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Circular economy — Guidance on the transition of business models and value networks

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Circular economy — Guidance on the transition of business models and value networks

Économie circulaire — Recommandations relatives à la transition des modèles d'affaires et des réseaux de valeur

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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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This document was prepared by Technical Committee ISO/TC 323, *Circular economy*.

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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.[23] 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[24].

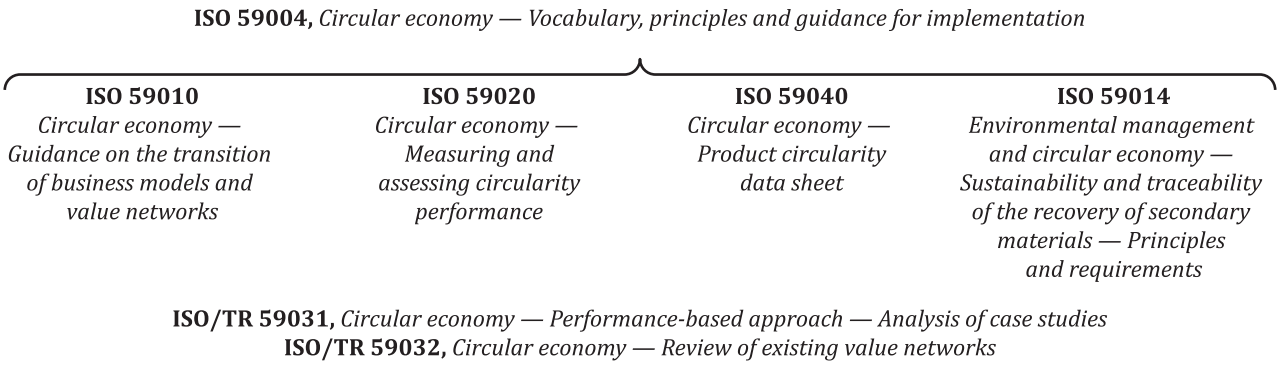

Figure 1 — ISO 59000 family of standards

0.2 Relationship between ISO 59004, this document and ISO 59020

ISO 59004, this document and ISO 59020 are interconnected, as shown in Figure 2, and support organizations in implementing a transition towards a circular economy.

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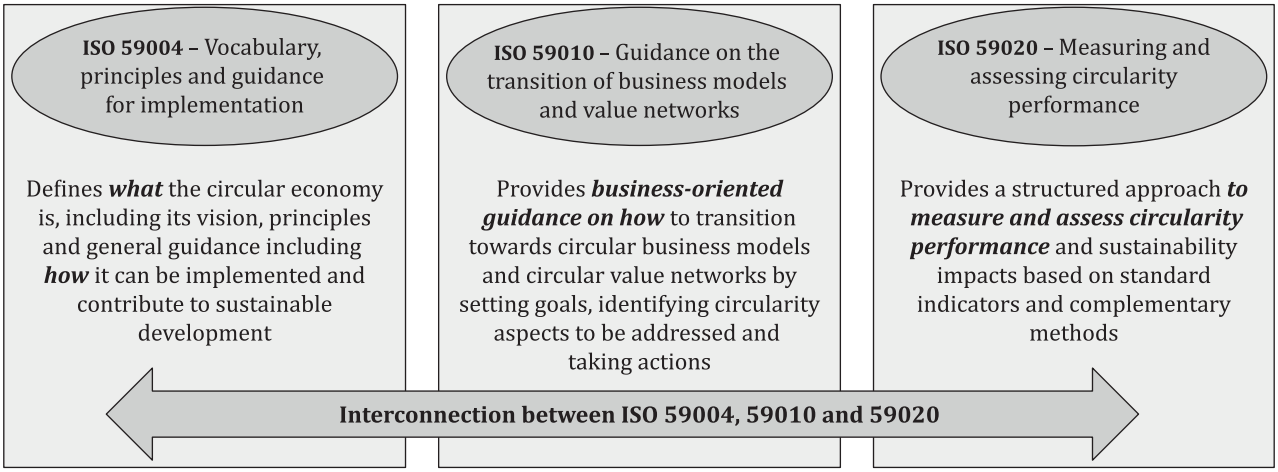

