SLOVENSKI STANDARD
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Nadomešča:
SIST EN 15643-1:2010
SIST EN 15643-2:2011
SIST EN 15643-3:2012
SIST EN 15643-4:2012
SIST EN 15643-5:2018

Trajnostnost gradbenih objektov - Okvir za ocenjevanje trajnostnosti stavb in gradbenih inženirskih objektov

Sustainability of construction works - Framework for assessment of buildings and civil engineering works

Nachhaltigkeit von Bauwerken - Allgemeine Rahmenbedingungen zur Bewertung von Gebäuden und Ingenieurbauwerken

Contribution des ouvrages de construction au développement durable - Cadre pour l'évaluation des bâtiments et des ouvrages de génie civil

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EUROPEAN STANDARD

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EN 15643

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English Version

Sustainability of construction works - Framework for assessment of buildings and civil engineering works

Contribution des ouvrages de construction au développement durable - Cadre pour l'évaluation des bâtiments et des ouvrages de génie civil

Nachhaltigkeit von Bauwerken - Allgemeine Rahmenbedingungen zur Bewertung von Gebäuden und Ingenieurbauwerken

This European Standard was approved by CEN on 30 May 2021.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 15643:2021) has been prepared by Technical Committee CEN/TC 350 “Sustainability of construction works”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2021, and conflicting national standards shall be withdrawn at the latest by December 2021.

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

This document supersedes a series of standards that consists of the following parts:

— EN 15643-1, *Sustainability of construction works — Sustainability assessment of buildings — Part 1: General framework*

— EN 15643-2, *Sustainability of construction works — Assessment of buildings — Part 2: Framework for the assessment of environmental performance*

— EN 15643-3, *Sustainability of construction works — Assessment of buildings — Part 3: Framework for the assessment of social performance*

— EN 15643-4, *Sustainability of construction works — Assessment of buildings — Part 4: Framework for the assessment of economic performance*

— EN 15643-5, *Sustainability of construction works — Sustainability assessment of buildings and civil engineering works — Part 5: Framework on specific principles and requirement for civil engineering works*

In comparison with the previous versions, this document:

— consolidates and develops the content of the previous standards (EN 15643-1 to -5) into a single common framework for the assessment of the environmental, social and economic performance assessment of all construction works (buildings and civil engineering works), while continuing to recognize the distinction between, and differences of approach, that are appropriate for the separate assessment of buildings and the assessment of civil engineering works;

— reflects the changes required under the revised Mandate M350, particularly the changes already introduced on response to the Mandate in the amendment of EN 15804 (EN 15804+A2:2019);

— expands and consolidates the main Terms and definitions that are used across the standards of CEN TC350;

— expands the modular structure of the assessment (adding Module B8) to include for the assessment of users’ activities associated with object of assessment and expands the scope of Module D to cover “exported utilities” for both buildings and civil engineering works;

— includes for the assessment of the technical feasibility for sustainable refurbishment of existing buildings.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document forms part of a series of European Standards, written by CEN/TC 350, that provide a system for the sustainability assessment of buildings and civil engineering works using a life cycle approach. The sustainability assessment quantifies aspects and impacts to assess the environmental, social and economic performance of buildings and civil engineering works using quantifiable indicators measured without value judgements. The purpose of the standards developed under this framework is to enable comparability of the results of assessments. The European Standards developed under this framework do not set actual benchmarks.

