

International Reference Life Cycle Data System (ILCD) Data Network:

Compliance rules

ILCD Data Network compliance - High quality data
ILCD Data Network compliance - Basic quality data
ILCD Data Network compliance - Data estimate
ILCD Data Network compliance - Entry level phase I
ILCD Data Network compliance - Entry level phase II

DRAFT

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1 Executive Summary

Life Cycle Thinking (LCT) and Life Cycle Assessment (LCA) are moving into the core of modern environmental policies and business decision support.

Life Cycle Assessment is a structured, internationally standardised method and management tool for quantifying the emissions, resources consumed, and environmental and health impacts that are associated with goods and services (“products”). LCAs take into account the product’s full life cycle: from the extraction of resources, production, use and recycling, up to the disposal of remaining waste. LCAs help thereby to avoid resolving one environmental problem while creating another: They avoid the so-called “shifting of burdens”, e.g. from one part of the life cycle to another, amongst different types of impacts on the natural environment and on human health, and amongst countries.

This document identifies the documents/sources and provides the time-line for the implementation of the quality, method, nomenclature, review and documentation compliance rules of the International Reference Life Cycle Data System (ILCD) Data Network (“ILCD Data Network”). The overall objective is to support consistent and quality-assured life cycle data and robust methods and studies for reliable decision support in public policy and business.

Background

Life Cycle Thinking (LCT) is a core concept in public policy and business. Upstream and downstream consequences of decisions must be taken into account to help avoid the shifting of burdens from one type of environmental impact to another, from one political region to another, from one generation to the next or from one stage to another in a product’s life cycle from the cradle to the grave. This is quantified in practice through Life Cycle Assessment (LCA). A range of policy and business instruments build on LCA data and methods: Eco-design, Type I Ecolabel, Type III Ecolabel (Environmental Product Declaration, EPD) and the related Carbon footprint and labels, environmental technology verification, green public and private procurement (GPP) etc.

The International Reference Life Cycle Data System (ILCD) has been established to support the use of consistent and quality-assured life cycle data and methods for all these instruments in the public and private sectors.

The ILCD consists primarily of the ILCD Handbook and the ILCD Data Network: The Handbook is a series of technical guidance documents in line with the ISO 14040 series and developed through peer review and public consultation. The Data Network is a web-based, decentralised network of consistent and quality-assured life cycle inventory (LCI) data sets. This is ensured through compliance with the requirements of the ILCD Handbook. It is open for all data providers from business,

national LCA projects, research groups, consultants, research projects, and others to join under their own terms and conditions.

More information on the ILCD is provided in the separate document “International Reference Life Cycle Data System (ILCD) - Introduction and Overview”.

Purpose of this document

Compliance elements

This document defines five sets of requirements that are the basis to ensure the overall quality and consistency of the ILCD Data Network: method, data quality (completeness and representativeness), nomenclature, review, and documentation. These rules have the purpose to ensure the appropriateness and necessary compatibility of the data sets in the ILCD Data Network regarding Life Cycle Inventory (LCI) data collection and modelling methods, use of the same underlying elementary flows and nomenclature, appropriate documentation for data users, and giving an assurance on the data quality via reviews.

Three levels of data quality are differentiated:

- **High quality data**
- **Basic quality data**
- **Data estimate**

Establishment phase and entry-level requirements

The ILCD Handbook that defines these requirements in detail is only now being finalised including awaiting the outcome of the public consultation. Data development and internal approval procedures e.g. in business associations as a major provider of primary data can take 6 to 24 months. In addition the update-frequency of the data is to be considered. It is therefore impossible especially for industry data sets to immediately meet all requirements. Also other data providers will need some time to adjust their data and documentation, reviews have to be organised and carried out, etc.

In the establishment-phase, there is the need to operate with entry level requirements. These are defined to be in place for up to 3 years, with one interim step after 1.5 years. This will help data developers have time for preparing and move forward to the full compliance with the ILCD requirements.

This results in the two additional sub-sequent compliance sets:

- **Entry level phase I**
- **Entry level phase II**

2 ILCD compliance elements

2.1 Systematic overview of the compliance elements and rules

The International Reference Life Cycle Data System (ILCD) Data Network provides a registry for consistent quality-assured life cycle inventory ("Eco-profile") data sets. Quality and consistency is ensured through compliance with the ILCD Handbook. Five sets of requirements are essential to ensure the overall quality and consistency of the data in the data network: method, data quality (completeness and representativeness), nomenclature, documentation, and review. These rules have the purpose to ensure the appropriateness and necessary compatibility of the data sets in the ILCD Data Network regarding data collection and modelling methods, use of the same underlying elementary flows and nomenclature, appropriate documentation for data users, and giving an assurance on the data quality via reviews.

The following compliance rules are defined for the different data set types:

Table 1 Overview of compliance rules and data set types

Data set type	Compliance area				
	Method	Quality	Nomenclature	Review	Documentation
Process	X	X	X	X	X
Flow	X		X		X
Flow property	X		X		X
LCIA method	X	X	X	X	X
Unit group	X		X		X
Source			X		X
Contact			X		X

Table 2 focuses on the "Process data set" as central element, giving an overview of the ILCD Data Network compliance requirements for all five compliance areas.