Figure 2 — Relationship between ISO 59004, this document and ISO 59020

0.3 Purpose and the outline of this document

Today's predominant linear economy-based value creation models are being increasingly scrutinized from social, environmental and business perspectives. As a result, diverse responses such as landfill closures, material bans and extended producer responsibility (EPR) policies are being implemented. Furthermore, environmental degradation during extraction, production, use, end-of-life treatment and related pollution are now commonly acknowledged as severe risks for businesses and societies, all of which depend on ecosystem services. Besides the increasing operational risks posed by the degradation of environmental ecosystems, the failure to protect them can negatively impact an organization's reputation.

In addition to these market risks, organizations anticipate continuous regulatory and reputational challenges as governments seek to address pollution and climate change. In this context, a circular economy and related value creation models have emerged as a promising strategy, gaining increased attention and support in society. Circular value creation models provide many more sustainable opportunities than existing linear models. During the development of this document, a survey was conducted to gather examples of changes in value creation models and value networks, and the results are provided in ISO/TR 59032.

Circular value creation models continuously improve their resource management practices and contributions to a circular economy and more sustainable business pathways. Circular value creation models establish measurable indicators (see ISO 59020) which can track resource use and losses over time, and monitor their impacts on and benefits to society and the natural environment.

In addition to its potential environmental benefits, studies show that a circular economy offers opportunities worth trillions of United States dollars, including job creation, which builds resiliency in national and international economies.[26] These findings have propelled momentum towards a global circular economy, and as a result, organizations have begun the transition to take advantage of these many opportunities.

However, transitioning from a linear to a circular value creation model can be challenging because it typically demands that an organization's value creation models and value networks be restructured. Accordingly, this document gives guidance for organizations wishing to transition their linear value creation models and value networks to circular ones.

This document is divided into eight clauses, of which Clauses 4 to 8, including their subclauses and interrelationships, are shown in Figure 3.

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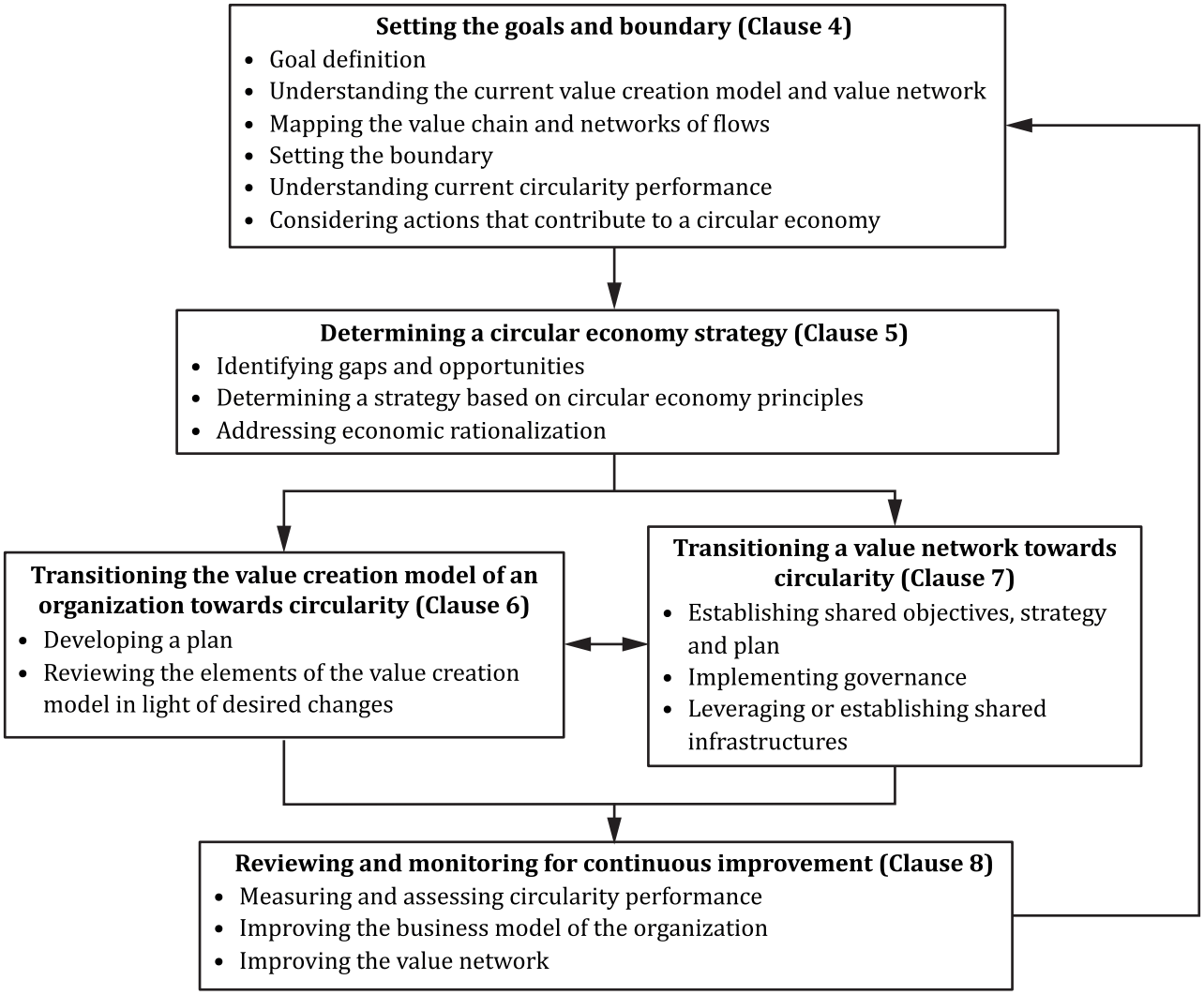

