

Deliverable 5.4 –
Standardization landscape

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Glossary

AMD	Amendment
AWI	Approved work item
CD	Committee draft
CEN	European Committee for Standardization
CENELEC (CLC)	European Committee for Electrotechnical Standardization
CEN-CENELEC/SABE	CEN-CENELEC Strategic Advisory Body on Environment
CWA	CEN Workshop Agreement
DE	Germany
DIN	German Institute for Standardization
DKE	German Commission for Electrical, Electronic & Information Technologies of DIN and VDE
DIS	Draft International Standard
EN	European Standard
ETSI	European Telecommunications Standards Institute
FDIS	Final draft international standard
FG RAS	Focus Group on resilient Agrifood Systems
ISO	International Organization for Standardization
IEC	International Electrotechnical Commission
ITU	International Telecommunication Union
IX	International
JTC	Joint technical committee
prEN	Draft European Standard
SC	Subcommittee
SEEA	System of Environmental-Economic Accounting
SS	Sub Sector
TC	Technical committee
TR	Technical report
UN	United Nations
WD	Working draft

WG Working group

WI Work item

Executive summary

This document gives an overview on existing standards and standardization activities in the field of biodiversity footprinting and natural capital accounting by standardization organizations such as CEN, CENELEC, ETSI, ISO, IEC, and ITU.

In the beginning, the deliverable explains the fundamentals of standardization, from the different document types to the levels of standardization, to the development of standards and the various possibilities of participation in the process of standardization.

Subsequently, the deliverable outlines the standardization research about the responsible committees and the existing standards in the field of biodiversity footprinting and natural capital accounting.

The standards research on standards relevant to the CircHive project has been completed and around 260 standards have been identified. The following two standards committees are considered to be particularly relevant to the CircHive project and it is recommended that their activities be investigated further during the course of the project:

- ISO/TC 331 Biodiversity
- ISO/TC 207 Environmental management

Note that this overview does not include standards developed by organisations whose primary function is not standardization. Therefore, for example, the System of Environmental-Economic Accounting Ecosystem Accounting (SEEA EA)¹, an international statistical standard on natural capital accounting that was developed under the auspices of the United Nations Statistical Commission and adopted in 2021, is out of scope and not included in this document.

¹ SEEA – System of Environmental-Economic Accounting: <https://seea.un.org/>

1. Introduction

This document (Deliverable D5.4 – “Standardization Landscape“) gives an Overview on existing standards and standardization activities in the field of biodiversity footprinting and natural capital accounting and outlines the fundamentals of standardization.

It is crucial for an R&I project to know the state-of-the-art in the areas of direct or indirect relevance for the project. Since standards reflect this state of the art in a specific area it is essential for R&I projects to have an overview of the standardization landscape. The area for CircHive’s standardization landscape is biodiversity footprinting and natural capital accounting. This knowledge enables the project to tailor its results or findings to current – and up-coming – market requirements and ensure that they are interoperable with existing solutions.

This overview of the standardization landscape creates the basis for the development of the further standardization strategy for the CircHive project. In the second step, a standardization potentials workshop will be held with all project partners to identify standardization potentials of the CircHive project. The strategy for how to best pursue these potentials and how to choose which standardization activities should be initiated will then be developed further.

This work will be done in Task *T5.4 Standardization*. This Task belongs to *WP 5 Communication, dissemination & exploitation (DEC)* and constitutes a basis for all project partners. It is safe to say that the standardization strategy to be developed will be of great importance for most of the project partners, as knowledge and results developed in the course of CircHive are best transferred to the market through standardization. As a standardization organization, DIN is the interface between the CircHive project and the world of standardization by organizations such as CEN, CENELEC, ETSI, ISO, IEC, and ITU whose primary function is standardization. While organizations focused on standard-development are key actors in the context of standardization, there are also other organizations that are relevant for the standardization of natural capital accounting and biodiversity footprinting. One important example is the UN, whose remit includes standard-setting but goes much beyond it.² The role of the UN is central for national accounting, including the System of National Accounts that countries use to measure economic activity, including GDP, and that is developed and maintained by the UN Statistical Commission (UNSC). Moreover, the System of Environmental-Economic Accounting Ecosystem Accounting (SEEA EA)³, the only existing international statistical standard on natural capital accounting, was developed under the auspices of the UNSC and adopted by it in 2021. In the context of biodiversity, International Union for Conservation of Nature (IUCN) serves a key role in developing standards related to biodiversity, including The IUCN Red List of Threatened Species to assess the extinction risk and threats to species.⁴ IUCN has also developed and adopted a standard to assessing ecosystem-level biodiversity, including Global Ecosystem Typology (GET)⁵. It has been adopted also by other organizations, including as the reference typology for measuring ecosystems in the SEEA EA. By focusing on organizations whose primary purpose is standardization, this document sets outside its scope standards developed and adopted by the UN and other international organizations such as IUCN.

Aim of T5.4 is to connect the activities of different standardization organizations and achieve synergies. The standardization work of organizations such as the UN could serve as a basis for further standardization activities on European and international level by CEN, CENELEC, ETSI, ISO⁶, IEC, and ITU.

² <https://www.un.org/en/ga/about/background.shtml>

³ SEEA – System of Environmental-Economic Accounting: <https://seea.un.org/>

⁴ <https://www.iucnredlist.org/>

⁵ <https://global-ecosystems.org/>

⁶ iso.org/files/live/sites/isoorg/files/store/en/PUB100432.pdf

The document is structured as follows: Chapter 2 “FUNDAMENTALS OF STANDARDIZATION” gives a summary of the fundamentals of standardization. Types of documents, the levels of standardization, the development of standards, and the various possibilities of participation in the process of standardization are explained. The “METHODOLOGY OF THE STANDARD RESEARCH FOR CIRCHIVE” is described in chapter 3. It explains the procedure for carrying out the standards research and the presentation of the results. In chapter 4 “OVERVIEW OF THE CIRCHIVE STANDARDIZATION LANDSCAPE” the most important standards and standardization committees are listed and explained. In conclusion, the “SUMMARY” and analysis of the research findings are described in chapter 5.

2. Fundamentals of standardization

A standard is a document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context.⁷

It should be based on the consolidated results of science, technology, and experience, and aim to promote optimal community benefits.⁸

Standardization is used to agree on terminologies, methodologies, requirements, characteristics, etc. in specific areas to make a product, process, or service fit for its purpose. Thus, standardization can drive innovative outcomes by agreeing on common product requirements such as interoperability, quality or safety, and provide guidelines for achieving them. Standardization supports the development of a generic language, which is understandable for everyone and thus helps to create a common basis. The result of the standardization process is a document, which provides rules, guidelines or characteristics for activities or their results.

2.1 Standard developing organisations

An essential aspect of standardization is to ensure that standardization documents do not contradict each other, especially since European and international standardization have gained significant importance. This is reflected in DIN's statistics, which show that European and international standards account for 90% of all standardization projects nowadays. The following clauses give a brief description of the framework of formal standardization on national, European, and international level. Figure 1 provides a general overview of the different types and levels of standardization.

⁷ ISO/IEC Guide 2:2004, 3.2, "Standardization and related activities – general vocabulary"

⁸ CEN/CENELEC, „EN 45020:2006: Standardization and related activities - General vocabulary,“ 2006

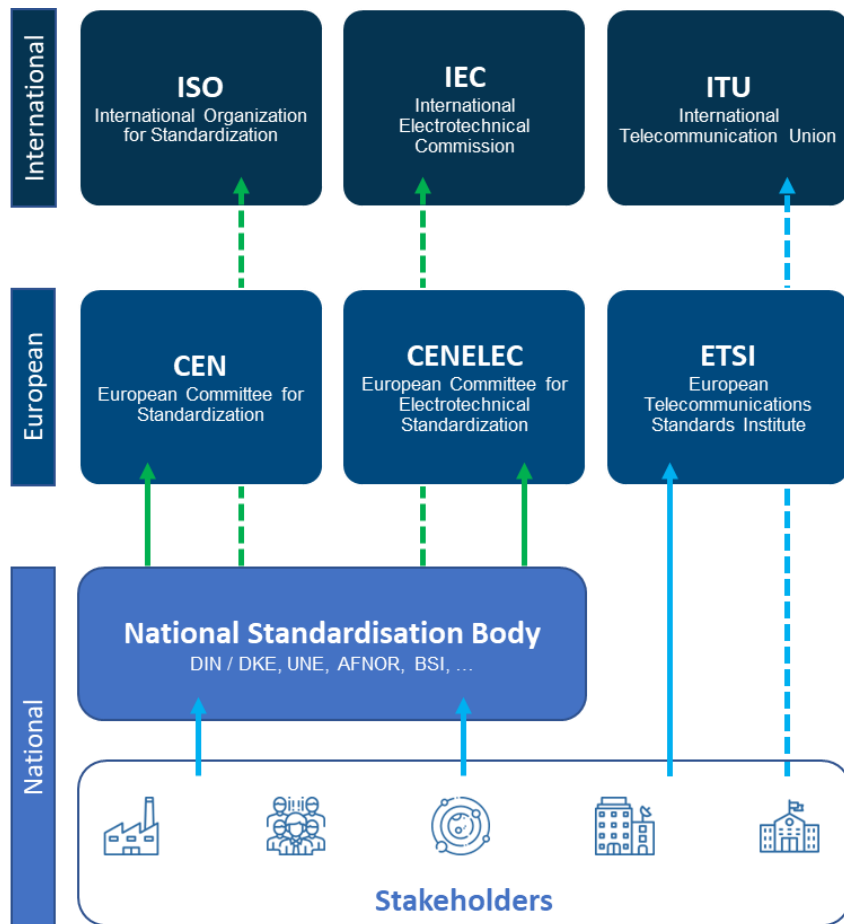


Figure 1 Overview of the organizational structure of the standardization world

2.1.1 National standardization

On national level, there are different structures and standardization bodies in different countries, as e. g. German Institute for Standardization (DIN), German Commission for Electrotechnical, Electronic, and Information Technologies (DKE), Spanish standardization body (UNE), the French Standardization Association (AFNOR) and the British Standards Institute (BSI). In general, each country has one or more recognized national standardization bodies (NSB). Within the NSB experts from different stakeholders, e.g., from organizations belonging to industry, commerce, the public sector, or research, are developing national standards. These NSB are also responsible for keeping the national standardization repository updated.

To represent national positions at European or international level, so-called mirror-committees are set up and coordinated by the NSB. In these national committees, the work and existing results of corresponding European and international standardization committees are discussed, a national opinion is developed, and the final drafts of standards are agreed upon. When European or international draft standards are published for comment, the mirror committees also vote on whether the standard should be published or not.

Here it is important to mention that experts working on European or international level need to be members of the national mirror committee and must be delegated by these committees.

2.1.2 European standardization

The main goal of European standardization is the development of European standards, that are valid and accepted within the EU. These European standards are the basis for the European single market. The European standardization organizations CEN⁹ (European Committee for Standardization), CENELEC¹⁰ (European Committee for Electrotechnical Standardization), and ETSI¹¹ (European Telecommunications Standards Institute) are responsible for the organization of European standardization work. CEN is responsible for all non-electronic activities and CENELEC for electrotechnical standardization activities, while ETSI is responsible for the standardization activities in the field of telecommunication at European level.

There is a particularly close cooperation between CEN and CENELEC, which are made up of national standardization organizations from the EU and EFTA (European Free Trade Association) member states, as well as states seeking membership. In contrast, the members of ETSI are directly European companies, institutes, and organizations.

