



SLOVENSKI STANDARD
oSIST prEN 17680:2021
01-september-2021

Trajnostnost gradbenih objektov - Ovrednotenje možnosti trajnostne prenove stavb

Sustainability of construction works — Evaluation of the potential for sustainable refurbishment of buildings

Nachhaltigkeit von Bauwerken - Bewertung des Potentials zur nachhaltigen Sanierung von Gebäuden

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 17680:2021](https://standards.iteh.ai/catalog/standards/sist/689831-1862-4d43-ad61-e81474136cc3/osist-pren-17680-2021)

Ta slovenski standard je istoveten z: prEN 17680

ICS:

13.020.20	Okoljska ekonomija. Trajnostnost	Environmental economics. Sustainability
91.040.01	Stavbe na splošno	Buildings in general

oSIST prEN 17680:2021

en,fr

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 17680:2021](#)

<https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-ad61-e81474136cc3/osist-pren-17680-2021>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
prEN 17680

June 2021

ICS 91.200

English Version

Sustainability of construction works - Evaluation of the potential for sustainable refurbishment of buildings

Nachhaltigkeit von Bauwerken - Bewertung des Potentials zur nachhaltigen Sanierung von Gebäuden

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 350.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

This draft European Standard was established by CEN 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.

CEN members are the national standards bodies of 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 United Kingdom.

[https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-](https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-ad61-e81474136cc3/osist-pr-en-17680-2021)

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword	3
Introduction	4
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions.....	8
3.1 Definitions.....	8
3.2 Abbreviations.....	12
4 Sustainable refurbishment, general principles	13
5 Evaluation of building condition and performance	17
5.1 General process.....	17
5.2 General procedure.....	18
5.3 Planning the evaluation of the building.....	18
5.3.1 Establishing the brief.....	18
5.3.2 Definition of requirements.....	19
5.3.3 Execution plan and competence requirements.....	19
5.3.4 Acquisition and sustainable assessment of building and underlying information	19
5.3.5 Preparation of criteria for performance degree.....	19
5.4 Condition registration and analysis.....	20
5.4.1 Registration of condition and determination of performance classes.....	20
5.4.2 Determination of performance degree for inaccessible parts.....	20
5.5 Analysis and evaluation process for sustainable refurbishment.....	20
5.5.1 General.....	20
5.5.2 Evaluating the building — step 1	21
5.5.3 Sustainable deconstruction — Step 2.....	25
5.5.4 Sustainable construction process — Step 3	27
5.5.5 Sustainable commissioning – step 4	28
5.5.6 Sustainable in use – step 5.....	30
6 Reporting.....	31
6.1 Content of report.....	31
6.2 Modelling of results and communication.....	32
Annex A (informative) Example of classification of indicators in performance and performance classes, from 1 – 4	35
Bibliography	45

European foreword

This document (prEN 17680:2021) has been prepared by Technical Committee CEN/TC 350/WG 8 “Sustainability of construction works - Evaluation of the potential for sustainable refurbishment of buildings”, the secretariat of which is held by Standards Norway.

This document is currently submitted to the CEN Enquiry.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN 17680:2021](https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-ad61-e81474136cc3/osist-pren-17680-2021)

<https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-ad61-e81474136cc3/osist-pren-17680-2021>

Introduction

This document forms a part of a series of European Standards written by CEN/TC 350, that provide a system for the sustainability assessment of buildings using a life cycle approach. The sustainability assessment quantifies impacts and aspects for environmental, social and economic performance of buildings using quantitative and qualitative indicators, both of which are measured without value judgement. The purpose of this series of European Standards is to enable comparability of the results of assessments. This series of European Standards does not set benchmarking or levels of performance. European (and other) countries face big challenges transforming the existing building stock to environmentally, economically and socially feasible buildings for the future within a low carbon society and a higher focus on resource efficiency. The transformation and reduction of environmental impacts of existing buildings should be done in a cost-effective manner and hence the refurbishment should be accessible and sustainable in all senses (i.e. environmental, social and economic). The need for refurbishment emerges due to the increasing demands for better-quality housing and the quest for energy efficiency of commercial and industrial buildings. The transformation should be done in a cost-effective manner and hence the refurbishment should be sustainable. The need for refurbishment emerges due to the increasing demands for better-quality housing and the quest for energy efficiency of commercial and industrial buildings.

