Conformity assessment

Circular economy

The role of conformity assessment

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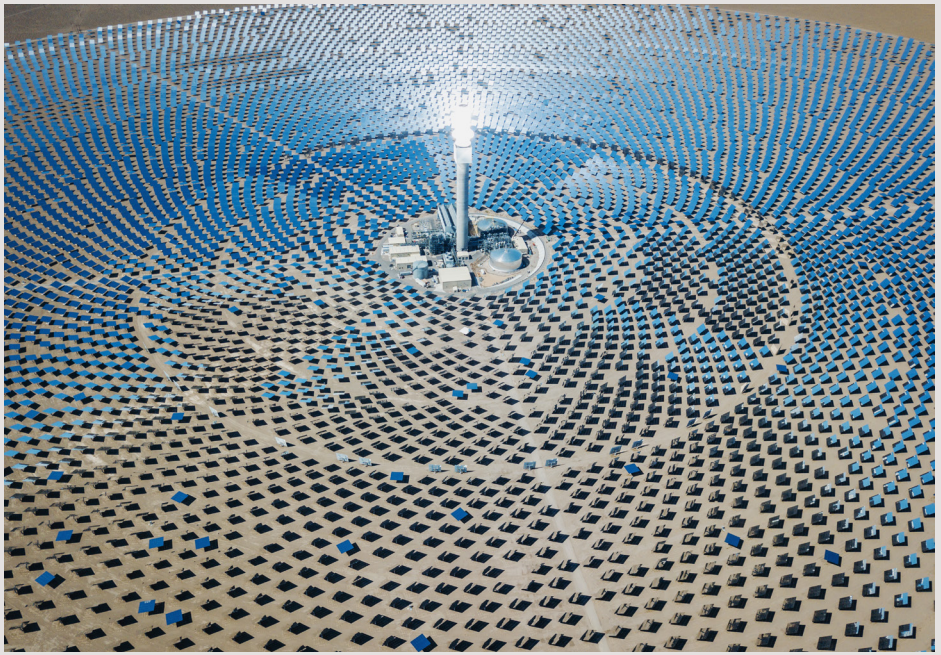
Contents

Few could have predicted how much the world has changed in just a few decades. As the 21st century unfolds, we are dealing with a complex brew of social, environmental, market and technological trends. Faced with ongoing uncertainty, how can businesses and governments adapt and grow? ***Standards and conformity assessment deliver part of the solution in solving today's most daunting challenges.***



Foremost on our minds is the climate crisis. Almost all sectors and industries are threatened by the effects of climate change, either directly or indirectly. Approved in September 2021, the London Declaration defines ISO's commitment to achieve the global climate agenda by 2050. ISO's portfolio of standards makes a positive contribution by helping organizations assess climate change impacts and put plans in place for effective action.

The London Declaration defines ISO's commitment to achieve the global climate agenda by 2050.

A circular economy lies at the heart of climate action. Today's unsustainable production and consumption patterns are known to cause environmental degradation, resource depletion and waste, while accentuating the inequalities across countries. There is an urgent need to move towards a more circular model that redefines the economy around principles of designing out waste and pollution, and keeping products and materials in use for as long as possible.

Sustainability standards, with a specific focus on a circular economy, are being developed at the country and global levels by a number of organizations including ISO, through its technical committee ISO/TC 323.

Efforts are underway for eco-design standards which consider the sustainable consumption of materials, energy and other resources at all stages of the product development process. Providing a comprehensive set of principles, these will look at environmental factors such as the consumption of resources and energy, emissions to air, water and soil, as well as the pollution resulting from noise, vibration, radiation, electromagnetic fields and other physical effects. Other areas of focus include waste materials produced during the production process and recycling (i.e. reuse and recovery of materials and/or of energy). Also in development is a series of design requirements for product durability, reusability, upgradability and repairability, and for the recyclability of devices such as electronic displays, commercial refrigeration appliances, washing machines and vacuum cleaners.

While standards exist to cover different aspects of a circular economy, conformity assessment offers tools to demonstrate that these specifications are met, and thereby provides trust and confidence to the market, which is needed more than ever.

This material is designed for a variety of users, including regulators, scheme developers/owners, standards writers, industry, and anyone needing a conformity assessment perspective on issues related to the circular economy.