The so-called delegation principle applies to CEN and CENELEC. This means, that the mirror committees of the national standardization bodies of their member states, send national experts to the technical committees and workings groups at CEN or CENELEC to develop European standards. The European standard (EN) will only be published, when a sufficiently large majority of the national standardization organizations has approved the final draft.

European standards (EN) must automatically be adopted by member states of the EU and opposing national standards must be withdrawn. As a result of this mandatory adoption, the EN standards in Germany then become DIN EN standards (e.g. DIN EN 16575). There are situations in which it is possible to complement EN standards with additional national standards, for instance to set more detailed requirements to meet specific needs of the member state.

European specifications are referred to as CWA, as well as CEN TS or CENELEC TS, depending on the type of development and their adoption by the member states is voluntary (e.g., DIN CEN/TS 17045), unlike the adoption of European Standards.

2.1.3 International standardization

The international standardization organizations ISO¹² (International Organization for Standardization), IEC¹³ (International Electrotechnical Commission), and ITU¹⁴ (International Telecommunication Union) are responsible for the organization of international standardization work. ISO is responsible for all non-electronic and IEC for electrotechnical standardization activities, while the ITU is in charge of standardization activities in the field of telecommunications.

⁹ www.cen.eu

¹⁰ www.cenelec.eu

¹¹ www.etsi.org

¹² www.iso.org

¹³ <https://www.iec.ch/>

¹⁴ <https://www.itu.int>

ISO and IEC are made up of the national standardization organizations, with e.g., DIN and DKE representing German interests on an international level. The ITU, on the other hand, is a special unit of the United Nations, whose 191 member states develop recommendations together with companies from the private sector and other regional and national organizations. Only when they are adopted by normative organizations such as ISO, ANSI (USA) or ETSI as well as by national regulatory authorities, such as the Federal Network Agency in Germany, they acquire the character of standards.

The so-called delegation principle also applies to ISO and IEC, meaning that the national standardization organizations send their experts to the working groups and technical committees of the international standardization bodies. An international standard (ISO) is only accepted, when a sufficiently large majority of the national standardization organizations has voted for its draft. International specifications are called IWA as well as ISO TS or IEC TS, depending on the type of development.

In contrast to European standardization, there is no obligation to adopt international standards in national standards. However, since internationally applicable standards are relevant for international trade or for global stakeholders, conflicting national or European standards should be avoided. There is the possibility of transferring international standards in European and national standards. There are also parallel processes for developing standards at international and European level. It is possible to directly develop EN ISO or EN IEC standards without first developing the standard on international level and then adopting it at European level.

2.2 Standardization document

There are several types of standardization documents that differ in their development process, the degree of consensus to be reached, and the openness to participation (Figure 2). Standardization documents describe products, systems or services by defining their characteristics and requirements and in many cases are publicly available.

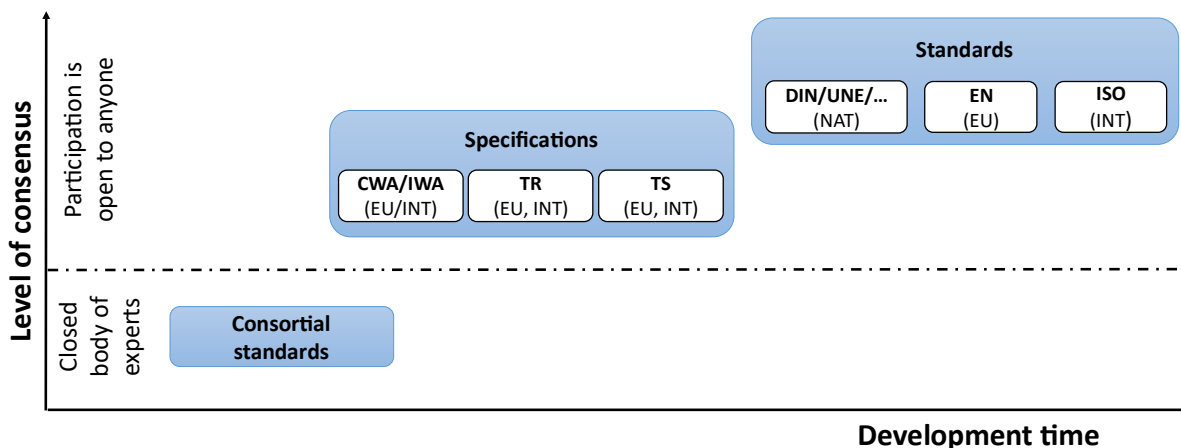


Figure 2 Types of standardization documents

2.2.1 Standard

According to Figure 2, standards in the narrower sense are developed within the formal standardization system where all interested parties have to be included in the development process of the document and consensus. Thus, this means the general agreement of all participants and the lack of sustained objection to central content

must be reached. The main objective of the consensus is to take into account the views of all interested parties concerned and to dispel any counter-arguments.

National standards usually require 18 months to develop, while the development of European and international standards normally takes more than two years due to the involvement of the national standardization bodies.¹⁵ Due to the high degree of consensus, standards have a high level of acceptance in society.

2.2.2 Specification

To better understand the difference between the various standardization documents, the terms *specification* and *standard* are used. However in many cases both documents will be called standards. In contrast to a standard created in consensus, the standardization activities in research projects focus mainly on the development of specifications. Compared to a standard, consensus is not mandatory in specifications and the involvement of all interested parties is not obligatory. In contrast to standards, specifications are created in workshops (temporary committee).

There are different types of specifications – *Workshop Agreement* on European or international level, *Technical Specification*, and *Technical Report*. A Workshop Agreement on European (CEN/CENELEC Workshop Agreement, CWA) or international (International Workshop Agreement, IWA) level is developed in a temporary workshop, which is designed to meet an immediate need and forms the basis for future standardization activities lead by a national standardization body. Even if there are not as strict rules for developing a specification as there are for standards, it is important to ensure the coherence of the standardization regulations to protect the credibility of international, European, and national standardization. The workshop is open to direct participation by anyone who is interested in the development of the agreement but consensus is not required. The development of a Workshop Agreement is fast and flexible, on average between 10 and 12 months and therefore also attractive for research projects. Specifications can also be developed within standards committees if, for example, no final consensus can be reached. These documents are then referred to as CEN or ISO TS (Technical Specifications). Technical Reports (TR) are de-facto documents that are developed and approved by a technical committee. A TR provides information on technical content and standardization work.

2.2.3 Consortial standards

Regarding the development time, the fastest ones are *consortial standards* (see Figure 2), also called *industry-*, *informal-* or *de-facto standards*. Among other things, they are characterised by the fact that not all interested parties need to be included in the development process. These closed group of experts can be, e. g. industry-specific consortia that have been formed from different companies. Although these documents have some characteristics of a standardization document, such as defined procedures or documentation rules, consortial standards are often not freely accessible and are developed in private.

¹⁵ <https://www.iso.org/developing-standards.html>

3. Methodology of the Standard Research for CircHive

To provide an overview of the standardization landscape related to CircHive, standards research was conducted. The approach for the standards research is summarized in Figure 3 and is divided into three main phases. The three phases are described in more detail below.

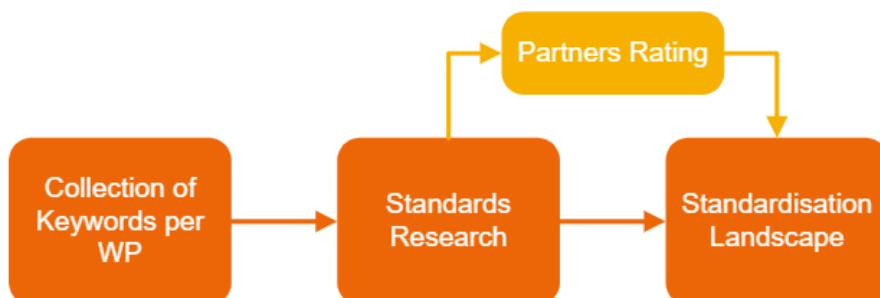


Figure 3 Steps for the development of a standardization landscape.

In order to conduct research for standards relevant for CircHive, *keywords were collected* from the project partners of the different work packages (phase I).

The following keywords were given by the project partners (Table 1):

Table 1. List of keywords

WP	keyword	keyword	keyword
1	Data*	Database	Biodiversity
	Data sharing	Open data*	Standardisation*
	Harmonization*	Environmental Monitoring	Remote sensing
	Land Use	Climate Change	Pollution*
	Over exploitation	Invasive species	Biodiversity data
	Biodiversity metrics		
2	Biodiversity footprint	Natural capital accounting	Biodiversity accounting
3	Biodiversity impacts	Biodiversity dependencies	Nature impacts
	Nature dependencies	Biodiversity targets	Nature targets
	Restoration	Nature-based solutions	Biodiversity credits
	Biodiversity offsets	Green public procurement	Biodiversity management systems
	Green bonds	Biodiversity facilities management	Biodiversity supply chain
4	Biodiversity initiatives	Sustainability reporting	Sustainability reporting framework
	Biodiversity reporting	Biodiversity networks	Biomaterials

	Organic production*	ESGs	SDGs
	Carbon initiative framework	CSR reporting monitoring	Sustainability reporting monitoring
	(company) strategy targets	Indicators*	Certification*
	data	(company) values*	Value chain
	Due diligence	(eco) labeling certification	Green infrastructure
	(green) public procurement	Tracking tracing	ranking

* These keywords delivered too generic results, which is why only search results in combination with other keywords were considered in the research.

For the *standard research* (phase II), mainly the search engine Nautos¹⁶ was used to find formal standards. The database includes national standards as well as standards from the European organizations CEN, CENELEC, ETSI, and international organizations such as ISO, IEC, and ITU. In case of national standards, it should be noted that due to language barriers mostly those providing at least one English title have been considered. All the hits from the Nautos search, using the different keywords, which were also searched in combinations, resulted in a list of 585 standards. For the standards, an analysis and assessment of the standards relevant and important to Circhive was conducted by the consortium. For this purpose, the consortium was asked to rate the standards by the following criteria: 0 – not relevant, 1 – maybe relevant, 2 – highly relevant, and x – I don't know. The standards that were assessed at least once as "highly relevant" were included in the overview of standards. In addition, the standards that were assessed mostly as "maybe relevant" were included in the overview of standards.

The *overview of the relevant formal standards* (phase III) was spread in form of a dashboard (see Figure 4) among the work packages.