Table 2 Overview of ILCD Data Network compliance requirements; details are given in the separate guidance documents

Compliance area	ILCD Data Network compliant data sets
<p>Method Covers LCI modelling framework and method approaches</p>	<ul style="list-style-type: none"> • ISO 14040 and -44 compliant process-based LCA • Methodologically ILCD compliant as defined in ILCD Handbook: Goal-dependent modelling, applying e.g. attributional or consequential modelling, allocation or substitution, etc.
<p>Data quality Covers completeness, precision, representativeness</p>	<ul style="list-style-type: none"> • 3 levels of data quality defined ("high quality", "basic quality", "data estimate"), covering quantitative criteria for completeness and precision, and qualitative criteria for technological, geographical and time-related representativeness
<p>Documentation¹ Covers documentation extent and format</p>	<ul style="list-style-type: none"> • Minimum documentation extent specified • ILCD format for IT compatibility / functionality of Data Network
<p>Nomenclature Covers naming rules, emission / resource compartments, measurement units, terminology, and other conventions</p>	<ul style="list-style-type: none"> • Compliant with ILCD nomenclature document (e.g. use of ILCD reference elementary flows for IT compatible inventories) • Terminology use enforced
<p>Review Covers review type, reviewer qualification and independence, review scope and methods</p>	<ul style="list-style-type: none"> • ILCD-registered qualified reviewer • ILCD reviewer registry, point system: LCA expertise and experience, experience in relevance sector, review experience • Type, scope and methods of review in line with ILCD Handbook (i.e. "Independent external review" (for present/past LCI data), "Accredited third-party review" (for future scenario LCI data), and e.g. unit process level review is required • Separate review report is required

¹ The ILCD reference format is made for wide compatibility and for allowing a complete documentation of the data sets. In practice, typically a sub-set of the documentation possibilities will be used.

2.2 References to documents with the detailed rules

The following list provides the documents and chapters where the detailed compliance rules of the ILCD Data Network are laid down. The named documents are accessible or become accessible currently at <http://lct.jrc.ec.europa.eu/eplca/deliverables/the-international-reference-life-cycle-data-system-ilcd-data-network> :

Data quality compliance (*work in progress / under consultation*)

For Process data sets this covers the technological, geographical and time-related representativeness as well as completeness and precision of the inventory. The requirements are specified in the "**ILCD Handbook - Specific guidance document for generic and average Life Cycle Inventory (LCI) data sets**" and the "**ILCD Handbook - General guidance document for Life Cycle Assessment (LCA)**", which forms its basis and provides more details.

Method compliance (*work in progress / under consultation*)

Covers mainly the applied LCI modelling framework (e.g. attributional, consequential) and the related allocation and other LCI method choices as well as a few methodological issues of the inventory flows for ensuring a proper link to the impact assessment. For Process data sets (and the few provisions for Flow, Flow property, and Unit groups) the requirements are defined in the "**ILCD Handbook - Specific guidance document for generic and average Life Cycle Inventory (LCI) data sets**" and the "**ILCD Handbook - General guidance document for Life Cycle Assessment (LCA)**", which forms its basis and provides more details.

Nomenclature compliance

Refers on one part to a structured and consistent naming of all data set types and some related conventions, the used elementary flow categories, and the classifications of Process data sets for structuring the data in the ILCD Data Network. The compliance rules for all data set types are defined in the document "**ILCD Handbook - Nomenclature and other conventions**".

The other part of the "Nomenclature compliance" refers to the use of correct LCA terminology, which is defined in the **ILCD terminology** (*terminology definition in progress; consultation upcoming*).

Review compliance (*work in progress / under consultation*)

Defines the necessary minimum requirements on critical review of Process and LCIA method data sets. They are specified in the “**ILCD Handbook - Review schemes for Life Cycle Assessment (LCA)**” (*under consultation*) and “**ILCD Handbook - Review scope, methods, and documentation**” (*work in progress*) in the part relating to generic/average and producer-specific LCI data sets and LCIA methods, respectively.

Documentation compliance

Ensures that a data set is properly identified and both correctly and appropriately documented to inform the user what the data set actually represents. For Process data sets the requirements closely relate to the provisions of the “ILCD Handbook - Specific guidance document for generic and average Life Cycle Inventory (LCI) data sets”. The exact scope of minimum documentation requirement for all data set types is defined in the “**ILCD Handbook - Documentation of LCA data sets**” document.

[Note: The "Data quality", "Method", "Nomenclature", and "Documentation" requirements for LCIA method data sets will be defined subsequently in respective "LCIA guidance" documents.]

3 Entry level and timing of implementation

Motivation

Given the situation that the ILCD compliance rules are finalised only now, no data developer can now immediately and fully meet them: Their product system models need to be more or less adjusted (e.g. by changing allocation criteria), the models and resulting data sets are to be reviewed, for which again first the qualified reviewer are to be registered by the different ILCD partners, and so on. (Re-collection of data should however not be necessary, unless the data is of very low quality anyway and would need improvement also independently of any ILCD requirements.)

