International Standard

ISO 59014

First edition
2024-10

Environmental management and circular economy — Sustainability and traceability of the recovery of secondary materials — Principles, requirements and guidance

Management environnemental et économie circulaire — Durabilité et traçabilité de la valorisation des matières secondaires — Principes, exigences et recommandations

Reference number
ISO 59014:2024(en)

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Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 207, *Environmental management,* Subcommittee SC 5, *Life cycle assessment*, in collaboration with Technical Committee ISO/TC 323, *Circular economy*.

This first edition cancels and replaces IWA 19:2017, which has been technically revised.

The main changes are as follows:

— extended focus going beyond the recovery of metals from recoverable resources;

— inclusion of operational requirements;

— proper recognition of subsistence activities;

— alignment with most recent developments in the ISO 59000 family of standards;

— consideration of life cycle perspective for achieving the best environmental and social outcome from the recovery of secondary materials;

— comprehensive focus on circular economy with the inclusion of a pathway methodology for the recovery of secondary materials.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 Background

The global economy is “linear” as it is mainly based on extraction, production, use and disposal. This linear economy leads to resource depletion, biodiversity loss, waste and harmful losses and releases, all of which collectively are causing serious damage to the capacity of the planet to continue to provide for the needs of future generations.[18] Moreover, several planetary boundaries have already been reached or exceeded.

There is an increased understanding that a transition towards an economy that is more circular, based on a circular use of resources, can contribute to meeting current and future human needs (welfare, housing, nutrition, healthcare, mobility, etc.). Transitioning towards a circular economy can also contribute to the creation and sharing of more value within society and interested parties, while natural resources are managed to be replenished and renewed and in a sustainable way, securing the quality and resilience of ecosystems.

Organizations recognize many potential reasons to engage in a circular economy (e.g. delivering more ambitious and sustainable solutions; improved relationships with interested parties; more effective and efficient ways to fulfil voluntary commitments or legal requirements; engaging in climate change mitigation or adaptation; managing resource scarcity risks, increasing resilience in the environmental, social and economic systems), while contributing to satisfying human needs.

The ISO 59000 family of standards (see Figure 1) is designed to harmonize the understanding of the circular economy and to support its implementation and measurement. It also considers organizations, such as government, industry and non-profit, in contributing to the achievement of the United Nations (UN) Agenda 2030 for Sustainable Development.[19]

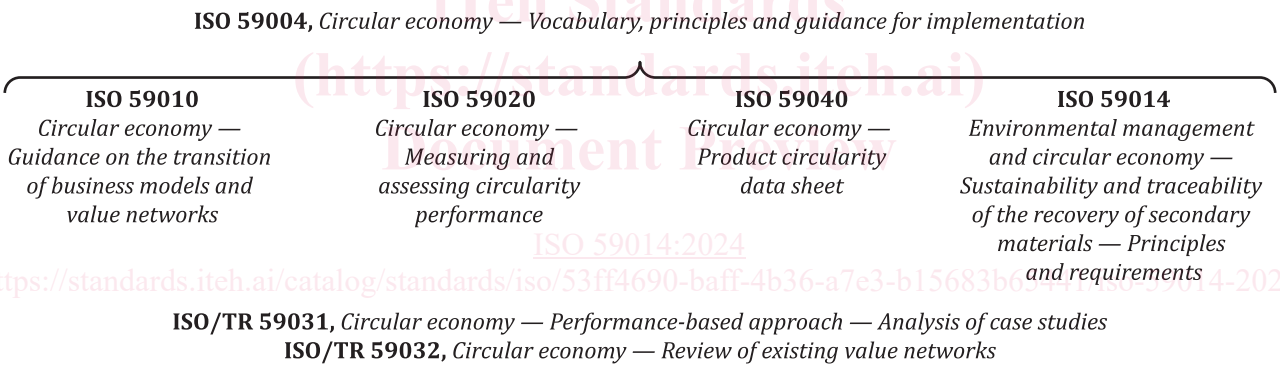

Figure 1 — ISO 59000 family of standards

Responsible, efficient and sustainable management of recoverable resources is a key action for organizations to keep more materials in a circular economy. This action is needed to respond to existing risks and impacts and growing consumer interest about the materials used, and to prevent the shifting of environmental or social impacts between life cycle stages, organizations, communities or countries. This specifically applies to organizations involved in activities and processes leading to the recovery and further use of secondary materials.

The management of waste that is considered a recoverable resource represents an important economic opportunity, while also contributing to reducing the demand for and extraction of virgin resources. The processing and subsequent use of secondary materials prevents the disposal of a resource that can provide value to another interested party(ies) and, thus, supports achieving environmental goals and improving the situation in many regions of the world.