The circular economy

With its promise to transform the current economic paradigm, the circular economy is emerging as the new approach for achieving sustainable economic development. This calls for a radical shift in production and consumption patterns, supported by a raft of new government policies.

Circularity consists of measures for creating shorter closed-loop materials and energy cycles that minimize pollution and waste, extend product life cycles and enable the broad sharing of natural assets. It covers all stages of the supply chain, from production to consumption, including repair and remanufacturing, waste management, and secondary raw materials that are fed back into the economy.

A circular process must encompass both tangible and intangible requirements, including sustainability of the global value chain based on aspects such as trade, economic factors, corporate responsibility, labour, health and human rights. Conformity assessment gives confidence on specific aspects such as safety, efficiency, repairability, durability, upgradability, recyclability and reusability – all of which contribute to the robustness of the circle.

Conformity assessment in the circular economy

Conformity assessment and the CASCO Toolbox

Conformity assessment demonstrates whether a product, service, process, system, or sometimes a claim or person, meets the relevant requirements. Defined rules and procedures are applied to demonstrate the fulfilment of such requirements which are stated in standards, regulations, contracts, programmes, or other normative documents.

Conformity assessment activities are performed by conformity assessment bodies (CABs). They are usually categorized according to their activities, scope and independence. A conformity assessment activity that is performed by a body that is independent of the provider of the assessed object and has no user interest in the object, is referred to as “third-party” activity. Following this rationale, “first-party” activities are performed by the provider and “second-party” activities by entities with user interests.

To ensure a CAB is competent and can be trusted, these entities rely on standards that can be found in the ISO/IEC 17000 series of standards for conformity assessment, the so-called CASCO Toolbox. Some of these standards are explained in more details below. They contain requirements for competence, impartiality and consistent operation, which serve as a basis for recognizing the reliability of CABs.

- **Testing** is the process used to determine the characteristics of a test item or sample (the object of conformity assessment) according to a procedure. Requirements for testing and calibration laboratories are specified in ISO/IEC 17025 which enables laboratories to demonstrate that they are technically competent, impartial and consistently able to produce valid and reliable results.
- **Inspection** is the examination of an item (the object of conformity assessment) and determination of its conformity with detailed requirements or, on the basis of professional judgement, with general requirements. Requirements for inspection bodies are specified in ISO/IEC 17020.
- **Validation** provides confirmation that the information declared as “claim” (the object of conformity assessment) is plausible with regard to the intended future use. Requirements for validation bodies are specified in ISO/IEC 17029.
- **Verification** provides confirmation that the information declared as “claim” (the object of conformity assessment) is truthfully stated. Requirements for verification bodies are specified in ISO/IEC 17029.
- **Certification** provides an independent (third-party) attestation of conformity. Requirements for certification bodies are specified in ISO/IEC 17021-1 (for management systems as objects of conformity assessment), ISO/IEC 17065 (for products, processes and services as objects of conformity assessment) and ISO/IEC 17024 (for persons as objects of conformity assessment).

In addition to these standards, the CASCO Toolbox contains requirements for accreditation bodies (ISO/IEC 17011), general specifications of a supplier's declarations (ISO/IEC 17050) and marks of conformity (ISO/IEC 17030).

Conformity assessment provides assurance that specified needs or expectations are met.

Conformity assessment systems

Based on the relevant standard, recognition can be granted to public (e.g. governmental inspection authority) as well as to private (e.g. certification body) entities.

Using the standards from the ISO/IEC 17000 series ensures harmonized conformity assessment practices across all CABs, allowing statements of conformity to be issued that are comparable worldwide.

Multilateral arrangements made on this basis ensure mutual recognition among CABs as well as the mutual acceptance of assessment results and conformity statements.

Conformity assessment and the circular economy

Conformity assessment provides assurance that specified needs or expectations are met. Regardless of whether it is a simple check, an extensive investigation, or a complex professional judgement, the CASCO Toolbox supports common approaches to conformity assessment.

Performed in the context of the circular economy, conformity assessment adds substance and credibility to the statement that products, processes, services, systems or claims meet specific requirements, thereby providing confidence in aspects such as recyclability, reusability, reparability, upgradability, etc.