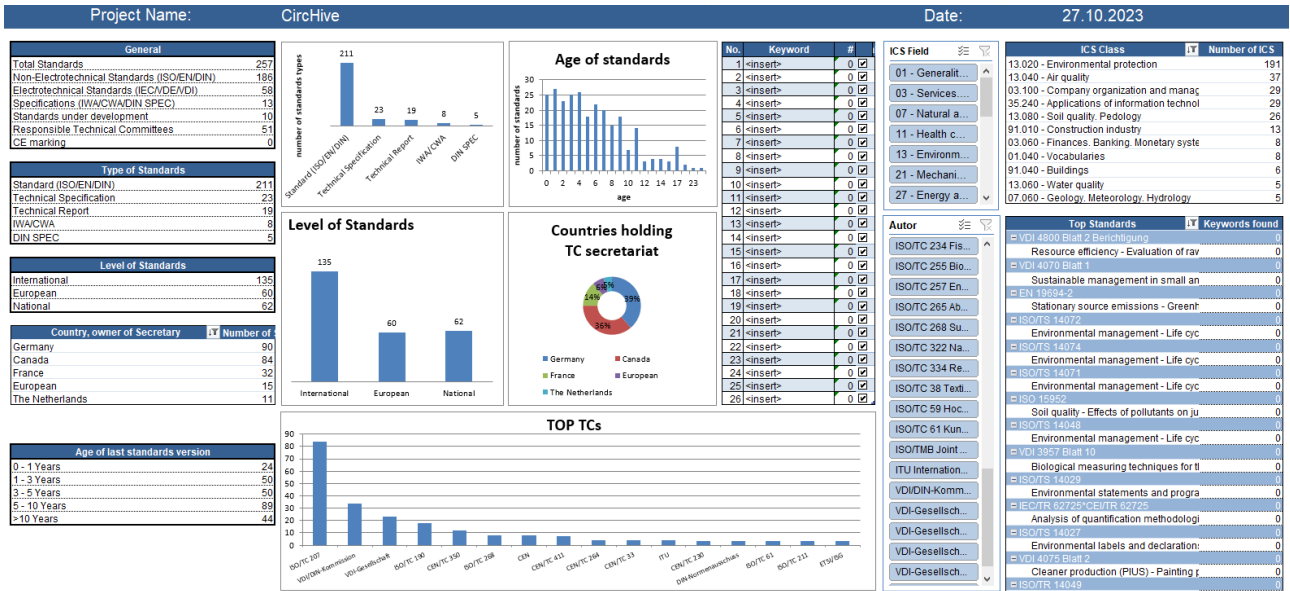


Figure 4 Dashboard with the relevant standards for Circhive

¹⁶ <https://nautos.de/>

An initial version of the dashboard with all relevant standards was provided in November 2023. The dashboard is an Excel template, which was developed specifically for the research of standards and provides an overview of the main information regarding the relevant standards. It can be used to search for specific standards by keywords or to get an overview of the standards within a specific ICS (International Classification for Standards) field or developed by a specific technical committee. The ICS is intended to serve as a structure for catalogues of international, regional, and national standards and other normative documents, and as a basis for standing-order systems for international, regional, and national standards.¹⁷ This dashboard was shared within the whole Circhive consortium. Overview of the Circhive Standardization Landscape

The following overview of the Circhive standardization landscape is based on the dashboard version from October 2023. Here, the outcomes from standardisation research divided into two sections is presented: (1) mapping of existing standards, (2) Mapping of relevant standardization committees and related up-coming standards. A full list of relevant standards can be found in the Annex in Table 8.

4.1 Mapping of existing standards

4.1.1 WP1

Based on the keywords listed in Table 1 the following ten most relevant standards were found (Table 2):

Table 2. List of the ten most relevant standards related to WP1

Standard no.	Title	TC
ISO 14025	Environmental labels and declarations - Type III environmental declarations - Principles and procedures	ISO/TC 207 Environmental management
ISO 14063	Environmental management - Environmental communication - Guidelines and examples	ISO/TC 207 Environmental management
VDI-MT 3800	Determination of expenditures for industrial environmental protection measures	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
ISO/TR 14069	Greenhouse gases - Quantification and reporting of greenhouse gas emissions for organizations - Guidance for the application of ISO 14064-1	ISO/TC 207 Environmental management
ISO 14090	Adaptation to climate change - Principles, requirements and guidelines	ISO/TC 207 Environmental management
ISO/IEC 18025	Information technology - Environmental Data Coding Specification (EDCS)	ISO/IEC JTC 1/SC 24 Computer graphics and image processing
VDI 4230 Volume 6	Biological procedures to determine environmental impact (biomonitoring) - Invertebrates as effect indicators in limnic ecosystem monitoring	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee

¹⁷ International Classification for Standards, 2015; Available at: https://www.iso.org/files/live/sites/isoorg/files/archive/pdf/en/international_classification_for_standards.pdf

ISO 14050	Environmental management - Vocabulary	ISO/TC 207 Environmental management
ISO 14015	Environmental management - Guidelines for environmental due diligence assessment	ISO/TC 207 Environmental management
ISO 14026	Environmental labels and declarations - Principles, requirements and guidelines for communication of footprint information	ISO/TC 207 Environmental management

4.1.2 WP2

Based on the keywords listed in Table 1 the following ten most relevant standards were found (Table 3):

Table 3. List of the eleven most relevant standards related to WP2

Standard no.	Title	TC
ISO/TR 14047	Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14044 to impact assessment situations	ISO/TC 207 Environmental management
ISO/TR 14049	Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14044 to goal and scope definition and inventory analysis	ISO/TC 207 Environmental management
ISO/TS 14074	Environmental management - Life cycle assessment - Principles, requirements and guidelines for normalization, weighting and interpretation	ISO/TC 207 Environmental management
ISO/TS 14027	Environmental labels and declarations - Development of product category rules	ISO/TC 207 Environmental management
ISO 14040	Environmental management - Life cycle assessment - Principles and framework	ISO/TC 207 Environmental management
ISO 14044 AMD 2	Environmental management - Life cycle assessment - Requirements and guidelines; Amendment 2	ISO/TC 207 Environmental management
ISO 14045	Environmental management - Eco-efficiency assessment of product systems - Principles, requirements and guidelines	ISO/TC 207 Environmental management
VDI 4075 Volume 6	Cleaner production (PIUS) - Dairies	VDI Society Energy and Environment
ISO/TS 14071	Environmental management - Life cycle assessment - Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006	ISO/TC 207 Environmental management

ISO/TS 14072	Environmental management - Life cycle assessment - Requirements and guidelines for organizational life cycle assessment	ISO/TC 207 Environmental management
BS 8632	Natural Capital Accounting for Organizations. Specification	SES/1/8 Assessing and Valuing Natural Capital

4.1.3 WP3

Based on the keywords listed in Table 1 the following eleven relevant standards were found (Table 4):

Table 4. List of the eleven most relevant standards related to WP3

Standard no.	Title	TC
ISO 14007	Environmental management - Guidelines for determining environmental costs and benefits	ISO/TC 207 Environmental management
ISO 14030-1	Environmental performance evaluation - Green debt instruments - Part 1: Process for green bonds	ISO/TC 207 Environmental management
CEN/TR 17005	Sustainability of construction works - Additional environmental impact categories and indicators - Background information and possibilities - Evaluation of the possibility of adding environmental impact categories and related indicators and calculation methods for the assessment of the environmental performance of buildings	CEN/TC 350 Sustainability of construction works
ISO 14002-2	Environmental management systems - Guidelines for using ISO 14001 to address environmental aspects and conditions within an environmental topic area - Part 2: Water	ISO/TC 207 Environmental management
ISO 14097	Greenhouse gas management and related activities - Framework including principles and requirements for assessing and reporting investments and financing activities related to climate change	ISO/TC 207 Environmental management
ITU-T L Supplement 20	Green public ICT procurement	ITU International Telecommunication Union
ISO 14091	Adaptation to climate change - Guidelines on vulnerability, impacts and risk assessment	ISO/TC 207 Environmental management
VDI 4340 Volume 1	Biodiversity - Standardised population-friendly assessment of wild bees for a long-term monitoring	VDI Society Technologies of Life Sciences
CWA 17898	Methodology to quantify the global agricultural crop footprint including soil impacts	CEN European Committee for Standardization

CEN/TR 16388	Gas-Specific Environmental Document - Guideline for incorporating within standards to minimize the environmental impact of gas infrastructure across the whole life cycle	CEN European Committee for Standardization
ISO 23611-6	Soil quality - Sampling of soil invertebrates - Part 6: Guidance for the design of sampling programmes with soil invertebrates	ISO/TC 190 Soil quality

4.1.4 WP4

Based on the keywords listed in Table 1 the following ten most relevant standards were found (Table 5):

Table 5. List of the ten most relevant standards related to WP4

Standard no.	Title	TC
ISO 14001	Environmental management systems - Requirements with guidance for use	ISO/TC 207 Environmental management
DIN/TS 35807	Guideline for Life Cycle Assessment according to DIN EN ISO 14001:2015-11	Principles of Environmental Protection Standards Committee
ISO 14015	Environmental management - Guidelines for environmental due diligence assessment	ISO/TC 207 Environmental management
CWA 17796	Responsibility-by-design - Guidelines to develop long-term strategies (roadmaps) to innovate responsibly	CENELEC European Committee for Electrotechnical Standardization
ISO 14024	Environmental labels and declarations - Type I environmental labelling - Principles and procedures	ISO/TC 207 Environmental management
VDI 4070 Volume 2	Sustainable management in small and medium-sized enterprises - Methods and examples for the practical application	VDI Society Energy and Environment
VDI 4070 Volume 1	Sustainable management in small and medium-sized enterprises - Guidance notes for sustainable management	VDI Society Energy and Environment
EN 16485	Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction	CEN/TC 175 Round and sawn timber
EN 16935	Bio-based products - Requirements for Business-to-Consumer communication and claims	CEN/TC 411 Bio-based products
DIN SPEC 32790	Reference architecture for blockchain applications to create transparency in supply chains	Information Technology and selected IT Applications Standards Committee

4.2 Mapping of relevant standardization committees and related up-coming standards

First of all, the relevant standardization committees from ISO, CEN, CENELEC, DIN and DKE were identified. The development of standards, however, is especially taking place in the international committees ISO/TC 311 Biodiversity and ISO/TC 207 Environmental management. The actual development of documents follows the usual delegation principle and is done in national mirror committees.

In this section an overview of the relevant standardization committees identified and related standards in development is presented. This will be a fundament for CircHives standardization strategy, which will be developed throughout the project. The CircHive consortium will assess the identified standards' relevance for the project, and DIN will continuously monitor the development.

4.2.1 International Standardization work

ISO/TC 331 Biodiversity

ISO/TC 331 is active in the standardization field of Biodiversity to develop principles, framework, requirements, guidance and supporting tools in a holistic and global approach for all organizations, to enhance their contribution to Sustainable Development. TC 331 Biodiversity works closely with related committees (e.g., ISO/TC 190 Soil quality, ISO/TC 147 Water quality, ISO/TC 276 Biotechnology, ISO/TC 34 Food products) in order to identify standardization needs and gaps, and collaborate with other organizations to avoid duplications and overlapping standardization activities.

ISO/TC 331 has five working groups:

- ISO/TC 331/AHG 3 Restoration, conservation and protection
- ISO/TC 331/CAG Chair's Advisory Group
- ISO/TC 331/WG 1 Terminology
- ISO/TC 331/WG 2 Measurement, data, monitoring and assessment
- ISO/TC 331/WG 4 Organizations, strategies and sustainable use¹⁸

This TC has no accepted and published ISO standards so far but currently works on four ISO standards (see Table 6 for an overview of the current standardization projects).

Table 6. Standards under development from ISO/TC 331

Standard no.	Title	Stage Code*
ISO/WD TS 13208	Biodiversity — Vocabulary	20.60
ISO/CD 17298	Biodiversity — Strategic and operational approach for organisations-- Requirements and guidelines	30.60
ISO/CD 17317	Biodiversity — Guide for the characterization of products derived from native species	30.20

¹⁸ <https://www.iso.org/committee/8030847.html>

ISO/WD 17620	Biodiversity — Process for designing and implementing biodiversity net gain	20.60
starts in 2024	Biodiversity and abiotic raw material: Considering biodiversity protection in the first step of the supply chain - Guidelines on the extraction of abiotic and production of biotic raw material and impacts on biodiversity	
starts in 2023/2024	Biodiversity and the Food Sector: Guidelines on how to improve biodiversity performance of food companies and food retailers	

*the stage codes describe the working status of a standardization document, the meaning of each stage code can be found in the annex Table 9.