In concept, the integrated building performance incorporates environmental, social and economic performance as well as the technical and functional performance, and these are intrinsically related to each other, as illustrated in Figure 4. 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 prerequisite for an assessment of sustainability performance of buildings and is therefore taken into account. This document, which define a simple method for qualifying the considerations to be made in relation to evaluating the potential of refurbishing an existing building, to determine the most sustainable and cost-effective approach to improve performance in line with regulatory requirements among others. This is based on the assumption that in the large majority of cases refurbishment does offer a more sustainable route to a sustainable building when compared with demolition and reconstruction.

This document is primarily designed to support decision-makers to decide how to sustainably refurbish existing building, and in some cases which buildings are sustainable for refurbishment taking into consideration that not all buildings should be refurbished if the existing conditions of a building do not permit.

This document is a part of the framework of standards for sustainability of buildings as shown in Figure 1 that draws upon information from the product and works level, as well as information on technical characteristics, all to support the evaluation potential for refurbishment. This document, which defines a simple method for qualifying the considerations to be made in relation to decide which buildings are sustainable for refurbishment, also taking into consideration that not all buildings should be refurbished, is a part of the framework standards for sustainability of buildings as shown in Figure 1.

Framework level	Sustainability Assessment			Technical characteristics	Functionality
		prEN 15643 (revisions of EN 15643-1...5) Sustainability of Construction Works – Framework for Assessment of Buildings and Civil Engineering Works			Service Life Planning – Principles ISO 15686-1
Works level Revision of Building Standards: 2020-22	EN15978rev Assessment of Environmental Performance of Buildings	EN16309rev Assessment of Social Performance of Buildings	EN 16627rev Assessment of Economic Performance of Buildings	EN ISO 52000 Energy Performance of Buildings	
	prWI00350029 Evaluation of the Potential for Sustainable Refurbishment of Buildings				
	prEN WI00350028 Assessment of Civil Engineering Works				
Product level	EN 15804 + A1 + A2 Environmental Product Declarations – Core Rules for Construction Products			Service Life Prediction Procedures ISO 15686-2, Feedback from Practice ISO 15686-7, Reference Service Life & Service Life Estimation ISO 15686-8	
	EN 15942 rev Communication Format B-to-B				
	prEN 15941 rev Generic Data				
	prEN xxxxx Communication B-to-C				
	CEN/TR 16790 Guidance for EN 15804				
	CEN/TR 17005 Add. Indicators				

Figure 1 — Framework standards for sustainability of buildings

oSIST prEN 17680:2021

<https://standards.itech.ai/catalog/standards/sist/61829831-1862-4d43->

Refurbishment can be seen as an opportunity, not only to modernize a building's appearance, but also to enhance its overall technical - and functional (usability) performance.

All European countries face big challenges transforming the existing building stock to environmentally and socially feasible buildings for the future with a low carbon societies and a higher focus on resource efficiency.

The transformation should be done in a cost-effective manner and hence the refurbishment should be sustainable. This standard gives a simple method for qualifying the considerations to be made in relation to categorizing the existing building: which buildings to give first priority for a sustainable refurbishment also taking into consideration that not all buildings should be refurbished.

It is a need for a simple method for qualifying the considerations to be made in relation to categorizing the existing building: which buildings to give first priority for a sustainable refurbishment also taking into consideration that not all buildings should be refurbished.