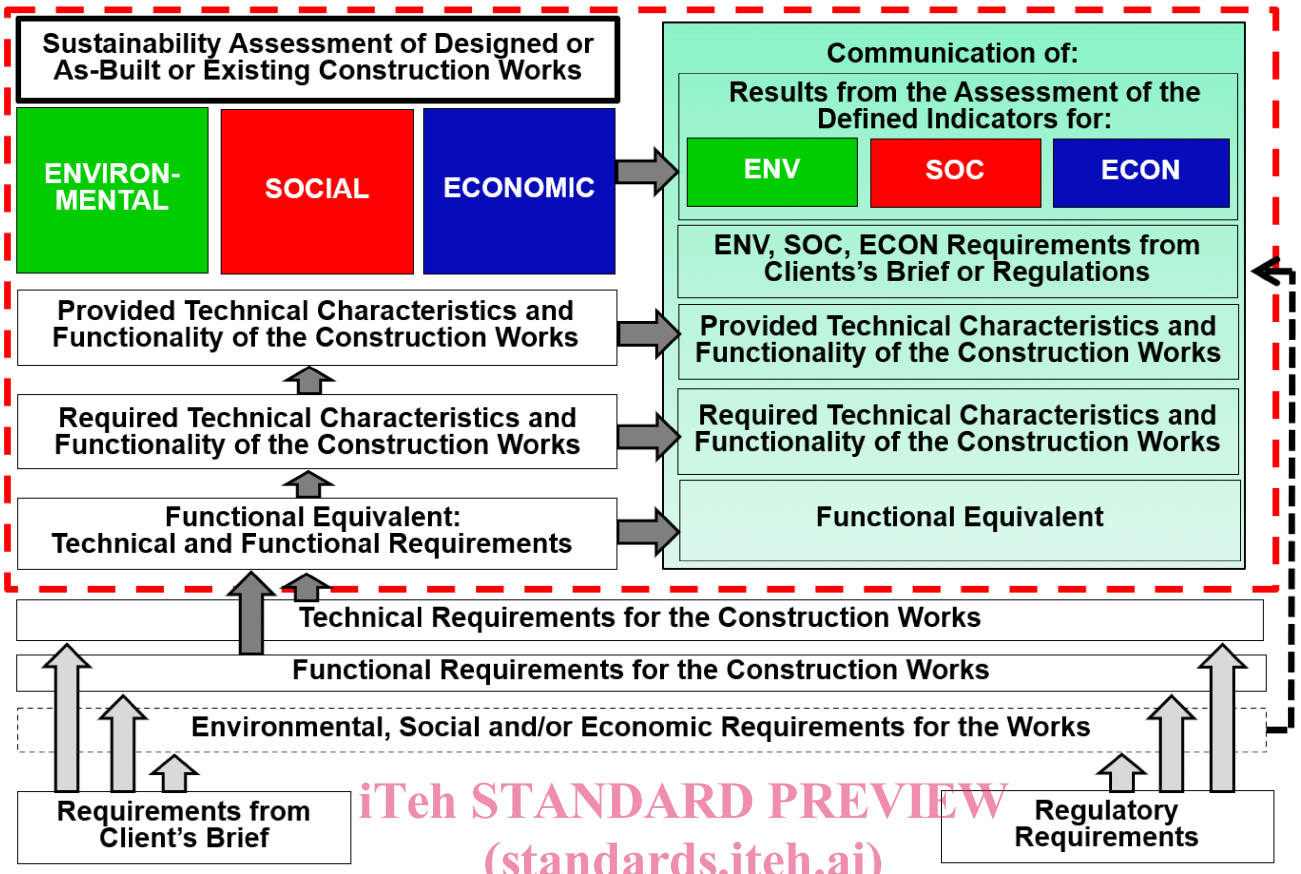
The sustainability assessment of buildings and civil engineering works uses different types of information. The results of a sustainability assessment of a building and/or civil engineering works provide information on the different types of indicators, the related works scenarios, and the life cycle stages included in the assessment.

In carrying out assessments, scenarios and a functional equivalent are determined at the construction works level. This means that the descriptive model of the works with the major technical and functional requirements has been defined in the client's brief or in regulations, as illustrated in Figure 1.

Assessments can be undertaken for the object under consideration that is a whole building or civil engineering works, a part of the works or a combination of several buildings and/or civil engineering works.