ISO/TC 207 Environmental management

ISO/TC 207 is active in the standardization field of environmental management to address environmental and climate impacts, including related social and economic aspects, in support of sustainable development.

TC 207 is focused on environmental management systems, auditing, verification/validation and related investigations, environmental labelling, environmental performance evaluation, life cycle assessment, climate change and its mitigation and adaptation, ecodesign, material efficiency, environmental economics and environmental and climate finance. Where appropriate, the ISO/TC 207 works in cooperation with existing committees on subjects that may support environmental management. Excluded is the standardization of test methods of pollutants, setting limit values and levels of environmental performance, and standardization of products.

ISO/TC 207 has six sub committees:

- ISO/TC 207/SC 1 Environmental management systems
- ISO/TC 207/SC 2 Environmental auditing and related environmental investigations
- ISO/TC 207/SC 3 Environmental labelling
- ISO/TC 207/SC 4 Environmental performance evaluation
- ISO/TC 207/SC 5 Life cycle assessment
- ISO/TC 207/SC 7 Greenhouse gas and climate change management and related activities

Under the SC 1 there is the *WG 14 Natural capital accounting* which is especially interesting for the CircHive project.¹⁹

This TC has published 67 ISO standards so far and currently works on 19 ISO standards (see Table 7 for an overview of the current standardization projects).

Table 7. Standards under development from ISO/TC 207.

Standard no.	Title	Stage Code*
ISO 14001:2015/AWI AMD 1	Environmental management systems — Requirements with guidance for use — Amendment 1	20.00
ISO/WD 14002-3	Environmental management systems — Guidelines for using ISO 14001 to address environmental aspects and conditions within an environmental topic area — Part 3: Climate	20.20
ISO/AWI 14002-4	Environmental management systems — Guidelines for using ISO 14001 to address environmental aspects and conditions	20.00

¹⁹ <https://www.iso.org/committee/54808.html>

	within an environmental topic area — Part 4: Part 4: Resources and waste	
ISO/AWI 14054	Natural Capital Accounting for Organizations — Specification	20.00
IEC/DIS 82474-1	Material declaration — Part 1: General requirements	40.20
ISO/AWI 14019-1	Validation and verification of sustainability information — Part 1: General principles and requirements	20.00
ISO/AWI 14019-2	Validation and verification of sustainability information — Part 2: Verification process	20.00
ISO/WD 14021	Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)	20.20
ISO/WD 14024	Environmental labels and declarations — Type I environmental labelling — Principles and procedures	20.20
ISO/WD 14025	Environmental labels and declarations — Type III environmental declarations — Principles and procedures	20.20
ISO/AWI 14035	Environmental technology verification — ETV — Guidance to implement ISO 14034	20.00
ISO/DIS 14071	Environmental management — Life cycle assessment — Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006	40.00
ISO/DIS 14072	Environmental management — Life cycle assessment — Requirements and guidelines for organizational life cycle assessment	40.00
ISO/DIS 14075	Environmental management — Principles and framework for social life cycle assessment	40.00
ISO/WD TS 14076	Eco-Technoeconomic Analyses: Principles, requirements and guidelines	20.60
ISO/DIS 59014	Environmental management and circular economy — Sustainability and traceability of secondary materials recovery — Principles and requirements	40.00
ISO/CD TS 14064-4	Greenhouse gases — Part 4: Quantification and reporting of greenhouse gas emissions for organizations — Guidance for the application of ISO 14064-1	30.20
ISO/FDIS 14068	Greenhouse gas management and climate change management and related activities — Carbon neutrality	50.20
ISO/AWI TR 14082	Radiative forcing management— Guidance for the quantification and reporting of radiative forcing-based climate footprints and mitigation efforts	20.00

*the stage codes describe the working status of a standardization document, the meaning of each stage code can be found in the annex Table 9.

4.2.2 European Standardization work

CEN/SS S26 Environmental management

Since *ISO/TC 207 Environmental management* does not have a mirror committee at European level, the Sub Sector *CEN/SS S26 Environmental management* was formally established, which is managed by CEN. This sub sector has no experts. From the sub sector, requests for the adoption of documents of *ISO/TC 207* are made to *CEN-CENELEC Strategic Advisory Body on Environment (SABE)*. CEN and CENELEC set up *SABE* to deal with the strategic issues related to the protection of the environment and to respond to the challenges posed by the developments within the various sectors as well as by the evolution of the legislation in Europe. The *CEN-CENELEC/SABE* discusses the requests of the *CEN/SS S26* regarding the European relevance of the ISO documents and decides whether the documents will be adopted by CEN.

CEN-CENELEC Focus Group on resilient Agrifood Systems (FG RAS)

The purpose of the Focus Group on resilient Agrifood Systems is to ensure a dialogue between all relevant European stakeholders interested in potential standardization in the field of resilient Agrifood Systems fostering a green and digital transformation. The Focus Group will map ongoing standardization activities, define needs and opportunities and recommend further action to ensure that standards support the deployment of innovative solutions in the agriculture and food sector (in the context of bioeconomy and new meat to the question on how to evaluate and reward ecosystem services on farm level).

The FG RAS will not develop standardization deliverables.

The main target of the FG RAS will be exploring how standardization can support the implementation of new business models in Agrifood Systems. Here, the focus will especially be on digital solutions, which need standardization as the basis for implementation. Also, horizontal topics will be considered when taking the bigger picture into account: the needs of smallholder farmers as well as the aspect of education and information are important for the transformation and truly resilient farming systems.

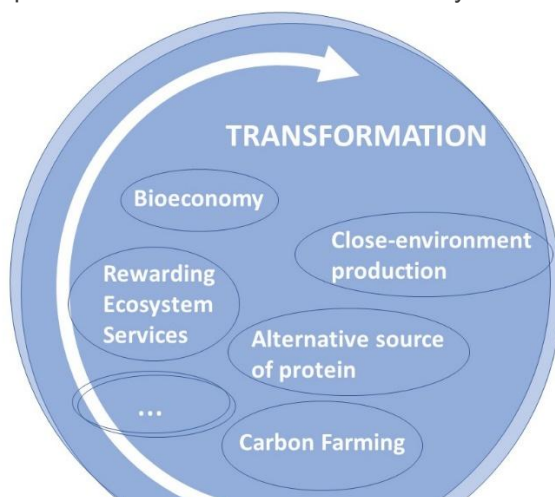


Figure 5. Overview of innovations for the transformation of the Agrifood Systems

Figure 5 shows initial ideas for innovative solutions that might contribute to a transformation of Agrifood Systems. In the first step of the FG RAS, these innovations could be the base for further discussion and exploration by the participants. Subsequently, the FG RAS could analyze how standardization can help to bring these innovations onto the market.

One of the reasons for the initiation of the FG RAS is the severe loss in biodiversity that threatens one of the most valuable natural assets. Part of establishing more resilient systems is enhancing biodiversity in farming, e.g., by creating an evaluation framework for a consistent rewarding system on farm level. Therefore, one aim of the Group will be to develop a Biodiversity strategy which aims to support resilience. Therefore, a Biodiversity Subgroup is planned. Detailed information about the subgroups and the work of the Focus Group will only be available once the Focus Group has been officially established.

4. Summary of the research and analysis of standards

Each WP of CircHive has a specific focus and contribution to the development of rigorous and standardized methods for combining two approaches to quantify biodiversity impact and value nature: biodiversity footprinting and natural capital accounting. This specific focus is also reflected in the range of standards that were assessed as important for each WP. There are today a few existing standards regarding biodiversity and natural capital accounting, developed by standardization organizations such as CEN, CENELEC, ETSI, ISO, IEC, and ITU.

In the field of environment, there are more relevant standards for CircHive. All existing and upcoming standards of relevance for biodiversity footprinting and natural capital accounting will be carefully monitored and considered throughout the CircHive project.

Standards developed by organizations such as UN (,e.g. SEEA) are not in the focus of this document. But in the following reporting period the consortium will collect the most relevant standards developed by these organizations.

ISO/TC 331 Biodiversity is one of the most relevant TCs for the CircHive consortium. Hereby, the working group “WG 2 Measurement, data, monitoring and assessment” and WG 4 “Organizations, strategies and sustainable use” is of special interest. As this committee has not yet published any standards, it is not represented in the standards search. The project partners LCF (WG 4) and RISE (WG 1, 2, 4, and AHG 3) are involved in various working groups. This networking is an excellent starting point for all further standardization activities of the project. In the further course of the project, it will become clear whether and which of the standards currently under development are relevant to the project and whether participation would make sense.

Alongside ISO/TC 331, the ISO/TC 207 Environmental management is the most important standards committee for the project. 81 standards of the total of 257 standards were assessed as relevant for the project are the responsibility of this committee. They are spread across all SCs, so none of the SCs can be identified as particularly relevant at this stage. However, ISO/TC 207/SC 1/WG 14 “Natural capital accounting”, in which the *ISO/AWI 14054 Natural Capital Accounting for Organizations — Specification* project was started this year, deserves special mention. This document is based on the document BS 8632 with the same title already developed and published in the UK in 2021. In particular, it must be clarified whether the CircHive project can make a contribution on the basis of the project results.

The CEN-CENELEC Focus Group on resilient Agrifood Systems (FG RAS) was identified by the project as very relevant to the project as agriculture is one of the five BEEHive sectoral hubs (food/agriculture, biomaterials, retailers, investors/banks, & green cities). Especially the planned subgroup Biodiversity is very interesting for the CircHive project. There is interest from the project to lead the subgroup.

The outcome of the research and analysis of standards is the basis of the subsequent standardization strategy. The next steps pursuing this strategy will be as follows: It will be determined which of the standards identified as of relevant are crucial in their application to guarantee compliance with standards within CircHive. These standards will be provided for all partners requiring this information. Furthermore, the project’s results might show that the as important rated standards miss essential information or aspects that can be provided by the CircHive consortium. In addition, a standardization potential workshop will be conducted to identify

standardization potentials based on the standardization research and CirCHive project results. To pursue the identified standardization potentials further standardization activities will be initiated. Possible standardization activities could be to initiate the development of a specification, such as a CWA, or to get in contact with the identified relevant technical committees to give input to existing standards or standards under development based on the project results.