Figure 3 — Main structure of this document

0.4 Correspondence between ISO 59004 and this document

This document seeks to provide a more business-oriented methodology than ISO 59004, by which the transition from linear economy to circular economy is implemented in an actual business strategy. Therefore, as shown in Table 1, the two documents are complementary. This document focuses on business-oriented perspectives at the organizational and inter-organizational levels, while ISO 59004 is more generic and also applies at higher levels.

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Table 1 — Correspondence between selected clauses in ISO 59004 and this document

Clauses and subclauses of ISO 59004		Corresponding clauses and subclauses in this document	
7.2	Context and reference situation assessment	4.2	Understanding the current value creation model and value network of the organization
		4.3	Mapping the value chain and networks of flows
		4.4	Setting the boundary for addressing circularity
		4.5	Understanding current circularity performance
6	Actions that contribute to a circular economy	4.6	Considering actions that contribute to a circular economy
7.3	Circular economy purpose, mission, vision and goals definition	4.1	Goal definition
		5.1	Identifying gaps and opportunities
		5.2	Determining a circular economy strategy based on circular economy principles
		5.3	Addressing economic rationalization
7.4	Circular economy strategic priorities and action plan development	6.1	Developing a plan
7.5	Circular economy implementation	6.2	Reviewing the elements of the value creation model in light of desired changes
7.6	Circular economy monitoring, reviewing and reporting	7	Transitioning a value network toward circularity
		8.1	Measuring and assessing circularity performance
		8.2	Improving the value creation model of the organization
		8.2	Improving the value network

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Circular economy — Guidance on the transition of business models and value networks

1 Scope

This document gives guidance for an organization seeking to transition its value creation models and value networks from linear to circular.

This document is applicable to any organization regardless of size, sector or region.

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 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 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/

3.1
value creation model
business model
organization's chosen system of interconnected and interdependent decisions and activities that determines how it creates, delivers and captures *value* (3.16)

Note 1 to entry: A value creation model involves external *processes* (e.g. transportation, take back) beyond those of the organization's processes (e.g. education, financing) and the *solutions* (3.14) it provides.

Note 2 to entry: The value creation model can have a focus on the short, medium or long term, or some combination thereof.

