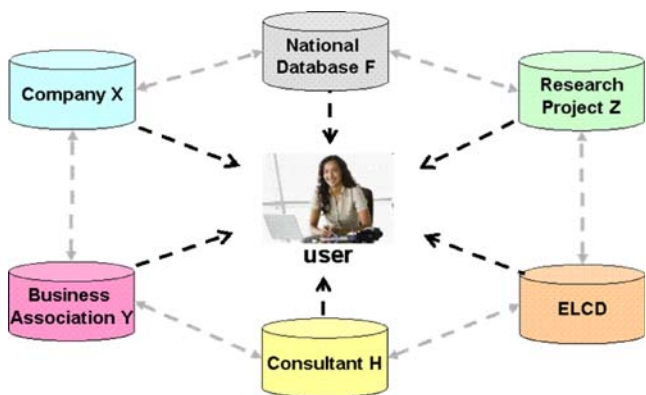
This paper provides a summary of the main scientific discussions and suggestions from the workshop. Issues raised related to, e.g., editorial/structural changes of the ILCD and how different scientific topics are addressed in the ILCD handbook are not summarized here. Detailed minutes, speeches, and presentations of the workshop and also the written comments received during the consultation after the workshop are available at <http://lct.jrc.ec.europa.eu>.

The following sections summarize the six sessions, with a principle focus on the main scientific discussions.

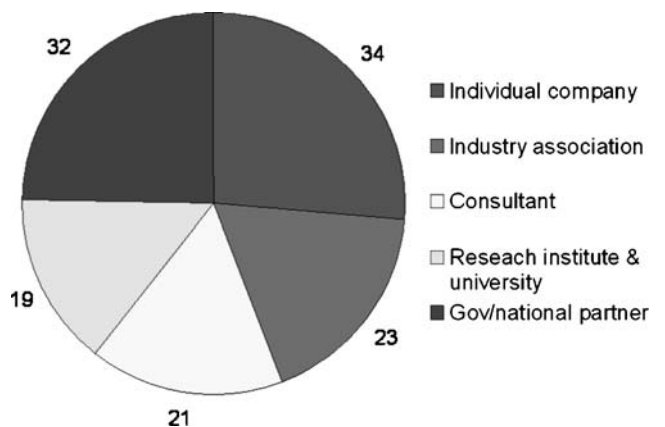
5.1 Opening speeches and ILCD introduction (29th June 2009) Chairs: G. Sonnemann (UNEP, DTIE), K. Kögler (EC, DG ENV), P. Misiga (EC, DG ENV), D. Pennington (EC, JRC)

Klaus Kögler, European Commission, DG ENVIRONMENT, Head of the Sustainable Production and Consumption Unit, opened the workshop. He highlighted the importance of the European Platform on LCA’s deliverables in the context of ensuring a basis for coherent and robust policy support within Europe.

Sylvie Motard, UNEP, Head of Liaison Office to the EU, outlined the relationship between the ILCD and activities of UNEP. She highlighted the links with the International Panel on Sustainable Resource Management and also with the UNEP/Society of Environment and Toxicology (SETAC) Life Cycle Initiative, particularly for how the ILCD had built on some deliverables of the Initiative.



**Fig. 2** ILCD data network: data will be provided to users from multiple sources in a consistent and quality assured way. Consistency and quality are assured through requirements based on the ILCD Handbook. Stakeholders worldwide can provide and exchange their data, based on their own terms and conditions, free of charge, upon registration, or for a fee



**Fig. 3** Summary of participant affiliations in the ILCD Handbook Public Consultation Workshop held in Brussels from June 29th to July 2nd, 2009

Giovanni Bidoglio, Head of the Rural, Water and Ecosystem Resources Unit at the Institute for Environment and Sustainability (IES), JRC, European Commission, highlighted the relationships of life cycle assessment with many other disciplines. He emphasized the importance of interactions and of the LCA community not working in isolation.

David Pennington, leader of the Unit's Life Cycle Assessment group, presented an overview of the ILCD Handbook and the planned Data Network (see Figs. 1 and 2). He highlighted the key role of life cycle thinking and assessment in business and policy. He outlined the scientific challenges faced by the public and private sectors, including the necessity to have an authoritative basis to ensure quality and coherence. He recognized the major developments that have been achieved worldwide by many organizations that make the ILCD possible, as well as the need for continued dialog and developments through various projects/initiatives.