5. References

Fehler! Textmarke nicht definiert. <https://seea.un.org/>

Fehler! Textmarke nicht definiert. <https://www.un.org/en/>

Fehler! Textmarke nicht definiert. <https://ecnl.org/focus-areas/un-standards>

Fehler! Textmarke nicht definiert.

iso.org/files/live/sites/isoorg/files/store/en/PUB100432.pdf

7 ISO/IEC Guide 2:2004, 3.2, “Standardization and related activities – general vocabulary”

8 EN 45020:2006, “Standardization and related activities - general vocabulary”

9 www.cen.eu

10 www.cenelec.eu

11 www.etsi.org

12 www.iso.org

13 <https://www.iec.ch/>

14 <https://www.itu.int>

15 <https://www.iso.org/developing-standards.html>

16 <https://nautos.de/>

17 International Classification for Standards, 2015; Available at:

https://www.iso.org/files/live/sites/isoorg/files/archive/pdf/en/international_classification_for_standards.pdf

18 <https://www.iso.org/committee/8030847.html>, last access: 27.10.2023

19 <https://www.iso.org/committee/54808.html>, last access: 27.10.2023

20

https://www.iso.org/files/live/sites/isoorg/files/developing_standards/docs/en/stage_codes.pdf, last access: 16.10.2023

6. Annex

Table 8. Full list of relevant standards for CircHive

Standard no.	title	Publication date	TC
IWA 26	Using ISO 26000:2010 in management systems	2017-08-00	ISO/TMB Joint Technical Coordination Group
ISO/IEC 17021-2	Conformity assessment - Requirements for bodies providing audit and certification of management systems - Part 2: Competence requirements for auditing and certification of environmental management systems	2016-12-00	ISO/CASCO
ITU-T L Supplement 20	Green public ICT procurement	2015-10-00	ITU International Telecommunication Union
ITU-T L Supplement 20	Green public ICT procurement	2015-10-00	ITU International Telecommunication Union
ITU-T L.1507	Use of ICT sites to support environmental sensing	2019-07-00	ITU International Telecommunication Union
ITU-T Y.4700	Deployment guidelines for ubiquitous sensor network applications and services for mitigating climate change	2012-06-00	ITU International Telecommunication Union
ISO/IEC 18025	Information technology - Environmental Data Coding Specification (EDCS)	2014-02-00	ISO/IEC JTC 1/SC 24 Computer graphics and image processing
ISO/IEC 18041-4	Information technology - Computer graphics, image processing and environmental data representation - Environmental Data Coding Specification (EDCS) language bindings - Part 4: C	2016-06-00	ISO/IEC JTC 1/SC 24 Computer graphics and image processing
ISO 5157	Textiles - Environmental aspects - Vocabulary	2023-05-00	ISO/TC 38 Textiles
ISO 16745-1	Sustainability in buildings and civil engineering works - Carbon metric of an existing building during use stage - Part 1: Calculation, reporting and communication	2017-05-00	ISO/TC 59 Building construction
ISO 22057	Sustainability in buildings and civil engineering works - Data templates for the use of environmental product declarations (EPDs) for construction products in building information modelling (BIM)	2022-04-00	ISO/TC 59 Building construction
ISO 22526-1	Plastics - Carbon and environmental footprint of biobased plastics - Part 1: General principles	2020-01-00	ISO/TC 61 Plastics
ISO 22526-3	Plastics - Carbon and environmental footprint of biobased plastics - Part 3: Process carbon footprint, requirements and guidelines for quantification	2020-08-00	ISO/TC 61 Plastics

ISO/FDIS 22526-4	Plastics - Carbon and environmental footprint of biobased plastics - Part 4: Environmental (total) footprint (Life cycle assessment)	2023-03-00	ISO/TC 61 Plastics
IEC/TR 62725	Analysis of quantification methodologies for greenhouse gas emissions for electrical and electronic products and systems	2013-03-00	IEC/TC 111 Environmental standardization for electrical and electronic products and systems
IEC/TR 62726	Guidance on quantifying greenhouse gas emission reductions from the baseline for electrical and electronic products and systems	2014-08-00	IEC/TC 111 Environmental standardization for electrical and electronic products and systems
ISO 16759	Graphic technology - Quantification and communication for calculating the carbon footprint of print media products	2013-07-00	ISO/TC 130 Graphic technology
ISO/TS 26030	Social responsibility and sustainable development - Guidance on using ISO 26000:2010 in the food chain	2019-12-00	ISO/TC 34 Food products
ISO 14380	Water quality - Determination of the acute toxicity to <i>Thamnocephalus platyurus</i> (Crustacea, Anostraca)	2011-11-00	ISO/TC 147 Water quality
ISO 11063	Soil quality - Direct extraction of soil DNA	2020-09-00	ISO/TC 190 Soil quality
ISO 11268-1	Soil quality - Effects of pollutants on earthworms - Part 1: Determination of acute toxicity to <i>Eisenia fetida</i> / <i>Eisenia andrei</i>	2012-11-00	ISO/TC 190 Soil quality
ISO 11268-2	Soil quality - Effects of pollutants on earthworms - Part 2: Determination of effects on reproduction of <i>Eisenia fetida</i> / <i>Eisenia andrei</i> and other earthworm species	2023-01-00	ISO/TC 190 Soil quality
ISO 11268-3	Soil quality - Effects of pollutants on earthworms - Part 3: Guidance on the determination of effects in field situations	2014-10-00	ISO/TC 190 Soil quality
ISO 15799	Soil quality - Guidance on the ecotoxicological characterization of soils and soil materials	2019-03-00	ISO/TC 190 Soil quality
ISO 15952	Soil quality - Effects of pollutants on juvenile land snails (<i>Helicidae</i>) - Determination of the effects on growth by soil contamination	2018-06-00	ISO/TC 190 Soil quality
ISO 16133	Soil quality - Guidance on the establishment and maintenance of monitoring programmes	2018-12-00	ISO/TC 190 Soil quality
ISO 16387	Soil quality - Effects of contaminants on <i>Enchytraeidae</i> (<i>Enchytraeus</i> sp.) - Determination of effects on reproduction	2023-03-00	ISO/TC 190 Soil quality
ISO 23265	Soil quality - Test for estimating organic matter decomposition in contaminated soil	2022-11-00	ISO/TC 190 Soil quality
ISO 23266	Soil quality - Test for measuring the inhibition of reproduction in oribatid mites (<i>Oppia nitens</i>) exposed to contaminants in soil	2020-06-00	ISO/TC 190 Soil quality
ISO 23266	Soil quality - Test for measuring the inhibition of reproduction in oribatid mites (<i>Oppia nitens</i>) exposed to contaminants in soil	2020-06-00	ISO/TC 190 Soil quality

ISO 23611-1	Soil quality - Sampling of soil invertebrates - Part 1: Hand-sorting and extraction of earthworms	2018-05-00	ISO/TC 190 Soil quality
ISO 23611-2	Soil quality - Sampling of soil invertebrates - Part 2: Sampling and extraction of micro-arthropods (Collembola and Acarina)	2006-02-00	ISO/TC 190 Soil quality
ISO 23611-3	Soil quality - Sampling of soil invertebrates - Part 3: Sampling and extraction of enchytraeids	2019-08-00	ISO/TC 190 Soil quality
ISO 23611-3	Soil quality - Sampling of soil invertebrates - Part 3: Sampling and extraction of enchytraeids	2019-08-00	ISO/TC 190 Soil quality
ISO 23611-4	Soil quality - Sampling of soil invertebrates - Part 4: Sampling, extraction and identification of soil-inhabiting nematodes	2022-08-00	ISO/TC 190 Soil quality
ISO 23611-5	Soil quality - Sampling of soil invertebrates - Part 5: Sampling and extraction of soil macro-invertebrates	2011-12-00	ISO/TC 190 Soil quality
ISO 23611-6	Soil quality - Sampling of soil invertebrates - Part 6: Guidance for the design of sampling programmes with soil invertebrates	2012-09-00	ISO/TC 190 Soil quality
ISO 18561-1	Intelligent transport systems (ITS) - Urban mobility applications via nomadic device for green transport management - Part 1: General requirements for data exchange between ITS stations	2020-11-00	ISO/TC 204 Intelligent transport systems
ISO/DIS 18561-2	Intelligent transport systems - Urban mobility applications via nomadic device for green transport management - Part 2: Functional requirements and specifications for trip and modal choice application	2022-08-00	ISO/TC 204 Intelligent transport systems
ISO Guide 64	Guide for addressing environmental issues in product standards	2008-08-00	ISO/TC 207 Environmental management
ISO Guide 64	Guide for addressing environmental issues in product standards	2008-08-00	ISO/TC 207 Environmental management
ISO 14001	Environmental management systems - Requirements with guidance for use	2015-09-00	ISO/TC 207 Environmental management
ISO 14001	Environmental management systems - Requirements with guidance for use	2015-09-00	ISO/TC 207 Environmental management
ISO 14002-1	Environmental management systems - Guidelines for using ISO 14001 to address environmental aspects and conditions within an environmental topic area - Part 1: General	2019-11-00	ISO/TC 207 Environmental management
ISO 14002-2	Environmental management systems - Guidelines for using ISO 14001 to address environmental aspects and conditions within an environmental topic area - Part 2: Water	2023-02-00	ISO/TC 207 Environmental management
ISO 14002-2	Environmental management systems - Guidelines for using ISO 14001 to address environmental aspects and conditions within an environmental topic area - Part 2: Water (ISO/DIS 14002-2:2022); German and English version prEN ISO 14002-2:2022	2023-05-00	ISO/TC 207 Environmental management

ISO 14004	Environmental management systems - General guidelines on implementation	2016-03-00	ISO/TC 207 Environmental management
ISO 14005	Environmental management systems - Guidelines for a flexible approach to phased implementation	2019-05-00	ISO/TC 207 Environmental management
ISO 14006	Environmental management systems - Guidelines for incorporating ecodesign	2020-01-00	ISO/TC 207 Environmental management
ISO 14007	Environmental management - Guidelines for determining environmental costs and benefits	2019-10-00	ISO/TC 207 Environmental management
ISO 14009	Environmental management systems - Guidelines for incorporating material circulation in design and development	2020-12-00	ISO/TC 207 Environmental management
ISO 14015	Environmental management - Guidelines for environmental due diligence assessment	2022-06-00	ISO/TC 207 Environmental management
ISO 14015	Environmental management - Guidelines for environmental due diligence assessment	2022-06-00	ISO/TC 207 Environmental management
ISO 14015	Environmental management - Guidelines for environmental due diligence assessment	2022-06-00	ISO/TC 207 Environmental management
ISO 14020	Environmental statements and programmes for products - Principles and general requirements	2022-12-00	ISO/TC 207 Environmental management
ISO 14021	Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling)	2016-03-00	ISO/TC 207 Environmental management
ISO 14021 AMD 1	Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling) - Amendment 1: Carbon footprint, carbon neutral	2021-07-00	ISO/TC 207 Environmental management
ISO 14024	Environmental labels and declarations - Type I environmental labelling - Principles and procedures	2018-02-00	ISO/TC 207 Environmental management
ISO 14024	Environmental labels and declarations - Type I environmental labelling - Principles and procedures	2018-02-00	ISO/TC 207 Environmental management
ISO 14025	Environmental labels and declarations - Type III environmental declarations - Principles and procedures	2006-07-00	ISO/TC 207 Environmental management
ISO 14026	Environmental labels and declarations - Principles, requirements and guidelines for communication of footprint information	2017-12-00	ISO/TC 207 Environmental management
ISO/TS 14027	Environmental labels and declarations - Development of product category rules	2017-04-00	ISO/TC 207 Environmental management
ISO/TS 14027	Environmental labels and declarations - Development of product category rules	2017-04-00	ISO/TC 207 Environmental management
ISO/TS 14029	Environmental statements and programmes for products - Mutual recognition of environmental product declarations (EPDs) and footprint communication programmes	2022-04-00	ISO/TC 207 Environmental management
ISO 14030-1	Environmental performance evaluation - Green debt instruments - Part 1: Process for green bonds	2021-09-00	ISO/TC 207 Environmental management