[SOURCE: ISO 59004:2024, 3.5.1]

3.2
circular economy
economic system (3.3) that uses a systemic approach to maintain a circular flow of resources, by recovering, retaining or adding to their *value* (3.16), while contributing to sustainable development

Note 1 to entry: *Resources* (3.12) 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* (3.19), losses and releases from the economic system.

[SOURCE: ISO 59004:2024, 3.1.1]

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3.3
economic system
system by which a society organizes and allocates *resources* (3.12)

Note 1 to entry: The economic system can vary depending upon the geographic region or governmental jurisdiction.

Note 2 to entry: This can include the regulation of resources and the production, use and disposal of these resources.

[SOURCE: ISO 59004:2024, 3.1.2]

3.4
extended producer responsibility
EPR
environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle

Note 1 to entry: An EPR policy is characterized by:

a) the shifting of responsibility (physically or economically; fully or partially) upstream towards the producer and away from government or municipalities;

b) the provision of incentives to producers to take into account environmental considerations when designing their products.

Note 2 to entry: An EPR can be only financial or can be financial and operational depending on local laws.

[SOURCE: ISO 24161:2022, 3.1.1.2, modified — "local" replaced "national" in Note 2 to entry.]

3.5
governance
principles, policies and framework by which an organization is directed and controlled

[SOURCE: ISO 21505:2017, 3.1]

3.6
interested party
stakeholder
person or organization 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 59004:2024, 3.4.2]

3.7
life cycle perspective
life cycle thinking
consideration of the circularity aspects relevant to a *solution* (3.14) during its life cycle which includes consideration of the relevant environmental, social and economic impacts

Note 1 to entry: The main idea in applying a life cycle perspective is to improve the circularity performance of a solution by considering its use of *resources* (3.12) and related emissions in relation to relevant environmental, social and economic impacts. This can facilitate links between the economic, social and environmental dimensions within an organization and through its entire *value chain* (3.17).

Note 2 to entry: In measuring and assessing the circularity performance of a system, a life cycle perspective should be applied.

Note 3 to entry: This perspective should include all stages of technical or biological cycles over appropriate timescales that are related to that system.

[SOURCE: ISO 59004:2024, 3.2.5]

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3.8
materiality
information related to *circular economy* (3.2) that is essential for decision-making and can be applied to identify issues that reflect an organization's environmental and social impacts, as well as information that supports *interested party* (3.6) and strategic decision-making

[SOURCE: ISO 14100:2022, 3.1.12, modified — "related to circular economy that is" added.]

3.9
materiality assessment
method to identify and prioritize the issues most important to an organization and its *interested parties* (3.6), and relevant to its *circular economy* (3.2) strategy

3.10
post-consumer material
PCM
material generated by households or by commercial, industrial or institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose

Note 1 to entry: This includes recycled content and returns of material from the distribution chain.

[SOURCE: ISO 1382:2020, 3.373, modified — "post-consumer recycled content" deleted as the preferred term. "including returns of material from the distribution chain" deleted in the definition. Note 1 to entry added.]

3.11
product
physical-based object designed for or utilized with a purpose

Note 1 to entry: A product can be, for example:

— goods of any type;

— hardware (e.g. engine mechanical part, spare parts, consumables);

— electrical or electronic hardware devices or components (e.g. computers, communication equipment and sensors);

— processed materials (e.g. lubricant, cement).

[SOURCE: ISO 59004:2024, 3.2.2]

3.12
resource
asset from which a *solution* (3.14) is created or implemented

Note 1 to entry: Depending on the context, reference to "resource" includes "raw material", "feedstock", "material" or "component".

Note 2 to entry: For the purpose of this document, asset refers to physical resources such as natural resources, virgin resources, recoverable resources and recovered resources.

Note 3 to entry: Resource includes any energy type (e.g. the energy content or energy potential of materials).

Note 4 to entry: Resources can be considered concerning both stocks and flows.

[SOURCE: ISO 59004:2024, 3.1.5]

3.13
service
activity designed or executed with a purpose

Note 1 to entry: Services have intangible elements. Provision of a service can involve, for example:

— an activity performed on a tangible *product* (3.11) supplied to a customer (e.g. automobile to be repaired; the income statement needed to prepare a tax return);

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— the creation of ambience for the customer (e.g. in hotels and restaurants).