In the subsequent discussions on day 1 of the workshop, participants discussed the following key topics:

- Effective communication of LCA results is a key issue.
- Too high a level of quality requirements would result in increased expense. Others suggested it is better to have fewer, higher quality studies even if these studies are more expensive. In this way, the costs will reduce overall.
- The ILCD was considered helpful to developing countries. It provides one source trying to identify a best practice. Concerns were raised, however, that if mandatory requirements were set too high that developing countries, in particular, would not be able to meet them—or only with the support/reliance on external experts. Equally, it was emphasized that caution is needed in regions such as Europe that cost burdens for data and assessment are not shifted to developing countries.
- A discussion started on the role of the European Commission in international harmonization and the related status of ILCD Handbook. It was clarified that the ILCD is led by the EC. But it remains open to all inputs irrespective of origin or affiliation. It was highlighted that it is essential to not just consider practice in the EU, nor to develop the ILCD as an EU-isolated approach. Product life cycles and business activities have become often global, reflecting globalization.

## 5.2 General guidance for LCA (30th June 2009)

Chairs: P. Masoni (ENEA, Italy), R. Pant (JRC-IES)

Marc-Andree Wolf, European Commission's JRC, opened day 2 with an overview of the advanced draft of the general guidance document of the ILCD handbook. He highlighted

four main decision contexts in the draft, outlining the differences in LCA requirements needed for each context:

- Short-term product decision support (situation I)
- Future product decision support (situation II)
- Future strategy decision support (situation III)
- Monitoring (situation IV)

He presented the general concepts of attributional versus consequential modeling and of allocation for each decision context. This was complemented with an overview of other generally applicable issues such as data quality and how to measure this in practice.

Discussions amongst stakeholders on these topics were extensive:

- There is a need to find the optimum position between being too prescriptive and being too general; allowing too much freedom and a lack of reproducibility. A clear distinction was also highlighted between business and policy needs versus academic innovation. The ILCD should ensure sufficient consistency only, not aiming at absolute 100% reproducibility. It needed to further expand on encouraging scenario analysis rather than being more prescriptive.
- To be able to go into more detail than is possible in the general guidance, several participants suggested that sector or product group specific guidance documents or category rules are needed.
- There were diverging views as to whether the differentiation into four different decision contexts (goal/scope situations) is good, whether certain situations should be merged, or even some split. Discussions focused primarily on reflecting changes in market capacity—whether they will have large or small scale implications in terms of, e.g., how the economy may/may not be affected by a product system being changed.
- Consequential and attributional modeling, as well as allocation and substitution, are key issues. The application dependent nature of these issues was highlighted. A debate started. The debate was very vivid. No consensus emerged on the relevance of the knowledge generated by attributional and consequential LCA. Discussions focused on practicability as well as the relative uncertainties. There appeared to be a split between those proposing primarily attributional modeling, those identifying where consequential modeling makes more sense and how this can be best done in current practice, and others suggesting a mix between attributional and consequential as reflecting best current practice.
- Guidance must provide clear decision support, but limitations generally need to be clearly stated. LCAs should not give the impression that a single result is the only truth, particularly for LCAs focused on future scenario and comparative assessments. It is necessary,

where possible, to present the results of a number of relevant scenarios as well as to highlight uncertainties and data gaps. Clear guidance for reporting is equally needed to help address this.

- A need for general rules for scenario analysis was identified. Sensitivity analysis was seen as of special relevance for, e.g., strategic policy decisions. But different practitioners must be able to come up with the same or a similar result for the same scenario, at least for a baseline scenario.
- More guidance on conducting robust uncertainty and accuracy assessments remains necessary.
- In relation to impact category coverage, in the context of inventory data collection, the importance of providing practical guidance for land use and for emerging issues such as water footprints was highlighted. Detailed guidance on indirect land use was seen as needing more development and practice testing.
- How to deal with strong fluctuations in prices when using economic allocation was highlighted as a specific problem in relation to reproducibility.