Benefits of sustainable refurbishment in comparison to deconstruction and redevelopment:

- Reduced landfill disposal
- Transportation costs and CO₂ footprint
- Contribution extending whole building lifetime
- Reduced environmental footprint through greater reuse of materials, improved thermal and water efficiency
- Contributing to lower life cycle costs

prEN 17680:2021 (E)

- Improved health and well-being of occupants
- Embodied Impact

Other benefits may include:

- Retention of community infrastructure
- Additional benefits of local economic development
- Neighbourhood renewal and well-being for all stakeholders.
- Protection for built heritage for future generations
- Better adaptation to climate change (e.g. limiting the solar gain in summer)

Refurbishment can be seen as an opportunity, not only to modernize a building's appearance, but also to enhance its overall technical - and functional (usability) performance.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN 17680:2021](https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-ad61-e81474136cc3/osist-pren-17680-2021)

<https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-ad61-e81474136cc3/osist-pren-17680-2021>

1 Scope

This document provides a process for the evaluation of the potential for sustainable refurbishment of an existing building, as a mean of contributing to the circular economy. This document gives guidelines to assess performance of existing buildings in order to determine what to do in a set of alternatives: Refurbish for similar or new use, use as is or sustainably deconstruct. Sustainable refurbishment aims to close the gap between current performance and current requirements. It can be used for a building or part(s) of a building, as well as a portfolio of buildings.

This document gives a method for assessing performance of existing buildings:

- 1) Technical (including energy) characteristics
- 2) Usability for users
- 3) Adaptability for changes
- 4) Indoor environment (health aspects)
- 5) Economic feasibility
- 6) Embodied environmental impacts

The document describes the work to be done in main applicable categories of a 5 steps process:

- Step 0: Establish brief of the object of the assessment
- Step 1: Evaluating the building
- Step 2: Sustainable deconstruction
- Step 3: Sustainable construction process
- Step 4: Sustainable commissioning
- Step 5: Sustainable in use

NOTE In this document, the users are people and organisations working in the building, including the facility management. In some buildings visitors are also important users.

This approach is generic for all types of buildings. At present this document does not cover civil engineering work and it does not give benchmarks for the evaluation.

Assessment of the impacts of sustainable refurbishment of buildings is covered by calculation methods described in EN 15978, EN 16309 and EN 16627.

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 12464-1, *Light and lighting - Lighting of work places - Part 1: Indoor work places*

EN 15804, *Sustainability of construction works – Environment product declarations – core rules for product category of construction products*

prEN 17680:2021 (E)

EN 15978-1, *Sustainability of construction works - Methodology for the assessment of performance of buildings - Part 1: Environmental Performance*

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

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

EN 17037, *Daylight in buildings*

3 Terms and definitions

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

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 Definitions**3.1.1****adaptability**

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

Note 1 to entry: adaptability can be subdivided into function of flexibility, versatility and elasticity of the building, part of or group of buildings

<https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-ad61-e81474136cc3/osist-pren-17680-2021>

3.1.2**demand profile**

set of parameters and their classes coming from regulations or the client's brief as demand levels

Note 1 to entry: Example load bearing capacity, floor to ceiling height

3.1.3**elasticity**

adaptability related to changing the volume of the building space either outside the existing building unit or addition of a new building(s) within the site

Note 1 to entry: Example to add extra floor(s) or horizontal extension or remove part of a building

3.1.4**environmental aspect**

aspect of construction works, part of works, processes or services related to their life cycle that can change to environment

[SOURCE: EN 15643:2020]

3.1.5**environmental impact**

result of a change to the environment, whether adverse, neutral or beneficial, wholly or partially resulting from environmental aspects

[SOURCE: EN 15643:2020]

3.1.6

environmental performance

performance related to environmental impacts and environmental aspects

[SOURCE: EN 15643:2020]

3.1.7

flexibility

adaptability related to changing space distribution within the existing building unit

Note 1 to entry: Example to change from cell offices to open landscape

3.1.8

functional performance

performance related to the functionality of a construction works or an assembled system (part of works), which is required by the client, users or by regulations

[SOURCE: EN 15643:2020]