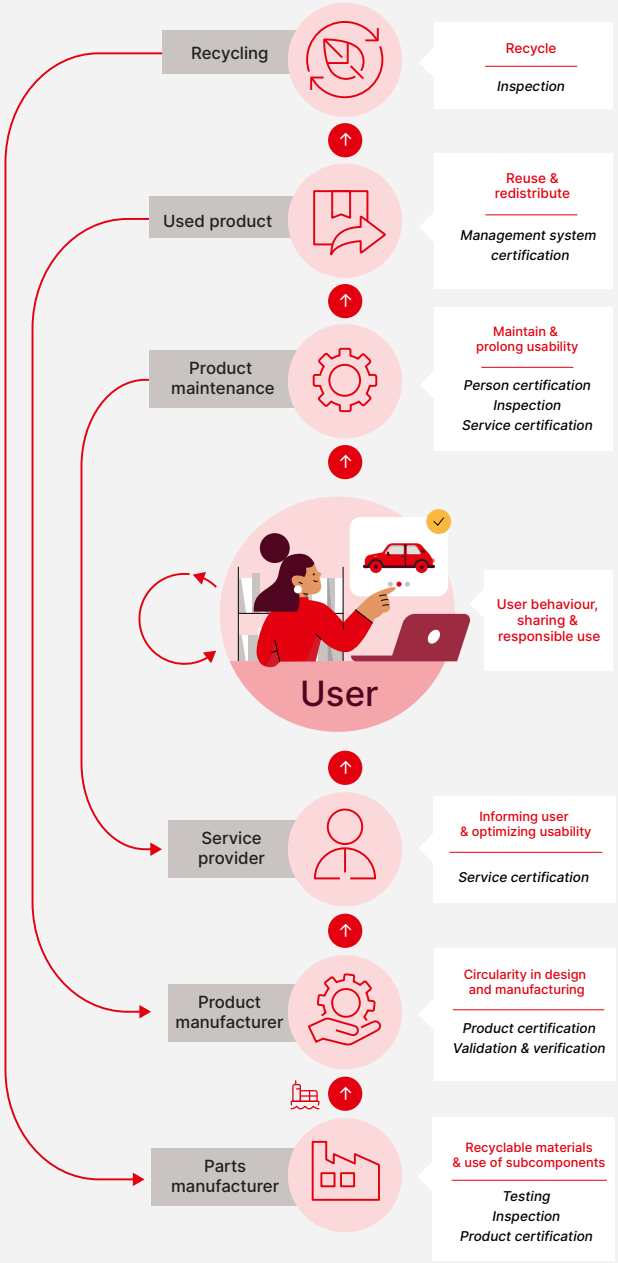
CASCO tools can support the circular economy in a variety of ways which are described in the table on the following pages.