Although the evaluation of technical and functional performance is beyond the scope of the standards developed under this framework, the technical and functional characteristics are considered by reference to the functional equivalent of the object of assessment. The functional equivalent takes into account the technical and functional requirements and forms the basis for comparisons of the results of the assessment under the basic principle that the functional equivalent is being fulfilled, when those set technical and functional requirements are being met or exceeded. Therefore, the concept of functional equivalent is used in this context instead of the concept of functional unit.

Figure 1 shows schematically how the functional equivalent and the following required technical characteristics and functionality of the construction works are to be fulfilled by provided technical characteristics and functionality. These all are communicated as illustrated in the box "Communication of:", so that those technical characteristics and functionality provided by the construction works that exceed from those required, either by the client's brief or through regulations, are to be communicated together with the results of the assessment. Furthermore, any particular demands for, or related to, the environmental, social and economic performance defined in the client's brief, or in regulations, are to be communicated, if relevant.



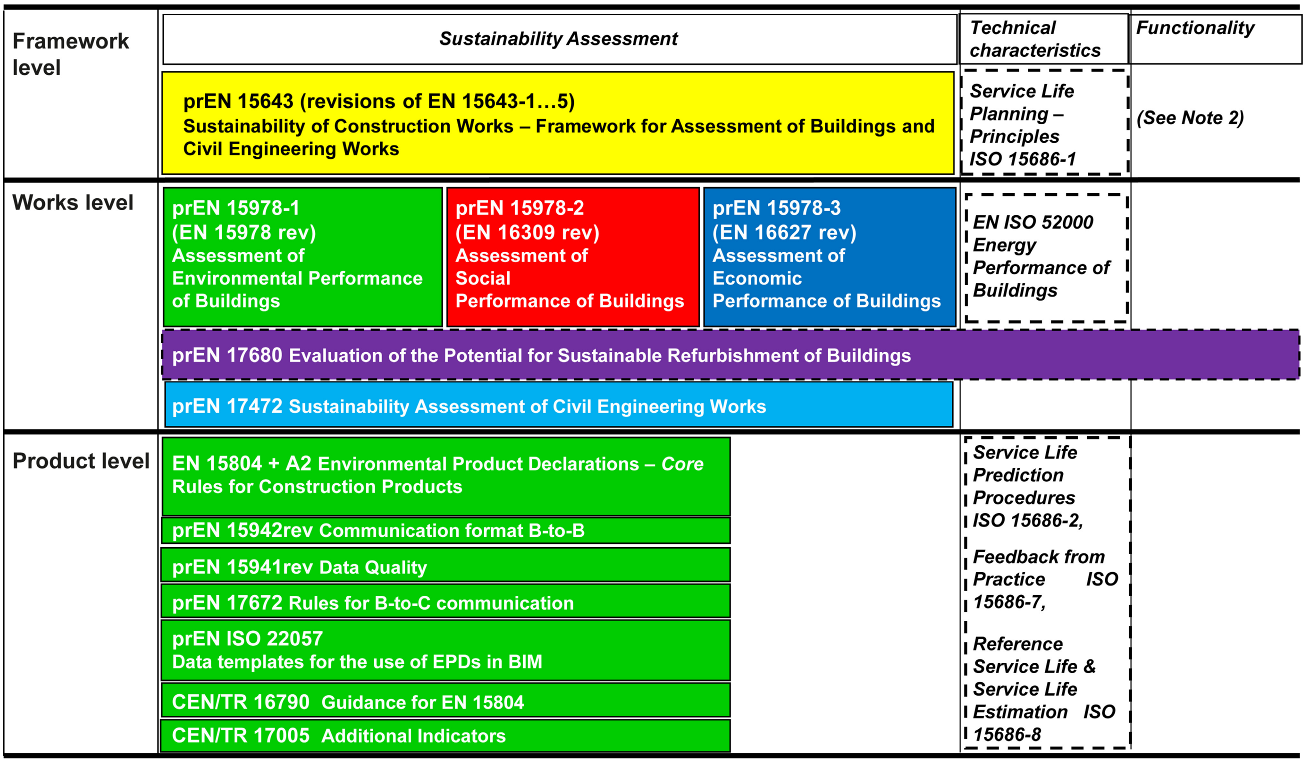
NOTE The outer box with the red dotted line represents the area standardized by CEN/TC 350.