Note 2 to entry: Knowledge transfer and financial management as well as digital software tools or programs and databases are considered as services.

[SOURCE: ISO 59004:2024, 3.2.3]

3.14
solution
product (3.11) or *service* (3.13), or a combination thereof, that fulfils a need of an *interested party* (3.6)

[SOURCE: ISO 59004:2024, 3.2.1]

3.15
sphere of influence
range or extent of political, contractual, economic or other relationships through which an organization has the ability to affect the decisions or activities of other individuals or organizations

Note 1 to entry: The ability to influence does not, in itself, imply a responsibility to exercise influence.

[SOURCE: ISO 59004:2024, 3.5.4]

3.16
value
gain(s) or benefit(s) from satisfying needs and expectations, in relation to the use and conservation of *resources* (3.12)

EXAMPLE Revenue, savings, productivity, sustainability, satisfaction, empowerment, engagement, experience, public health, trust.

Note 1 to entry: Value is relative to, and determined by the perception of, those *interested party(ies)* (3.6) able to capture it.

Note 2 to entry: Value can be financial or non-financial, e.g. social, environmental, other gains or benefits.

Note 3 to entry: Value is dynamic over time.

[SOURCE: ISO 59004:2024, 3.1.7]

3.17
value chain
set of organizations that provide a *solution* (3.14) that results in *value* (3.16) for them

[SOURCE: ISO 59004:2024, 3.5.2]

3.18
value network
network of interlinked *value chains* (3.17) and *interested parties* (3.6)

[SOURCE: ISO 59004:2024, 3.5.3]

3.19
waste
resource (3.12) that is no longer considered to be an asset as it, at the time, provides insufficient *value* (3.16) to the holder

Note 1 to entry: The holder can choose to retain, discard or transfer the waste.

Note 2 to entry: Value can be assigned to waste as a result of a need from another *interested party* (3.6), at which point the resource is no longer considered waste.

Note 3 to entry: The assignment of value to waste as a resource is linked, in part, to the available technology (e.g. landfill mining).

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Note 4 to entry: Some regulations require the holder to dispose of certain types of waste, while others assign value to waste.

Note 5 to entry: Because resources include the energy content or energy potential of materials, such energy, when liberated during a process and not recovered for another use, can be considered a waste.

[SOURCE: ISO 59004:2024, 3.3.6]

4 Setting goals for the transition to a circular economy value creation model and its boundary

4.1 Goal definition

The organization should initially define its goals, i.e. what it seeks to achieve by transitioning to a circular economy value creation model. This goal definition process can include considerations on reductions in resource inflows and outflows, energy consumption and water consumption, as well as other approaches to improve the efficient use of resources.

Setting the organization's goals helps to guide its vision, boundary definition, actions and eventual performance measurement.

To help set measurable goals, an organization can conduct an assessment by reviewing and mapping all its activities and interactions within and between its value chains and broader value network.

Defining the goals early in the solution development process enables circularity aspects to be incorporated in the design of the solution.

4.2 Understanding the current value creation model and value network of the organization

Understanding the organization's current value creation model is the basis to determining the goals. For this purpose, assessing business elements that constitute its current value creation model is useful.

Typical business elements and examples are listed below. However, each organization can have unique value creation models and associated elements.

a) Value proposition:

   1) value the organization delivers to its customers and other interested parties;

   2) customers' and interested parties' problems that the organization helps to solve;

   3) customers' and interested parties' needs that the organization's value proposition addresses;

   4) solutions the organization creates for customers and which address interested parties' needs.

b) Key activities:

   1) activities the organization performs daily to create and deliver its value proposition;

   2) activities the organization conducts daily to operate its business, including its governance and risk management.

c) Key business resources:

   1) business resources the organization needs to create and deliver its value proposition, such as raw materials, water, energy, people, suppliers, knowledge, financing and other assets (e.g. logistical infrastructure).

d) Customer segments:

   1) customers' sector, business scale and geographical location in business-to-business (B2B) cases;

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