A wide and also quickly growing demand for data ("Carbon footprint effect") is however to be met in a short time-frame.

At the same time do different types of LCAs need different types of LCI data sets: e.g. monitoring-type work needs attributional data, future scenario LCAs need to consider certain consequences, addressed by consequential modelling. This is reflected by the three main decision-context situations as identified in the ILCD Handbook. Data in the ILCD Data Network has from the beginning to meet the respective differentiated data needs.

Approach

Less strict requirements are put in place for the first years of building-up the ILCD Data Network. Accordingly, next to the three data quality levels as specified in the "ILCD Handbook - Guidance document on generic / average LCI data sets", a fourth level of unspecified data quality is introduced for this establishment-phase.

The timing of the requirements is derived from a double goal: Firstly to make as many data available as soon as possible without compromising too much in terms of consistency and quality-assurance. Secondly, to provide both incentives and a clear time-plan for stepwise improving the minimum quality of the data that is available via the network.

In doing so, also the effort/cost involved to meet the specific requirements is considered together with data updating cycles and internal communication/coordination needs e.g. in business associations to get approval by their members on revised data sets.

The following table 3 accordingly provides this "phasing-in" information, focussing on Process data sets, stepwise to full ILCD Data Network compliance.

Table 3 Stepwise towards full ILCD Data Network compliance

Compliance area	Time line		
	0-18 months (Entry level - phase I)	18-36 months (Entry level - phase II)	> 36 months (Full ILCD Data Network compliance)
Method Covers LCI modelling framework and method approaches	<ul style="list-style-type: none"> ISO 14040 and -44 compliant process-based LCA Methodological ILCD compliance not enforced; applied modelling framework(s) and allocation/substitution approaches to be documented 		<ul style="list-style-type: none"> ISO 14040 and -44 compliant process-based LCA Methodologically ILCD compliant as defined in ILCD Handbook: Goal-dependent modelling, applying e.g. attributional or consequential modelling, allocation or substitution, etc.
Data quality Covers completeness, precision, representativeness	<ul style="list-style-type: none"> No data quality levels; Data quality to be stated using ISO quality criteria only; achieved technological, geographical and time-related representativeness to be documented 		<ul style="list-style-type: none"> 3 levels of data quality defined ("high quality", "basic quality", "data estimate"), covering quantitative criteria for completeness and precision, and qualitative criteria for technological, geographical and time-related representativeness.
Documentation Covers documentation extent and format	<ul style="list-style-type: none"> Minimum documentation extent specified ILCD format for IT compatibility / functionality of Data Network 		<ul style="list-style-type: none"> Minimum documentation extent specified ILCD format for IT compatibility / functionality of Data Network
Nomenclature Covers naming rules, emission / resource compartments, measurement units, terminology, and other conventions	<ul style="list-style-type: none"> Compliant with ILCD nomenclature document (e.g. use of ILCD reference elementary flows for IT compatible inventories), Certain aggregated elementary flows (e.g. VOC) are permitted Terminology use not enforced. 	<ul style="list-style-type: none"> Compliant with ILCD nomenclature document (e.g. use of ILCD reference elementary flows for IT compatible inventories), Certain aggregated elementary flows (e.g. VOC) are permitted Terminology use enforced. 	<ul style="list-style-type: none"> Compliant with ILCD nomenclature document (e.g. use of ILCD reference elementary flows for IT compatible inventories) Terminology use enforced.
Review Covers review type, reviewer qualification and independence, review scope and	<ul style="list-style-type: none"> Use of reviewers from registry not required Qualified independent external reviewer in line with ISO 14044 (chapter 6.1) requirements: "Qualified reviewer" 	<ul style="list-style-type: none"> ILCD-registered qualified reviewer ILCD reviewer registry, point system: LCA expertise and experience, experience in relevance sector, review experience 	<ul style="list-style-type: none"> ILCD-registered qualified reviewer ILCD reviewer registry, point system: LCA expertise and experience, experience in relevance sector, review experience

Compliance area	Time line		
	0-18 months (Entry level - phase I)	18-36 months (Entry level - phase II)	> 36 months (Full ILCD Data Network compliance)
methods	<p>(adapted from ISO 14025):</p> <ul style="list-style-type: none"> - knowledge of relevant sector - knowledge of represented process or product - LCA method expertise and experience <ul style="list-style-type: none"> • Review on unit process level may not be required, depending on data quality claims • Separate review report is not required (review documented in data set) 	<ul style="list-style-type: none"> • Scope and methods of review in line with ILCD Handbook (But: Accreditation not enforced), e.g. review on unit process level is required • Separate review report is required 	<ul style="list-style-type: none"> • Type, scope and methods of review in line with ILCD Handbook (i.e. “Independent external review“ (for present/past LCI data), “Accredited third-party review“ (for future scenario LCI data), and e.g. unit process level review is required • Separate review report is required

Remark: green colour identifies less strict requirement than the final ILCD Data Network compliance