Figure 1 — Concept of sustainability assessment of construction works

In concept, the integrated performance of construction works incorporates environmental, social and economic performance as well as the technical and functional performance, and these are intrinsically related to each other. Although the assessment of technical and functional performance does not form part of this series of standards, their interrelationship with environmental, social and economic performance is a prerequisite for an assessment of sustainability of construction works and, therefore, is taken into account, as illustrated in Figure 1.

The users' activities associated with the constructed asset (referred to as "users' activities") are part of the assessment of construction works. These can include, for example, the fuel consumed by the cars using a road as part of the assessment of infrastructure, or the energy used for commuting to and from a building, as part of a building assessment.

It is advisable to carry out an assessment at the earliest opportunity during the conceptual/initial planning stages of a construction or refurbishment project. This will allow a broad estimate of the environmental, social and/or economic performance to be determined. As the project evolves, the assessment may be periodically reviewed and updated to support decision-making. A final assessment (as-built) should be carried out. The results of this final assessment can be used to inform all parties concerned, and also serve as the database for future new similar projects.



NOTE 1 The coloured boxes represent the current work programme of CEN/TC 350.

NOTE 2 Functional requirements are part of client's brief and building regulations.

Figure 2 — Work programme of CEN/TC 350

As described in the Figure 2, this framework is the general framework for sustainability assessment of buildings and civil engineering works. The purpose of this EN 15643 is to provide a framework with principles, requirements and guidelines for the assessment of the environmental, social and economic performance of a building and/or civil engineering works or combination thereof at the "framework level". This document has been drafted by combining the previously published 5 parts of the framework standards; i.e. EN 15643-1, -2, -3, -4 and -5 into one framework standard.

The documents developed under this framework for the assessment of the construction works, EN 15978, EN 16309, EN 16627 for buildings and EN 17472[5] for civil engineering works, contribute to the achievement of United Nations Sustainable Development Goals (SDG). The SDG icons are shown below in Figure 3.

Figure 3 — The icons of the United Nations Sustainable Development Goals (SDG)

1 Scope

This document provides principles and requirements for the assessment of environmental, social and economic performance of buildings and civil engineering works taking into account their technical characteristics and functionality.

NOTE 1 Assessments of environmental, social and economic performance are the three aspects of sustainability assessment of buildings and civil engineering works, or combination thereof, (hereafter referred to as "construction works").

The framework applies to all types of construction works and it is relevant for new construction works over their entire life cycle, and of existing construction works over their remaining service life and end of life stage.

The sustainability assessment of construction works covers aspects and impacts of construction works expressed with quantifiable indicators. It includes the assessment of the construction works' influence on the environmental, social and economic aspects and impacts on the local area (area of influence) and of the local infrastructure beyond the curtilage of the building and the civil engineering works.

NOTE 2 The sustainability assessment in the standards developed under this framework encompasses potential impacts e.g. intrinsic hazards from chemicals that are not based on a full environmental risk assessment.