ISO 14030-1	Environmental performance evaluation - Green debt instruments - Part 1: Process for green bonds	2021-09-00	ISO/TC 207 Environmental management
ISO 14030-2	Environmental performance evaluation - Green debt instruments - Part 2: Process for green loans	2021-09-00	ISO/TC 207 Environmental management
ISO 14030-3	Environmental performance evaluation - Green debt instruments - Part 3: Taxonomy	2022-07-00	ISO/TC 207 Environmental management
ISO 14030-4	Environmental performance evaluation - Green debt instruments - Part 4: Verification programme requirements	2021-09-00	ISO/TC 207 Environmental management
ISO 14031	Environmental management - Environmental performance evaluation - Guidelines	2021-03-00	ISO/TC 207 Environmental management
ISO 14033	Environmental management - Quantitative environmental information - Guidelines and examples	2019-02-00	ISO/TC 207 Environmental management
ISO 14034	Environmental management - Environmental technology verification (ETV)	2016-11-00	ISO/TC 207 Environmental management
ISO 14040	Environmental management - Life cycle assessment - Principles and framework	2006-07-00	ISO/TC 207 Environmental management
ISO 14040	Environmental management - Life cycle assessment - Principles and framework	2006-07-00	ISO/TC 207 Environmental management
ISO 14040 AMD 1	Environmental management - Life cycle assessment - Principles and framework; Amendment 1	2020-09-00	ISO/TC 207 Environmental management
ISO 14040 AMD 1	Environmental management - Life cycle assessment - Principles and framework; Amendment 1	2020-09-00	ISO/TC 207 Environmental management
ISO 14044	Environmental management - Life cycle assessment - Requirements and guidelines	2006-07-00	ISO/TC 207 Environmental management
ISO 14044	Environmental management - Life cycle assessment - Requirements and guidelines	2006-07-00	ISO/TC 207 Environmental management
ISO 14044 AMD 1	Environmental management - Life cycle assessment - Requirements and guidelines; Amendment 1	2017-12-00	ISO/TC 207 Environmental management
ISO 14044 AMD 1	Environmental management - Life cycle assessment - Requirements and guidelines; Amendment 1	2017-12-00	ISO/TC 207 Environmental management
ISO 14044 AMD 2	Environmental management - Life cycle assessment - Requirements and guidelines; Amendment 2	2020-09-00	ISO/TC 207 Environmental management
ISO 14044 AMD 2	Environmental management - Life cycle assessment - Requirements and guidelines; Amendment 2	2020-09-00	ISO/TC 207 Environmental management
ISO 14045	Environmental management - Eco-efficiency assessment of product systems - Principles, requirements and guidelines	2012-05-00	ISO/TC 207 Environmental management
ISO 14045	Environmental management - Eco-efficiency assessment of product systems - Principles, requirements and guidelines	2012-05-00	ISO/TC 207 Environmental management
ISO 14046	Environmental management - Water footprint - Principles, requirements and guidelines	2014-08-00	ISO/TC 207 Environmental management
ISO 14046	Environmental management - Water footprint - Principles, requirements and guidelines	2014-08-00	ISO/TC 207 Environmental management

ISO/TR 14047	Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14044 to impact assessment situations	2012-06-00	ISO/TC 207 Environmental management
ISO/TR 14047	Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14044 to impact assessment situations	2012-06-00	ISO/TC 207 Environmental management
ISO/TS 14048	Environmental management - Life cycle assessment - Data documentation format	2002-04-00	ISO/TC 207 Environmental management
ISO/TR 14049	Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14044 to goal and scope definition and inventory analysis	2012-06-00	ISO/TC 207 Environmental management
ISO/TR 14049	Environmental management - Life cycle assessment - Illustrative examples on how to apply ISO 14044 to goal and scope definition and inventory analysis	2012-06-00	ISO/TC 207 Environmental management
ISO 14050	Environmental management - Vocabulary	2020-07-00	ISO/TC 207 Environmental management
ISO 14051	Environmental management - Material flow cost accounting - General framework	2011-09-00	ISO/TC 207 Environmental management
ISO 14051	Environmental management - Material flow cost accounting - General framework	2011-09-00	ISO/TC 207 Environmental management
ISO 14052	Environmental management - Material flow cost accounting - Guidance for practical implementation in a supply chain	2017-03-00	ISO/TC 207 Environmental management
ISO 14052	Environmental management - Material flow cost accounting - Guidance for practical implementation in a supply chain	2017-03-00	ISO/TC 207 Environmental management
ISO 14055-1	Environmental management - Guidelines for establishing good practices for combatting land degradation and desertification - Part 1: Good practices framework	2017-10-00	ISO/TC 207 Environmental management
ISO/TR 14055-2	Environmental management - Guidelines for establishing good practices for combatting land degradation and desertification - Part 2: Regional case studies	2022-03-00	ISO/TC 207 Environmental management
ISO 14063	Environmental management - Environmental communication - Guidelines and examples	2020-03-00	ISO/TC 207 Environmental management
ISO 14064-1	Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals	2018-12-00	ISO/TC 207 Environmental management
ISO 14064-2	Greenhouse gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements	2019-04-00	ISO/TC 207 Environmental management
ISO 14064-3	Greenhouse gases - Part 3: Specification with guidance for the verification and validation of greenhouse gas statements	2019-04-00	ISO/TC 207 Environmental management

ISO 14065	General principles and requirements for bodies validating and verifying environmental information	2020-12-00	ISO/TC 207 Environmental management
ISO 14067	Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification	2018-08-00	ISO/TC 207 Environmental management
ISO 14067	Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification	2018-08-00	ISO/TC 207 Environmental management
ISO/DIS 14068	Greenhouse gas management and climate change management and related activities - Carbon neutrality	2023-01-00	ISO/TC 207 Environmental management
ISO/TR 14069	Greenhouse gases - Quantification and reporting of greenhouse gas emissions for organizations - Guidance for the application of ISO 14064-1	2013-05-00	ISO/TC 207 Environmental management
ISO/TS 14071	Environmental management - Life cycle assessment - Critical review processes and reviewer competencies: Additional requirements and guidelines to ISO 14044:2006	2014-06-00	ISO/TC 207 Environmental management
ISO/TS 14072	Environmental management - Life cycle assessment - Requirements and guidelines for organizational life cycle assessment	2014-12-00	ISO/TC 207 Environmental management
ISO/TS 14072	Environmental management - Life cycle assessment - Requirements and guidelines for organizational life cycle assessment	2014-12-00	ISO/TC 207 Environmental management
ISO/TR 14073	Environmental management - Water footprint - Illustrative examples on how to apply ISO 14046	2017-05-00	ISO/TC 207 Environmental management
ISO/TR 14073	Environmental management - Water footprint - Illustrative examples on how to apply ISO 14046	2017-05-00	ISO/TC 207 Environmental management
ISO/TS 14074	Environmental management - Life cycle assessment - Principles, requirements and guidelines for normalization, weighting and interpretation	2022-11-00	ISO/TC 207 Environmental management
ISO/TS 14074	Environmental management - Life cycle assessment - Principles, requirements and guidelines for normalization, weighting and interpretation	2022-11-00	ISO/TC 207 Environmental management
ISO 14080	Greenhouse gas management and related activities - Framework and principles for methodologies on climate actions	2018-06-00	ISO/TC 207 Environmental management
ISO 14090	Adaptation to climate change - Principles, requirements and guidelines	2019-06-00	ISO/TC 207 Environmental management
ISO 14091	Adaptation to climate change - Guidelines on vulnerability, impacts and risk assessment	2021-02-00	ISO/TC 207 Environmental management
ISO/TS 14092	Adaptation to climate change - Requirements and guidance on adaptation planning for local governments and communities	2020-05-00	ISO/TC 207 Environmental management
ISO 14093	Mechanism for financing local adaptation to climate change - Performance-based climate resilience grants - Requirements and guidelines	2022-11-00	ISO/TC 207 Environmental management
ISO 14097	Greenhouse gas management and related activities - Framework including principles and requirements for	2021-05-00	ISO/TC 207 Environmental management

	assessing and reporting investments and financing activities related to climate change		
ISO 14097	Greenhouse gas management and related activities - Framework including principles and requirements for assessing and reporting investments and financing activities related to climate change	2021-05-00	ISO/TC 207 Environmental management
ISO 14097	Greenhouse gas management and related activities - Framework including principles and requirements for assessing and reporting investments and financing activities related to climate change	2021-05-00	ISO/TC 207 Environmental management
IEC 62430	Environmentally conscious design (ECD) - Principles, requirements and guidance	2019-10-00	ISO/TC 207 Environmental management
ISO/TS 19159-1	Geographic information - Calibration and validation of remote sensing imagery sensors and data - Part 1: Optical sensors	2014-07-00	ISO/TC 211 Geographic information/Geomatics
ISO/TS 19159-2	Geographic information - Calibration and validation of remote sensing imagery sensors and data - Part 2: Lidar	2016-04-00	ISO/TC 211 Geographic information/Geomatics
ISO/TS 19159-3	Geographic information - Calibration and validation of remote sensing imagery sensors and data - Part 3: SAR/InSAR	2018-05-00	ISO/TC 211 Geographic information/Geomatics
ISO 12878	Environmental monitoring of the impacts from marine finfish farms on soft bottom	2012-07-00	ISO/TC 234 Fisheries and aquaculture
ISO 13065	Sustainability criteria for bioenergy	2015-09-00	ISO/PC 248 Sustainability criteria for bioenergy
ISO 24252	Biogas systems - Non-household and non-gasification	2021-11-00	ISO/TC 255 Biogas
ISO 17743	Energy savings - Definition of a methodological framework applicable to calculation and reporting on energy savings	2016-06-00	ISO/TC 257 General technical rules for determination of energy savings in renovation projects, indus
ISO/TR 27918	Lifecycle risk management for integrated CCS projects	2018-04-00	ISO/TC 265 Carbon dioxide capture, transportation, and geological storage
ISO 37104	Sustainable cities and communities - Transforming our cities - Guidance for practical local implementation of ISO 37101	2019-04-00	ISO/TC 268 Sustainable development in communities
ISO/TR 37121	Sustainable development in communities - Inventory of existing guidelines and approaches on sustainable development and resilience in cities	2017-01-00	ISO/TC 268 Sustainable development in communities
ISO 37122	Sustainable cities and communities - Indicators for smart cities	2019-05-00	ISO/TC 268 Sustainable development in communities

ISO 37122	Sustainable cities and communities - Indicators for smart cities	2019-05-00	ISO/TC 268 Sustainable development in communities
ISO 37123	Sustainable cities and communities - Indicators for resilient cities	2019-12-00	ISO/TC 268 Sustainable development in communities
ISO/TS 37151	Smart community infrastructures - Principles and requirements for performance metrics	2015-05-00	ISO/TC 268 Sustainable development in communities
ISO 37154	Smart community infrastructures - Best practice guidelines for transportation	2017-08-00	ISO/TC 268 Sustainable development in communities
ISO/TS 37172	Smart community infrastructures - Data exchange and sharing for community infrastructures based on geographic information	2022-10-00	ISO/TC 268 Sustainable development in communities
ISO 32210	Sustainable finance - Guidance on the application of sustainability principles for organizations in the financial sector	2022-10-00	ISO/TC 322 Sustainable finance
ISO/DIS 33401	Reference materials - Contents of certificates, labels and accompanying documentation	2023-01-00	ISO/TC 334 Reference materials
CEN Guide 4	Guide for addressing environmental issues in products standards	2008-11-00	CEN European Committee for Standardization
CEN/TR 16388	Gas-Specific Environmental Document - Guideline for incorporating within standards to minimize the environmental impact of gas infrastructure across the whole life cycle	2012-08-00	CEN European Committee for Standardization
CWA 17300	City Resilience Development - Operational Guidance	2018-08-00	CEN European Committee for Standardization
CWA 17301	City Resilience Development - Maturity Model	2018-08-00	CEN European Committee for Standardization
CWA 17302	City Resilience Development - Information Portal	2018-08-00	CEN European Committee for Standardization
CWA 17518	Good practice recommendations for making Climate Adaptation Plans for fisheries and aquaculture	2020-05-00	CEN European Committee for Standardization
CWA 17675	Mapping of the mandatory and voluntary carbon management framework in the EU	2021-03-00	CEN European Committee for Standardization
CWA 17898	Methodology to quantify the global agricultural crop footprint including soil impacts	2022-06-00	CENELEC European Committee for Electrotechnical Standardization
CWA 17796	Responsibility-by-design - Guidelines to develop long-term strategies (roadmaps) to innovate responsibly	2021-09-00	CEN European Committee for Standardization
EN 62542	Environmental standardization for electrical and electronic products and systems - Standardization of environmental aspects - Glossary of terms (IEC 62542:2013)	2013-08-00	CENELEC European Committee for Electrotechnical Standardization