However, inadequate waste management, poor working conditions, and lack of health and safety procedures pose risks and impacts to human health and the environment. These risks often go unidentified or ignored, particularly affecting workers in subsistence activities, communities, and the environment.

Furthermore, consumers are increasingly concerned about the environmental and social risks and impacts associated with the materials and products they purchase. Interested parties want to be informed if a recycled material is sustainably produced.

Traceability plays an important role in the circular flow of resources as it allows for the flow of recoverable and recovered resources, including secondary materials, to be tracked and accounted. The ISO 14000 family of standards supports efforts to identify the risks and opportunities of the preparation and use of secondary materials and to provide harmonized approaches for their environmental management. A key element is the link of environmental and social impacts in the life cycle of materials.

This document aligns with the ISO 14000 family of standards on environmental management (see Figure 2) and can also contribute to enhancing the harmonization system codes (HS code) for secondary materials.

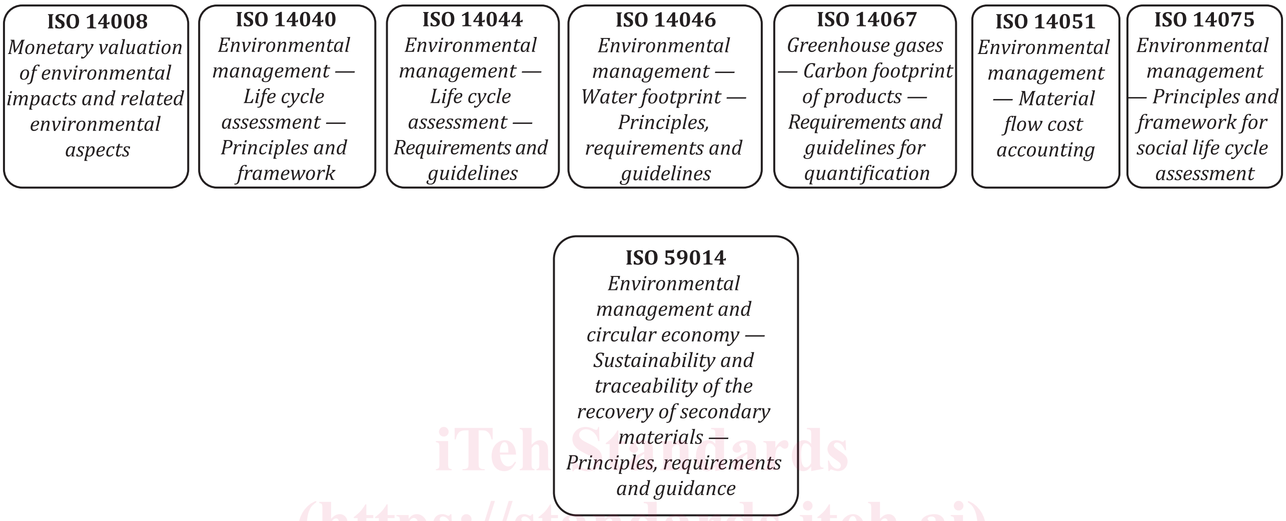
ISO 14008
Monetary valuation of environmental impacts and related environmental aspects
ISO 14040
Environmental management — Life cycle assessment — Principles and framework
ISO 14044
Environmental management — Life cycle assessment — Requirements and guidelines
ISO 14046
Environmental management — Water footprint — Principles, requirements and guidelines
ISO 14067
Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
ISO 14051
Environmental management — Material flow cost accounting
ISO 14075
Environmental management — Principles and framework for social life cycle assessment
ISO 59014
Environmental management and circular economy — Sustainability and traceability of the recovery of secondary materials — Principles, requirements and guidance

Figure 2 — ISO 14000 family of standards

0.2 Purpose and the outline of this document

This document provides principles, requirements and guidance to any kind of organization seeking to recover secondary materials. It describes the main terms and definitions (see Clause 3), principles (see Clause 4), activities, processes and organizations (see Clause 5), operational requirements (see Clause 6), organizational requirements (see Clause 7) and traceability requirements (see Clause 8).

Environmental management and circular economy — Sustainability and traceability of the recovery of secondary materials — Principles, requirements and guidance

1 Scope

This document provides principles, requirements and guidance for organizations in fostering the sustainability and traceability of activities and processes for the recovery of secondary materials.

This document also specifies requirements and provides guidance for organizations that engage with individuals involved in subsistence activities (SAs) as part of the organization's activities and processes for the recovery of secondary materials, with the aim of ensuring safe and healthy working conditions and the continual improvement of the well-being, livelihoods and professional practices of those individuals.