An overall outcome of this day was that there is the need for the ILCD general guidance on LCA to identify “What is the right balance” between different methodological approaches and different degrees of strictness/flexibility. The answer from the workshop was that “It depends”. It depends on goal and scope, intended application, intended target audience. The guidance should therefore be structured, e.g., by the specified decision context situations. Equally, there is not necessarily a scientific “right” or “wrong” answer for each issue. It will often come down to the need for a convention based on best current practice.

### 5.3 Guidance for generic or average life cycle inventory data sets (1st July 2009, morning) Chairs: H. T. Wang (Sichuan University, CHINA), R. Pant (JRC-IES)

The third day started with a presentation of the draft guidance document for generic or average life cycle inventory (LCI) data sets. The document relates to and closely builds on the action points of the general guidance on LCA but with a focus on LCI data set issues. Three main stages in development of LCI data sets were discussed:

- Data collection
- Data set modeling
- Data set review

Participants raised and discussed the following issues:

- How to best achieve a good coverage of the impacts/emissions/resource-use modeled and how to assess this in practice with different types of cut-off criteria to help establish what is modeled? If criteria are set based on

percentage coverage, then some questioned how can you know what is 100%. Approximation and stepwise completion of the inventory data was suggested as one solution, as often used in practice. Another idea was to use environmentally extended economic input-output models, while others questioned the relevance and robustness of this approach.

- More guidance is needed in practice for the initial data collection step, from measurements to unit process data sets, for estimation, and for how to best document this.
- More specific guidance was requested to deal with practical problems if relevant primary data of foreground processes was not available or accessible.
- On data review, a balance is needed between meeting confidentiality interests and allowing, e.g., reviewers to be able to judge quality and completeness. For the review of business average data sets, the necessity was suggested to go back to the raw data from, e.g., individual plants. It was further that according to International Organization for Standardization (ISO), pre-reviewed cumulative datasets must not be used in comparative assertions if only one reviewer has performed the review.
- A request was made for more guidance on how to measure uncertainty for primary and secondary data.

### 5.4 Guidance on life cycle impact assessment (1st July 2009, afternoon) Chairs: C. Castanho (University of Brasilia, BRAZIL), D. Pennington (JRC-IES)

Rana Pant, EC JRC, presented the draft ILCD guidance document on life cycle impact assessment (LCIA). He also presented a background document on the existing LCIA methodologies from around the world that are in current mainstream use, highlighting which impacts are covered, and where there are similarities/differences between these existing approaches. He outlined four main topics:

- The necessity to first focus on globally compatible LCIA models and factors, with spatial/temporal distinction where this is relevant and scientifically defensible
- The proposed framework for impact assessment in LCA, including the growing practice of using consistent midpoint and endpoint indicators in one framework
- Criteria proposed for the evaluation of LCIA models to ensure robustness
- Which environment, health, and resource indicators should be addressed in an LCA and what should be omitted

Focus was on the mandatory steps in ISO standards of classification and characterization. The optional steps of normalization and weighting were not addressed.

Participants discussed several issues including:

- One participant acknowledged the need for global compatibility, but raised the concern of how far it would be possible to use, e.g., the same characterization factors for emissions in Europe and Asia.
- There was a brief discussion on toxicity impacts, particularly related to whether inventory data are generally sufficiently robust/consistent to support reliable indicators.
- It was questioned why human health effects associated with the use stage are not more widely included in LCA, including for example migration from packaging materials into food.
- There was a brief discussion on how to best include land use in both the inventory and the impact assessment, with requests for further practical guidance. It was highlighted that land use is included already in some available methods.
- In relation to time horizons, there was some discussion including on whether different reference years used, e.g., for climate change reflect discounting/cutting off long-term impacts. There was a suggestion that a need for consistency of time horizons, such as considering impacts over the first 100 or 500 years, did not matter—as in common current practice.
- Referring to the presentation by Rana Pant in which an example on global warming potential for 500 years was used, a participant raised concern that this could create an extra impact category as now 100 years is more and more commonly used.
- It was highlighted that recommended characterization factors must be maintained over time, but there is a trade-off between stability and the need for scientific improvement/updating
- There is a need for more guidance on uncertainty and variability in also LCIA.