How CASCO tools apply to the circular economy

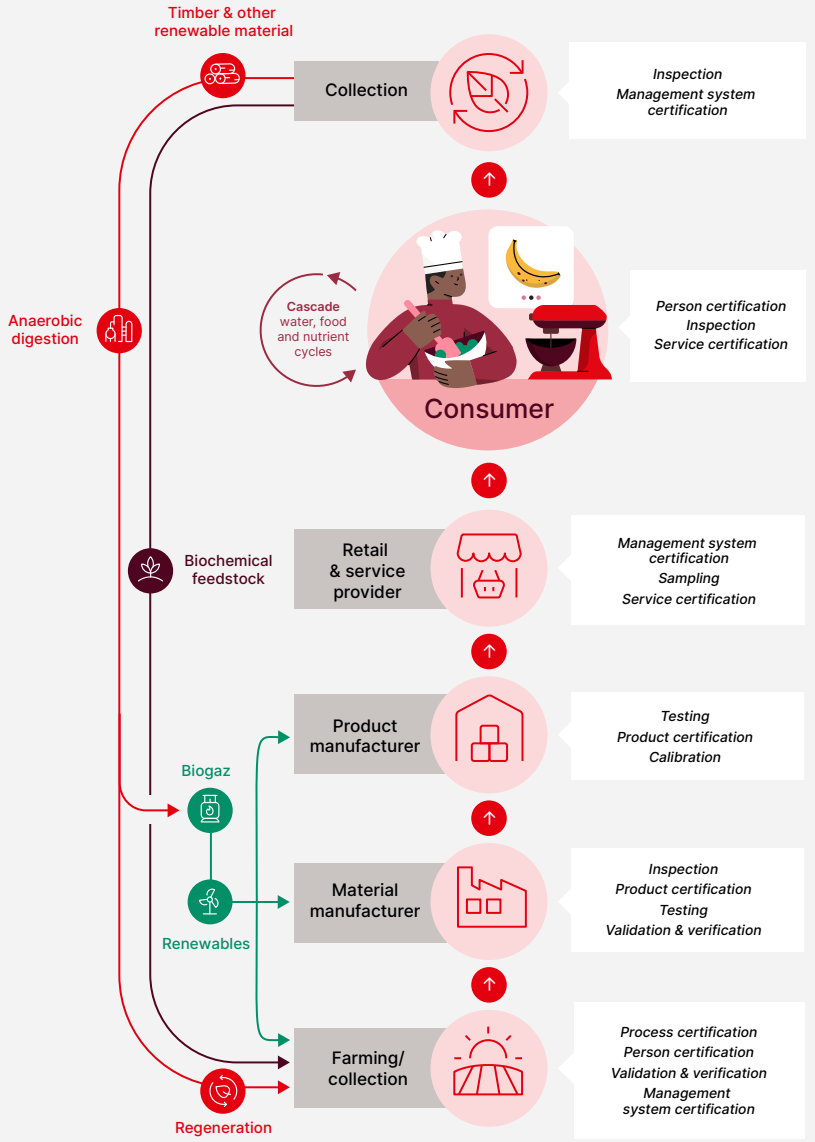
Task, challenge, problem	Approach, solution	Applicable CASCO tool
How do you ensure that an item or part thereof is recyclable?	Used materials can be tested in a laboratory to assess their suitability for meltdown and recasting.	ISO/IEC 17025 enables laboratories to demonstrate that they are technically competent, impartial and consistently able to produce valid and reliable results.
How do you ensure that assemblies of new and reused components work as intended?	Inspection with professional judgement can be used to examine whether the type of assembly or individual assemblies are still fit for purpose.	Fulfilling ISO/IEC 17020 ensures that inspection bodies consistently carry out competent and impartial inspections.
How do you ensure claims of recyclability or repairability can be trusted?	The plausibility of such claims can be confirmed in a validation process.	ISO/IEC 17029 ensures consistent operation and impartiality of validation/verification bodies, which is understood to be a confirmation of reliability of information declared in claims.
How do you ensure that declarations of recycled material components are correct?	The truthfulness of the information contained in a declaration can be confirmed in a verification process.	ISO/IEC 17029 ensures consistent operation and impartiality of bodies performing validation/ verification, which is understood to be a confirmation of reliability of information declared in claims.

Task, challenge, problem	Approach, solution	Applicable CASCO tool
How do you ensure that recycled products are safe for consumers?	Products can be certified, including by testing of the product and auditing of the production processes.	ISO/IEC 17065 gives assurance that products, processes or services conform with specified requirements in standards and other normative documents of a certification scheme.
How do you ensure that shipment and transport services are both energy-efficient and low in emissions?	Services can be certified, including through evaluation of the service provision.	ISO/IEC 17065 gives assurance that products, processes or services conform with specified requirements in standards and other normative documents of a certification scheme.
How do you ensure processes have a high recovery rate with a low waste volume?	Processes can be certified, including by auditing the process operation and verification of data.	ISO/IEC 17065 gives assurance that products, processes or services conform with specified requirements in standards and other normative documents of a certification scheme.
How do you demonstrate that a supply chain management system is effective?	The management system can be certified.	Certification bodies using the ISO/IEC 17021 series ensure the competence of their audit teams, adequate resources, following a consistent process, and deliver impartial results.
How do you ensure that maintenance and repair are performed by competent personnel?	The persons carrying out maintenance and repair can be certified.	ISO/IEC 17024 ensures that certification bodies operating certification schemes for persons operate in a consistent, comparable and reliable manner.

Conformity assessment in the circular economy
Technical cycles



Conformity assessment in the circular economy
Biological cycles



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