This document is applicable to organizations seeking to recover secondary materials systematically and responsibly using life cycle and circular economy perspectives, regardless of their size, type and location.

This document does not provide quality criteria for specific types of secondary materials recovered. Energy recovery and disposal are outside the scope of this document.

The collection, classification, sorting and non-destructive processes can lead to the recovery of components and products. The preparation and processing of products or components for their reuse or reprocessing (e.g. for repurposing, remanufacturing, refurbishment and repair) are outside the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 14040, *Environmental management — Life cycle assessment — Principles and framework*

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

ISO 14050, *Environmental management — Vocabulary*

ISO 14075[1)], *Environmental management — Principles and framework for social life cycle assessment*

ISO 59004, *Circular economy — Vocabulary, principles and guidance for implementation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 59004, ISO 14050 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

1) Under preparation. Stage at the time of publication: ISO/FDIS 14075:2024.

3.1
child labour
work that deprives children of their childhood, their opportunity to attend school, their potential and their dignity, and that is mentally, physically, socially or morally dangerous and harmful to children

Note 1 to entry: Child labour interferes with their schooling by:

— depriving them of the opportunity to attend school;

— obliging them to leave school prematurely; or

— requiring them to attempt to combine school attendance with excessively long hours and heavy duties.

Note 2 to entry: In its most extreme forms, child labour involves children being enslaved, separated from their families, exposed to serious *hazards* (3.8) and illnesses and/or left to fend for themselves on the streets of large cities, often at a very early age.

Note 3 to entry: Children's participation in work that contributes to their development and the welfare of their families can be considered as positive if this provides them with skills and experience, helps to prepare them to be productive members of society during their adult life and does not affect their health and personal development or interfere with their schooling. These activities include helping their parents around the home, assisting in a family business or earning pocket money outside school hours and during school holidays.

Note 4 to entry: Derived from the International Labour Organization "What is child labour?"[16].

3.2
circular economy
economic system that uses a systemic approach to maintain a circular flow of resources, by recovering, retaining or adding to their *value* (3.23), while contributing to sustainable development

Note 1 to entry: Resources can be considered concerning both stocks and flows.

Note 2 to entry: The inflow of virgin resources is kept as low as possible, and the circular flow of resources is kept as closed as possible to minimize *waste* (3.24), losses and releases from the economic system.

[SOURCE: ISO 59004:2024, 3.1.1]

3.3
classification
systematic identification of *recoverable resources* (3.16) with the purpose of making decisions relating to the *recovery pathway* (3.17) and the recovery of resources according to defined attributes

Note 1 to entry: Examples of attributes include *product* (3.15), component and *material* (3.12) type and characteristics, composition, hazardousness, process requirements and repairability.

3.4
continual improvement
recurring activity to enhance performance

[SOURCE: ISO 14050:2020, 3.1.13]

3.5
depollution
selective treatment during which certain substances, mixtures or components that are potentially harmful are safely removed

Note 1 to entry: Examples of removed elements include pollutants and declared *hazardous substances* (3.9).

Note 2 to entry: Depollution does not include the cleaning of food.

3.6
destructive process
process to obtain *secondary materials* (3.19) without any intent of preserving the original *product* (3.15) or component

EXAMPLE Disintegration (crushing, shredding, milling, grinding), concentration (separation, destructive *depollution* (3.5), homogenization), refining and re-melting.

3.7
disposal
process which does not result in the recovery of *products* (3.15), components, *secondary materials* (3.19) or energy

3.8
hazard
potential source of harm

[SOURCE: ISO/IEC Guide 51:2014, 3.2]

3.9
hazardous substance
substance which can adversely affect human health or the environment with immediate or retarded effect, either by itself or through interaction with other factors

Note 1 to entry: Hazardous substances are typically identified by international or national regulations which guide on proper processing and *disposal* (3.7).

3.10
interested party
person or *organization* (3.14) that can affect, be affected by, or perceive itself to be affected by a decision or activity

Note 1 to entry: To "perceive itself to be affected" means the perception has been made known to the organization.

[SOURCE: ISO 14001:2015, 3.1.6, modified — Example deleted.]

3.11
life cycle perspective
life cycle thinking
consideration of the environmental, social and circularity aspects relating to a *product* (3.15), component and *material* (3.12) during their entire life cycle

[SOURCE: ISO 14050:2020, modified — "social and circularity" added after "environmental", "component and material" added after "product".]

3.12
material
substance or a mixture of substances that can be used to make a *product* (3.15)

3.13
non-destructive process
process to obtain resources recoverable as *secondary materials* (3.19) or whole *products* (3.15) and components that preserves the original product or component

EXAMPLE Salvaging, cleaning, emptying, non-destructive *depollution* (3.5), disassembling.