#### 5.5 Review schemes for LCA (2nd July 2009, morning)

Chairs: S.S. Chen (SIRIM, MALAYSIA), R. Pant (JRC-IES)

Kirana Chomkhamisri, EC JRC, presented an overview of the advanced draft guidance on “Review Schemes for LCA”. This provides the general requirements for conducting peer reviews of data and assessments in 12 different application situations. Further documents are being developed to provide more detailed guidance for each situation. It was emphasized that good reviews have the potential to reduce overall costs, while being essential in some cases for stakeholder confidence and verification; but a balance is needed.

Participants raised the following issues:

- While quality assurance was highlighted as being important, there is a need to not unduly increase costs, complexity, or restrict the uptake of LCA through too strict review requirements.
- Pre-verified data should be usable in other LCA studies to avoid repeated verification and related costs of the same data sets.
- Accreditation was generally considered to be excessive as a recommendation and not required by ISO 14040/44. It was recognized, however, that more stringent requirements could be set or requested through standards, policies, etc., by different organizations.
- Clear distinction is needed for internal decision support and Business-to-Business (B2B) communication review requirements from other applications.
- The value of exams for reviewers was questioned, while other suggestions included the requirement of a “test review”. Experience of, e.g., eco-design courses developed in Korea or the US practitioner exam were suggested to provide input for developing future exams/courses. Courses and exercises on LCA were advised to be used as an alternative or as a complement to exams.
- The need to support capacity building in developing economies was highlighted to ensure the local availability of qualified reviewers and avoid reliance on reviewers from developed countries.
- The independency of the reviewers needs a clear definition, but also a 100% water-tight definition would not be feasible. A pragmatic solution should be found.
- The difficulty to identify sufficient numbers of qualified and independent reviewers was named, especially for review panels that need several reviewers on the same topic.
- The need for more detailed guidance for review, such as for using mass, energy, carbon-balances on unit process level was highlighted.

5.6 Summary, closing speeches, and next steps (2nd July 2009, afternoon) Chairs pm: G. Sonnemann (UNEP), M. Sponar (DG ENV), D. Pennington (JRC-IES)

The closing session started with a presentation by David Pennington to summarize all of the sessions and to provide an overview of the main issues raised from his perspective.

Sylvie Lemmet, Director, Division Technology, Industry and Economics (DTIE), UNEP, and Timo Makela, Director, Sustainable Development and Integration, DG Environment, European Commission, then gave closing speeches. The closing speeches went beyond just the content of the

documents discussed in the workshop and the scope of these activities.

Ms. Lemmet highlighted a number of ongoing activities and new projects that partially are inspired by, and related in scope and objectives to, the ILCD. UNEP is planning to support these primarily through their life cycle initiative with the SETAC. Mr. Makela re-iterated the importance of the ILCD from a European perspective, stressing the importance of the related interactions with the broader global community.

Several questions were answered by Ms. Lemmet and Mr. Makela:

- From the policy perspective in DG Environment, the need was re-iterated to move forward fast to provide timely guidance for quality assurance and consistency to support the implementation of EC's Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan. It was clarified that it would be unlikely to require the direct application of LCA to meet policy requirements, while these assessments are vital as an input in the implementation of policies that promote tools such as eco-design, eco-label, and a growing number of other policy instruments.
- One participant asked for clarification of the potential overlap of the UNEP/SETAC Life Cycle Initiative's proposals with the ILCD, as they appeared to aim at the same kind of output for the same problem. It was stated that the ILCD already involves a number of key countries and business representatives that are closely

consulted by the EC. UNEP emphasized that the EC activities were beneficial for moving forward in defining best practice in LCA, but that there was still a need for further global developments/agreements. Such a process should build on what exists in various parts of the world and broaden stakeholder involvement to others who had not participated in the ILCD developments. The idea was not to have two initiatives with incompatible results but to move together, in a complementary manner, towards one benchmark that was widely accepted in the world.

For more information about the ILCD, as well as the detailed minutes from this workshop, the presentations, and the written inputs from the public consultation, including how these have been taken into account, please visit the European Platform on LCA at <http://lct.jrc.ec.europa.eu>.

For further questions, please contact [lca@jrc.ec.europa.eu](mailto:lca@jrc.ec.europa.eu).

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