3.1.9

functional requirement

type and level of functionality of a building, civil engineering works or an assembled system which is required by the client, users and / or by regulations

[SOURCE: ISO 15686-10:2010]

3.1.10

functionality

suitability or usefulness for a specific purpose or activity

[SOURCE: EN 15643:2020]

3.1.11

versatility

adaptability related to changing the use of the building

Note 1 to entry: Example to change use from offices to school area or divide for different users (core business)

3.1.12

maintenance

combination of technical, administrative, and managerial actions during the service life intended to retain construction works or parts of works in a state in which it can perform its required functions

[SOURCE: EN 15978]

3.1.13

maintenance (planned)

combination of planned technical, administrative, and managerial actions during the service life intended to retain construction works or parts of works (functional units) in a state in which it can perform its required functions

prEN 17680:2021 (E)

Note 1 to entry: Preventive (planned) maintenance covers cleaning, servicing, lubrication, changing wearing parts, testing, inspection, condition monitoring, done on a periodic basis and done before a failure would occur

3.1.14**performance profile**

set of parameters and their classes coming from the actual object of assessment

Note 1 to entry: calculation methods as per 15978 - Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method, EN 16309 Assessment of Social Performance of Buildings, and EN 16627 Assessment of Economic Performance of Buildings

3.1.15**performance classes**

Division of performance based on criteria

Note 1 to entry: Can be specified through reference to authority requirements (legal/regulatory requirements), client requirements, user requirements, functional requirements or other requirements

3.1.16**refurbishment**

large scale (substantial) modification and improvements to an existing building in order to bring it up to an acceptable condition

[SOURCE: EN 15643:2020]

Note 1 to entry: Refurbishment can be undertaken to facilitate continuation of the current function, including technical modernisation (renovation) and a change of space plan or a change of function to new use

3.1.17**sustainable refurbishment**

refurbishment to a condition that maximize the environmental, social and economic performance,

Note 1 to entry: Sustainable refurbishment shall fulfil authority's sustainability regulations

Note 2 to entry: Sustainable refurbishment aims to fulfil UN Sustainable Development Goals relevant for the built environment

3.1.18**renovation**

upgrade of components, elements or systems including energy efficiency upgrading (technical modernisation)

Note 1 to entry: This also applies when upgrading is required by e.g. changed regulations

3.1.19**repair**

returning an item to an acceptable condition through the renewal, replacement or mending worn, damaged or degraded parts

[SOURCE: EN 15643:2020]

3.1.20**replacement**

substitution of a whole construction product, building element or installation with the same or an equivalent similar product, building element or installation in order to re-establish the required functional and technical performance or to fulfil new regulations

[SOURCE: EN 15643:2020]

Note 1 to entry: Replacement of a component according to current requirement. Ex. replacing an old window, the new one should be according U-value of today

3.1.21**re-use**

any operation through which products that are not waste are used again for the same purpose for which they were conceived or used for other purposes without reprocessing

[SOURCE: EN 15643:2020]

3.1.22**social aspect**

aspect of construction works, assembled system (part of works), processes or services related to their life cycle that can change to society or quality of life

[SOURCE: EN 15643:2020]

3.1.23**social impact**

any change to society or quality of life, whether adverse or beneficial, wholly or partially resulting from social aspects

[SOURCE: EN 15643:2020]

3.1.24**social performance**

performance related to social impacts and social aspects

[SOURCE: EN 15643:2020]

3.1.25**sustainability assessment of buildings**

combination of the assessments of environmental -, social -, economic -, usability - and adaptability performance taking into account the technical and functional requirements

[SOURCE: EN 15643:2020]

Note 1 to entry: will make it possibility to set up different requirement profiles for the asset

Note 2 to entry: embodied and operational impact requirements should be included

3.1.26**sustainable building**

building that fulfils all necessary economic, environmental and social as well as technical and functional requirements, based on its intended use over the lifecycle of the building

ITeH STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/61829831-1862-4d43-ad61-e81474136cc3/osist-pren-17680-2021>