The assessment of environmental, social and economic aspects of organizations, such as management systems, are not included in the standards developed under this framework. However, the decisions or actions that influence the environmental, social and economic performance of the object of assessment can be taken into account where the assessment includes management process related aspects.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15804, *Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products*

EN 15941, *Sustainability of construction works - data quality for environmental assessment of products and construction works - Selection and use of data*[1]

EN 15942, *Sustainability of construction works - Environmental product declarations - Communication format business-to-business*

EN 15978, *Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method*[2]

EN 16309, *Sustainability of construction works - Assessment of social performance of buildings - Calculation methodology*[3]

EN 16627, *Sustainability of construction works - Assessment of economic performance of buildings - Calculation methods*[4]

[1] Under preparation. Stage at the time of publication: prEN 15941:2021.
[2] EN 15978 is expected to be replaced by EN 15978-1 after its revision by 2020-2022/23.
[3] EN 16309 is expected to be replaced by EN 15978-2 after its revision by 2020-2022/23.
[4] EN 16627 is expected to be replaced by EN 15978-3 after its revision by 2020-2022/25.

EN 17472, *Sustainability of construction works - Sustainability assessment civil engineering works - Calculation methods*[5]

EN ISO 14044, *Environmental management - Life cycle assessment - Requirements and guidelines (ISO 14044)*

EN ISO 52000-1, *Energy performance of buildings - Overarching EPB assessment - Part 1: General framework and procedures (ISO 52000-1)*

ISO 15392, *Sustainability in buildings and civil engineering works - General principles*

ISO 15686-1, *Buildings and constructed assets - Service life planning - Part 1: General principles and framework*

ISO 15686-2, *Buildings and constructed assets - Service life planning - Part 2: Service life prediction procedures*

ISO 15686-5, *Buildings and constructed assets - Service life planning - Part 5: Life-cycle costing*

ISO 15686-7, *Buildings and constructed assets - Service life planning - Part 7: Performance evaluation for feedback of service life data from practice*

ISO 15686-8, *Buildings and constructed assets - Service-life planning -Part 8: Reference service life and service-life estimation*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.[6]

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

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://www.iso.org/obp

3.1
accessibility
ability of a space or service to be entered or used with ease

Note 1 to entry: Requirements for accessibility will depend on the users' needs, as well as to activities during the life cycle of the building or civil engineering works, e.g. construction work, maintenance and deconstruction.

Note 2 to entry: "Barrier-free use of buildings" relates to requirements for accessibility to meet the needs of users with reduced mobility.

[SOURCE: ISO 15392: 2019, modified – "or service" has been added in the definition]

[5] Under preparation. Stage at the time of publication: FprEN 17472:2021.

[6] Clause 3 includes terms that are not used in this document, but that are needed for overall consistency in the standards developed under this framework.

3.2
adaptability
ability of the object of assessments or parts thereof to be changed or modified to make suitable for a particular use

[SOURCE: ISO 21929-1:2011, modified – "of the object of assessments or parts thereof" has been added in the definition]

3.3
area of influence
area or combination of areas surrounding construction works that can be affected with changes to their economic, environmental or social conditions by the use and operations of construction works throughout its life cycle

Note 1 to entry: The area of influence is variable and dependent e.g. on the use of construction works, its location and its life cycle stage.

Note 2 to entry: The area of influence concerns only the construction works and not the construction products.

EXAMPLE Stones coming from China, China is not in the area of influence.

[SOURCE: ISO/TS 21929-2:2015, modified - Note 1 and Note 2 to entry have been added]

3.4
assembled system
part of works
component or a set of components incorporated in the construction works

3.5
backfilling
recovery operation where suitable non-hazardous waste is used for purposes of reclamation in excavated areas or for engineering purposes in landscaping; non-hazardous waste used for backfilling substitutes non-waste materials, is suitable for the aforementioned purposes, and is limited to the amount strictly necessary to achieve those purposes

[SOURCE: Directive (EU) 2018/851]

3.6
brief
document that states the client's requirements for a construction project

[SOURCE: ISO 6707-2:2017, modified – "construction" has been added in the definition]

3.7
building
construction works that have the provision of shelter for their occupants or contents as one of their main purposes and are usually enclosed and designed to stand permanently in one place

[SOURCE: ISO 6707-1:2020, modified – "partially and totally" has been removed from the definition]