ETSI GS CDM 003 V 1.1.1	Common Information sharing environment service and Data Model (CDM) - CDM Architecture	2021-05-00	ETSI/ISG CDM European common information sharing environment service and data model
ETSI GS CDM 004 V 1.0.0	Common information sharing environment service and Data Model (CDM) - Service Model	2021-09-00	ETSI/ISG CDM European common information sharing environment service and data model
ETSI GS CDM 005 V 1.5.3	Common information sharing environment service and Data Model (CDM) - Data Model	2021-09-00	ETSI/ISG CDM European common information sharing environment service and data model
ETSI TR 103679 V 1.1.1	Environmental Engineering (EE) - Explore the challenges of developing product group-specific Product Environmental Footprint Category Rules (PEFCRs) for smartphones	2019-05-00	European Telecommunications Standards Institute
ETSI TR 103679 V 1.1.1	Environmental Engineering (EE) - Explore the challenges of developing product group-specific Product Environmental Footprint Category Rules (PEFCRs) for smartphones	2019-05-00	European Telecommunications Standards Institute
EN 17213	Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets	2020-03-00	CEN/TC 33 Doors, windows, shutters, building hardware and curtain walling
EN 17213	Windows and doors - Environmental Product Declarations - Product category rules for windows and pedestrian doorsets	2020-03-00	CEN/TC 33 Doors, windows, shutters, building hardware and curtain walling
EN 17610	Building hardware - Environmental product declarations - Product category rules complementary to EN 15804 for building hardware	2022-08-00	CEN/TC 33 Doors, windows, shutters, building hardware and curtain walling
EN 17610	Building hardware - Environmental product declarations - Product category rules complementary to EN 15804 for building hardware	2022-08-00	CEN/TC 33 Doors, windows, shutters, building hardware and curtain walling
EN 16908+A1	Cement and building lime - Environmental product declarations - Product category rules complementary to EN 15804	2022-03-00	CEN/TC 51 Cement and building limes
EN 805	Water supply - Requirements for systems and components outside buildings	2000-01-00	CEN/TC 164 Water supply
EN 16485	Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction	2014-03-00	CEN/TC 175 Round and sawn timber
EN 16485	Round and sawn timber - Environmental Product Declarations - Product category rules for wood and wood-based products for use in construction	2014-03-00	CEN/TC 175 Round and sawn timber

EN 16039	Water quality - Guidance standard on assessing the hydromorphological features of lakes	2011-09-00	CEN/TC 230 Water analysis
EN 16493	Water quality - Nomenclatural requirements for the recording of biodiversity data, taxonomic checklists and keys	2014-08-00	CEN/TC 230 Water analysis
EN 16503	Water quality - Guidance standard on assessing the hydromorphological features of transitional and coastal waters	2014-08-00	CEN/TC 230 Water analysis
EN 17615	Plastics - Environmental Aspects - Vocabulary	2022-06-00	CEN/TC 249 Plastics
CEN/TR 13910	Packaging - Report on criteria and methodologies for life cycle analysis of packaging	2010-08-00	CEN/TC 261 Packaging
EN 15483	Ambient air quality - Atmospheric measurements near ground with FTIR spectroscopy	2008-11-00	CEN/TC 264 Air quality
EN 16413	Ambient air - Biomonitoring with lichens - Assessing epiphytic lichen diversity	2014-02-00	CEN/TC 264 Air quality
EN 16414	Ambient air - Biomonitoring with mosses - Accumulation of atmospheric contaminants in mosses collected in situ: from the collection to the preparation of samples	2014-02-00	CEN/TC 264 Air quality
EN 19694-2	Stationary source emissions - Greenhouse Gas (GHG) emissions in energy-intensive industries - Part 2: Iron and steel industry	2016-07-00	CEN/TC 264 Air quality
prEN 17952	Value management - Function analysis, basic characteristics: Requirements and guidance for implementation and achieving deliverables	2023-03-00	CEN/TC 279 Value management - Value analysis, functional analysis
EN 16887	Leather - Environmental footprint - Product Category Rules (PCR) - Carbon footprints	2017-03-00	CEN/TC 289 Leather
CEN/TR 13097	Characterization of sludges - Good practice for sludge utilisation in agriculture	2010-06-00	CEN/TC 308 Characterization of sludges
FprEN 17837	Postal Services - Parcel Delivery Environmental Footprint - Methodology for calculation and declaration of GHG emissions and air pollutants of parcel logistics delivery services	2023-05-00	CEN/TC 331 Postal services
EN 15804+A2	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products	2019-10-00	CEN/TC 350 Sustainability of construction works
EN 15804+A2/AC	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products	2021-08-00	CEN/TC 350 Sustainability of construction works
prEN 15941	Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data	2022-09-00	CEN/TC 350 Sustainability of construction works
prEN 15941	Sustainability of construction works - Data quality for environmental assessment of products and construction work - Selection and use of data	2022-09-00	CEN/TC 350 Sustainability of construction works

EN 15978	Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method	2011-11-00	CEN/TC 350 Sustainability of construction works
EN 15978	Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method	2011-11-00	CEN/TC 350 Sustainability of construction works
prEN 15978-1	Sustainability of construction works - Methodology for the assessment of performance of buildings - Part 1: Environmental Performance	2021-09-00	CEN/TC 350 Sustainability of construction works
CEN/TR 16970	Sustainability of construction works - Guidance for the implementation of EN 15804	2016-07-00	CEN/TC 350 Sustainability of construction works
CEN/TR 17005	Sustainability of construction works - Additional environmental impact categories and indicators - Background information and possibilities - Evaluation of the possibility of adding environmental impact categories and related indicators and calculation methods for the assessment of the environmental performance of buildings	2016-10-00	CEN/TC 350 Sustainability of construction works
CEN/TR 17005	Sustainability of construction works - Additional environmental impact categories and indicators - Background information and possibilities - Evaluation of the possibility of adding environmental impact categories and related indicators and calculation methods for the assessment of the environmental performance of buildings	2016-10-00	CEN/TC 350 Sustainability of construction works
CEN/TR 17005	Sustainability of construction works - Additional environmental impact categories and indicators - Background information and possibilities - Evaluation of the possibility of adding environmental impact categories and related indicators and calculation methods for the assessment of the environmental performance of buildings	2016-10-00	CEN/TC 350 Sustainability of construction works
EN 17472	Sustainability of construction works - Sustainability assessment of civil engineering works - Calculation methods	2022-02-00	CEN/TC 350 Sustainability of construction works
CEN/TS 17276	Nanotechnologies - Guidelines for Life Cycle Assessment - Application of EN ISO 14044:2006 to Manufactured Nanomaterials	2018-12-00	CEN/TC 352 Nanotechnologies
EN 16214-3+A1	Sustainability criteria for the production of biofuels and bioliquids for energy applications - Principles, criteria, indicators and verifiers - Part 3: Biodiversity and environmental aspects related to nature protection purposes	2017-07-00	CEN/TC 383 Sustainably produced biomass for energy applications
FprEN 16214-3	Sustainability and greenhouse gas emission saving criteria for biomass for energy applications - Principles, criteria, indicators and verifiers - Part 3: Sustainability criteria related to environmental aspects	2023-02-00	CEN/TC 383 Sustainably produced biomass for energy applications

EN 16524	Mechanical products - Methodology for reduction of environmental impacts in product design and development	2020-11-00	CEN/TC 406 Mechanical products - Ecodesign methodology
EN 16751	Bio-based products - Sustainability criteria	2016-04-00	CEN/TC 411 Bio-based products
EN 16760	Bio-based products - Life Cycle Assessment	2015-11-00	CEN/TC 411 Bio-based products
EN 16760	Bio-based products - Life Cycle Assessment	2015-11-00	CEN/TC 411 Bio-based products
EN 16848	Bio-based products - Requirements for Business to Business communication of characteristics using a Data Sheet	2016-11-00	CEN/TC 411 Bio-based products
EN 16935	Bio-based products - Requirements for Business-to-Consumer communication and claims	2017-05-00	CEN/TC 411 Bio-based products
CEN/TR 16957	Bio-based products - Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase	2016-09-00	CEN/TC 411 Bio-based products
CEN/TR 17341	Bio-based products - Examples of reporting on sustainability criteria	2019-02-00	CEN/TC 411 Bio-based products
EN 17480	Algae and algae products - Methods for the determination of productivity of algae growth sites	2021-08-00	CEN/TC 454 Algae and algae products
EN 50693	Product category rules for life cycle assessments of electronic and electrical products and systems	2019-08-00	CLC/TC 111X Environment
EN 50693	Product category rules for life cycle assessments of electronic and electrical products and systems	2019-08-00	CLC/TC 111X Environment
VDI 3633 Volume 11	Simulation of systems in logistics, materials handling, and production - Simulation and visualization	2020-10-00	VDI Society Production and Logistics
VDI 3785 Volume 1	Environmental meteorology - Methods and presentation of investigations relevant for planning urban climate	2008-12-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3786 Volume 1	Environmental meteorology - Meteorological measurements - Fundamentals	2013-08-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3787 Volume 1	Environmental meteorology - Climate and air pollution maps for cities and regions	2015-09-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3793 Volume 2	On-site determination of vegetational injuries - Interpretation keys to evaluate aerial CIR-photographs for the assessment of crown conditions of coniferous and deciduous trees - Spruce, beech, oak and pine	2020-06-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3793 Volume 3	Survey and monitoring of trees and forest stands by means of aerial images - Design and procedure of digital image surveys	2017-09-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee

VDI-MT 3800	Determination of expenditures for industrial environmental protection measures	2023-02-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3857 Volume 2	Assessment values for accumulation of substances in grass cultures caused by ambient air pollution - Orientation values for maximum background levels of selected inorganic air pollutants	2021-07-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 1	Biological measuring techniques for the determination and evaluation of effects of air pollutants on plants (biomonitoring) - Fundamentals and aims	2020-02-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 10	Biological measuring techniques for the determination and evaluation of effects of air pollutants on plants (biomonitoring) - Use of active biomonitoring methods in the vicinity of emission sources	2022-05-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 11	Biological measuring techniques for the determination and evaluation of effects of air pollution on plants (biomonitoring) - Use of passive biomonitoring methods with needles and leaves of free-standing trees	2019-01-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 12	Biological measuring techniques for the determination and evaluation of the effects of air pollutants (bioindication) - Mapping of diversity of epiphytic bryophytes as indicators of air quality	2006-07-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 13	Biological measuring techniques for the determination and evaluation of effects of air pollutants (biomonitoring) - Mapping the diversity of epiphytic lichens as an indicator of air quality	2023-02-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 13	Biological measuring techniques for the determination and evaluation of effects of air pollutants (biomonitoring) - Mapping the diversity of epiphytic lichens as an indicator of air quality	2023-02-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 14	Biological measuring techniques for the determination and evaluation of effects of air pollutants on plants (bioindication) - Phytotoxic effect of inorganic fluorides in ambient air - Method of standardised gladiolus exposure	2005-11-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 15	Biological measuring techniques for the determination and evaluation of effects of air pollutants on plants (biomonitoring) - Investigation strategy following hazardous incidents (passive biomonitoring)	2014-02-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 16	Biological measuring techniques for the determination and evaluation of effects of air pollution on plants (bioindication) - Determination of genotoxic effects with the Tradescantia MCN test	2015-10-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee

VDI 3957 Volume 17	Biological measurement procedures to determine and assess effects of air pollutants on plants (bioindication) - Active monitoring of the heavy metal load with peat moss (Sphagnum-bag-technique)	2009-07-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 18	Biological measuring techniques for the determination and evaluation of effects of air pollutants (biomonitoring) - Determination of nitrogen accumulation in the foliose lichen <i>Parmelia sulcata</i> detecting effects of ambient air pollutants	2015-12-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 18	Biological measuring techniques for the determination and evaluation of effects of air pollutants (biomonitoring) - Determination of nitrogen accumulation in the foliose lichen <i>Parmelia sulcata</i> detecting effects of ambient air pollutants	2015-12-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 19	Biological measurement procedures to determine and assess the effects of ambient air pollutants (bioindication) - Detection of regional nitrogen depositions with the mosses <i>Scleropodium purum</i> and <i>Pleurozium schreberi</i>	2009-12-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 2	Biological measuring techniques for the determination and evaluation of effects of air pollutants on plants (biomonitoring) - Method of the standardised grass exposure	2020-08-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 20	Biological measuring techniques for the determination and evaluation of effects of air pollutants (biomonitoring) - Mapping of lichens to indicate local climate change	2017-07-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 20	Biological measuring techniques for the determination and evaluation of effects of air pollutants (biomonitoring) - Mapping of lichens to indicate local climate change	2017-07-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 21	Biological measuring techniques for the determination and evaluation of effects of air pollutants (biomonitoring) - Evaluation of phytotoxic effects of ambient air pollutants with lichen exposure of <i>Hypogymnia physodes</i>	2019-07-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 3	Biological measuring techniques for the determination and evaluation of effects of air pollutants on plants (biomonitoring) - Method of the standardised exposure of curly kale	2022-04-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 4	Biological measuring techniques for the determination and evaluation of effects of air pollutants on plants (biomonitoring) - Method of the standardised exposure of curly kale - Assessment of matter content in food plants for human consumption	2022-04-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 5	Biological measuring techniques for the determination and evaluation of effects of air pollutants on plants (bioindication) - Standardised exposure of spruce	2001-12-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee

VDI 3957 Volume 6	Biological measuring techniques for the determination und evaluation of effects of air pollutants on plants (biomonitoring) - Determination and evaluation of the phytotoxic effect of ozone and photooxidants - Method of the standardised tobacco exposure	2022-04-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3957 Volume 8	Biological measuring techniques for the determination and evaluation of effects of air pollutants (biomonitoring) - Determination of the growth rate of epiphytic lichens and bryophytes for monitoring of environmental changes	2015-07-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3958 Volume 1	Environmental simulation - Fundamentals and methods	1995-12-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 3959 Volume 1	Recording of nitrogen availability by Ellenberg indicator values of forest ground vegetation	2020-01-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 4009	Reliability tests	2022-10-00	VDI Society Product and Process Design
VDI 4070 Volume 1	Sustainable management in small and medium-sized enterprises - Guidance notes for sustainable management	2016-02-00	VDI Society Energy and Environment
VDI 4070 Volume 2	Sustainable management in small and medium-sized enterprises - Methods and examples for the practical application	2022-10-00	VDI Society Energy and Environment
VDI 4075 Volume 1	Cleaner production (PIUS) - Basic principles and area of application	2014-10-00	VDI Society Energy and Environment
VDI 4075 Volume 10	Cleaner production (PIUS) - Composting	2019-06-00	VDI Society Energy and Environment
VDI 4075 Volume 2	Cleaner production (PIUS) - Painting processes	2015-08-00	VDI Society Energy and Environment
VDI 4075 Volume 3	Cleaner production (PIUS) - Foundries industries	2016-07-00	VDI Society Energy and Environment
VDI 4075 Volume 5	Cleaner Production (PIUS) - Health care	2014-01-00	VDI Society Energy and Environment
VDI 4075 Volume 6	Cleaner production (PIUS) - Dairies	2014-10-00	VDI Society Energy and Environment
VDI 4075 Volume 7	Cleaner production (PIUS) - Plastics processing (extrusion)	2015-07-00	VDI Society Energy and Environment
VDI 4075 Volume 8	Cleaner production (PIUS) - Breweries	2017-06-00	VDI Society Energy and Environment
VDI 4230 Volume 2	Biological procedures to determine effects of air pollutants (bioindication) - Biomonitoring with earthworms	2008-01-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee

VDI 4230 Volume 3	Biological procedures to determine effects of air pollutants (bioindication) - Biomonitoring with bird eggs as accumulative and reactive indicators	2009-11-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 4230 Volume 6	Biological procedures to determine environmental impact (biomonitoring) - Invertebrates as effect indicators in limnic ecosystem monitoring	2023-06-00	VDI/DIN-Commission on Air Pollution Prevention (KRdL) - Standards Committee
VDI 4340 Volume 1	Biodiversity - Standardised population-friendly assesement of wild bees for a long-term monitoring	2023-03-00	VDI Society Technologies of Life Sciences
VDI 4340 Volume 1	Biodiversity - Standardised population-friendly assesement of wild bees for a long-term monitoring	2023-03-00	VDI Society Technologies of Life Sciences
VDI 4506 Volume 4	Strategic sales - Brand management using Business Coach	2013-04-00	VDI Society Product and Process Design
VDI 4520 Volume 1	Product management - Introduction and basics	2017-01-00	VDI Society Product and Process Design
VDI 4520 Volume 2	Product management - Methods and tools in the phases of the product management process	2023-03-00	VDI Society Product and Process Design
VDI 4520 Volume 3	Product management - Implementation model for companies	2022-10-00	VDI Society Product and Process Design
VDI 4600 Volume 1	Cumulative energy demand - Examples	2015-08-00	VDI Society Energy and Environment
VDI 4800 Volume 1	Resource efficiency - Methodological principles and strategies	2016-02-00	VDI Society Energy and Environment
VDI 4800 Volume 1	Resource efficiency - Methodological principles and strategies	2016-02-00	VDI Society Energy and Environment
VDI 4800 Volume 2	Resource efficiency - Evaluation of raw material demand	2018-03-00	VDI Society Energy and Environment
VDI 4800 Volume 2 correction	Resource efficiency - Evaluation of raw material demand - Corrigendum concerning standard VDI 4800 Part 2:2018-03	2018-05-00	VDI Society Energy and Environment
DIN/TS 35807	Guideline for Life Cycle Assessment according to DIN EN ISO 14001:2015-11	2020-08-00	Principles of Environmental Protection Standards Committee
DIN SPEC 16599	Information technology - Automatic identification and data capture techniques - Traceability	2017-12-00	Information Technology and selected IT Applications Standards Committee
DIN SPEC 32790	Reference architecture for blockchain applications to create transparency in supply chains	2022-11-00	Information Technology and selected IT Applications Standards Committee
DIN SPEC 35810	Stakeholder Engagement - Guidelines for decision making processes dealing with climate change; Text in German and English	2014-11-00	DIN SPEC (PAS, CWA)

DIN SPEC 35811	Scenario Planning - Guidelines for decision making processes dealing with climate change; Text in German and English	2014-08-00	DIN SPEC (PAS, CWA)
DIN SPEC 91474	Data format for the exchange of LCA results for the configuration of modular variant-rich products	2023-02-00	Research and Transfer
BS 8632	Natural Capital Accounting for Organizations - Specification	2021-06-00	SES/1/8 Assessing and Valuing Natural Capital

Table 9: Stage codes²⁰

Stage	Substage						
				90 Decision			
	00 Registration	20 Start of main action	60 Completion of main action	92 Repeat an earlier phase	93 Repeat current phase	98 Abandon	99 Proceed
00 Preliminary stage	00.00 Proposal for new project received	00.20 Proposal for new project under review	00.60 Close of review			00.98 Proposal for new project abandoned	00.99 Approval to ballot proposal for new project
10 Proposal stage	10.00 Proposal for new project registered	10.20 New project ballot initiated	10.60 Close of voting	10.92 Proposal returned to submitter for further definition		10.98 New project rejected	10.99 Approval to new project approved
20 Preparatory stage	20.00 New project registered in TC/SC work programme	20.20 Working draft (WD) study initiated	20.60 Close of comment period			20.98 Project deleted	20.99 WD approved for registration as CD
30 Committee stage	30.00 Committee draft (CD) registered	30.20 CD Study initiated	30.60 Close of comment period	30.92 CD referred back to Working Group		30.98 Project deleted	30.99 CD approved for registration as DIS
40 Enquiry stage	40.00 DIS registered	40.20 DIS ballot initiated: 12 weeks	40.60 Close of voting	40.92 Full report circulated: DIS referred back to TC or SC	40.93 Full report circulated: decision for new DIS ballot	40.98 Project deleted	40.99 Full report circulated: DIS approved for registration as FDIS

²⁰ https://www.iso.org/files/live/sites/isoorg/files/developing_standards/docs/en/stage_codes.pdf, last access: 16.10.2023

Stage	Substage						
				<i>90 Decision</i>			
	<i>00 Registration</i>	<i>20 Start of main action</i>	<i>60 Completion of main action</i>	<i>92 Repeat an earlier phase</i>	<i>93 Repeat current phase</i>	<i>98 Abandon</i>	<i>99 Proceed</i>
50 Approval stage	50.00 Final text received or FDIS registered for formal approval	50.20 Proof sent to secretariat or FDIS ballot initiated: 8 weeks	50.60 Close of voting. Proof returned by secretariat	50.92 FDIS or proof referred back to TC or SC		50.98 Project deleted	50.99 FDIS or proof approved for publication
60 Publication stage	60.00 International Standard under publication		60.60 International Standard published				
90 Review stage		90.20 International Standard under periodical review	90.60 Close of review	90.92 International Standard to be revised	90.93 International Standard confirmed		90.99 Withdrawal of International Standard proposed by TC or SC
95 Withdrawal stage		95.20 Withdrawal ballot initiated	95.60 Close of voting	95.92 Decision not to withdraw International Standard			95.99 Withdrawal of International Standard



Project Partners



Circhive is a five-year, €11.5 million project with 15 research and 10 case-study partners.

The project will develop rigorous and standardised methods for combining two approaches to valuing nature: biodiversity footprinting and natural capital accounting. These two approaches are being used by an increasing number of organisations to understand and value the nature that underpins their operations.

By combining these methods, the project will provide a more comprehensive approach to valuing nature and improving biodiversity performance.

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