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Australian STANDARD

Environmental management — Life cycle assessment — Principles and framework

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Preface

This Standard was prepared by the Standards Australia Committee EV-021, Environmental Management and Sustainable Development, to supersede AS/NZS ISO 14040:1998.

The objective of this Standard is to describe the principles and framework for life cycle assessment (LCA) including—

(a) definition of the goal and scope of the LCA;

(b) life cycle inventory analysis (LCI) phase;

(c) life cycle impact assessment (LCIA) phase;

(d) life cycle interpretation phase;

(e) reporting and critical review of the LCA;

(f) limitations of the LCA;

(g) relationship between the LCA phases; and

(h) conditions for use of value choices and optional elements.

This Standard covers life cycle assessment (LCA) studies and life cycle inventory (LCI) studies.

This Standard does not describe the LCA technique in detail, nor does it specify methodologies for the individual phases of the LCA.

The intended application of LCA or LCI results is considered during definition of the goal and scope, but the application itself is outside the scope of this Standard.

This Standard is identical with, and has been reproduced from, ISO 14040:2006, *Environmental management — Life cycle assessment — Principles and framework*.

As this document has been reproduced from an International Standard, the following applies:

(a) In the source text “this International Standard” should read “this Australian Standard”.

(b) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific Standards.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14040 was prepared by Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 5, *Life cycle assessment*.

This second edition of ISO 14040, together with ISO 14044:2006, cancels and replaces ISO 14040:1997, ISO 14041:1998, ISO 14042:2000 and ISO 14043:2000, which have been technically revised.

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Introduction

The increased awareness of the importance of environmental protection, and the possible impacts associated with products [1)], both manufactured and consumed, has increased interest in the development of methods to better understand and address these impacts. One of the techniques being developed for this purpose is life cycle assessment (LCA).

LCA can assist in

— 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, and

— marketing (e.g. implementing an ecolabelling scheme, making an environmental claim, or producing an environmental product declaration).

For practitioners of LCA, ISO 14044 details the requirements for conducting an LCA.

LCA addresses the environmental aspects and potential environmental impacts [2)] (e.g. use of resources and the environmental consequences of releases) throughout a product's life cycle from raw material acquisition through production, use, end-of-life treatment, recycling and final disposal (i.e. cradle-to-grave).

There are four phases in an LCA study:

a) the goal and scope definition phase,

b) the inventory analysis phase,

c) the impact assessment phase, and

d) the interpretation phase.

The scope, including the system boundary and level of detail, of an LCA depends on the subject and the intended use of the study. The depth and the breadth of LCA can differ considerably depending on the goal of a particular LCA.

The life cycle inventory analysis phase (LCI phase) is the second phase of LCA. It is an inventory of input/output data with regard to the system being studied. It involves collection of the data necessary to meet the goals of the defined study

The life cycle impact assessment phase (LCIA) is the third phase of the LCA. The purpose of LCIA is to provide additional information to help assess a product system's LCI results so as to better understand their environmental significance.

Life cycle interpretation is the final phase of the LCA procedure, in which the results of an LCI or an LCIA, or both, are summarized and discussed as a basis for conclusions, recommendations and decision-making in accordance with the goal and scope definition.

There are cases where the goal of an LCA can be satisfied by performing only an inventory analysis and an interpretation. This is usually referred to as an LCI study.

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1) In this International Standard, the term “product” includes services.

2) The “potential environmental impacts” are relative expressions, as they are related to the functional unit of a product system.

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This International Standard covers two types of studies: life cycle assessment studies (LCA studies) and life cycle inventory studies (LCI studies). LCI studies are similar to LCA studies but exclude the LCIA phase. LCI studies are not to be confused with the LCI phase of an LCA study.

Generally, the information developed in an LCA or LCI study can be used as part of a much more comprehensive decision process. Comparing the results of different LCA or LCI studies is only possible if the assumptions and context of each study are equivalent. Therefore this International Standard contains several requirements and recommendations to ensure transparency on these issues.

LCA is one of several environmental management techniques (e.g. risk assessment, environmental performance evaluation, environmental auditing, and environmental impact assessment) and might not be the most appropriate technique to use in all situations. LCA typically does not address the economic or social aspects of a product, but the life cycle approach and methodologies described in this International Standard can be applied to these other aspects.

This International Standard, like other International Standards, is not intended to be used to create non-tariff trade barriers or to increase or change an organization's legal obligations.

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Australian Standard®

Environmental management — Life cycle assessment — Principles and framework

1 Scope

This International Standard describes the principles and framework for life cycle assessment (LCA) including

a) the goal and scope definition of the LCA,

b) the life cycle inventory analysis (LCI) phase,

c) the life cycle impact assessment (LCIA) phase,

d) the life cycle interpretation phase,

e) reporting and critical review of the LCA,

f) limitations of the LCA,

g) relationship between the LCA phases, and

h) conditions for use of value choices and optional elements.

This International Standard covers life cycle assessment (LCA) studies and life cycle inventory (LCI) studies. It does not describe the LCA technique in detail, nor does it specify methodologies for the individual phases of the LCA.

The intended application of LCA or LCI results is considered during the goal and scope definition, but the application itself is outside the scope of this International Standard.

This International Standard is not intended for contractual or regulatory purposes or registration and certification.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14044, *Environmental management — Life cycle assessment — Requirements and guidelines*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
life cycle
consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal

3.2
life cycle assessment
LCA
compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle

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