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Sustainability in buildings and civil engineering works — Framework for methods of assessment of the environmental, social and economic performance of construction works as a basis for sustainability assessment —

Part 1: Buildings

Développement durable dans les bâtiments et les ouvrages de génie civil — Cadre méthodologique de l'évaluation au sens du développement durable des performances environnementales, sociales et économiques des ouvrages de construction —

Partie 1: Bâtiments



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Contents

	Page
Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
3.1 Terms relating to construction works and construction products.....	2
3.2 Terms relating to performance.....	5
3.3 Terms relating to life cycle approaches.....	7
3.4 Terms relating to resources and materials.....	11
3.5 Miscellaneous terms.....	12
4 Principles and application	13
5 The object of assessment	13
5.1 General.....	13
5.1.1 Perspectives on a building.....	13
5.1.2 A building as a place in which to live, work or socialize.....	14
5.1.3 A building as a part of the built environment.....	14
5.1.4 A building as an end-use product and an integrated assembly of products.....	14
5.1.5 A building as an economic asset.....	15
5.1.6 A building as a project to be managed from its inception to end-of-life.....	15
5.1.7 A building as a system in operation.....	16
5.1.8 A place for shelter and protection of contents.....	16
5.1.9 A building as an object that embodies cultural value.....	16
5.1.10 A building as either an enduring or short-term asset.....	16
5.2 System boundary.....	18
5.3 Functional equivalent.....	18
5.4 The building life cycle.....	19
5.4.1 General.....	19
5.4.2 The use of modules in the building assessment.....	20
5.4.3 The life cycle of building components.....	24
5.5 Relevance of local contexts.....	25
6 Framework for methods of assessment	26
6.1 General.....	26
6.2 Assessment method documentation.....	26
6.3 Purpose of assessment.....	27
6.4 Statement of assumptions and scenarios.....	27
6.5 The structured list of issues related to the areas of concern included in the assessment.....	27
6.5.1 Environmental issues.....	27
6.5.2 Social issues.....	29
6.5.3 Economic issues.....	36
6.5.4 Issues related to the management processes for construction, delivery, operation and maintenance.....	39
6.5.5 Additional issues.....	41
7 Methods for quantification	41
7.1 General.....	41
7.2 Information for the assessment.....	42
7.2.1 Sources.....	42
7.2.2 Quality.....	43
7.3 Traceability and transparency.....	43
7.4 Multi-effects and double counting.....	43
7.5 Using performance levels.....	43
7.6 Weighting and aggregation.....	44

This is a preview of "ISO 21931-1:2022". [Click here to purchase the full version from the ANSI store.](#)

8	Evaluation of assessment results	45
8.1	General.....	45
8.2	Comparability of the results.....	45
9	Assessment report	46
Annex A (informative)	Extent and application of the assessment method	48
Annex B (informative)	Responsible sourcing	50
Annex C (informative)	Stakeholder involvement	52
Annex D (informative)	Potential multi-effects of indicators	53
Bibliography	56

This is a preview of "ISO 21931-1:2022". [Click here to purchase the full version from the ANSI store.](#)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 59, *Buildings and civil engineering works*, Subcommittee SC 17, *Sustainability in buildings and civil engineering works*.

This second edition cancels and replaces the first edition (ISO 21931-1:2010), which has been technically revised.

The main changes are as follows:

- the scope has been expanded from a framework for methods of assessment of environmental performance to also include provisions related to methods for the assessment of economic and social performance of construction works, as an overall basis for sustainability assessment.

A list of all parts in the ISO 21931 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Buildings and constructed assets have an impact on sustainable development. Therefore, the internationally recognized Sustainable Development Goals (SDGs) formulated by the United Nations also apply to the construction and real estate industry. Amongst other things, the construction of sustainable and resilient buildings is required as part of targets towards sustainable cities and communities formulated in SDG 11. This goal is closely interrelated with the other SDGs. Both providers and buyers of real estate need clear characteristics and assessment criteria in order to evaluate, assess and communicate the contribution of buildings to sustainable development.

The provision and use of buildings in the sense of constructed shelters is a prerequisite for the residential sector, as well as for trade and industry. Buildings constitute both a living and working environment and affect the safety, comfort and performance of the user, as well as the quality of coexistence/life in a community. Aspects of urban integration and architectural design of buildings are important for the overall quality of the built environment: they can represent a cultural value. Buildings and constructed assets represent a high economic value both from a private, micro-economic and macro-economic point of view. Their construction and maintenance contribute to the preservation and creation of jobs, whereas the building-related negative effects on the environment contribute to external costs. The construction, use and maintenance of buildings are associated with significant energy and material flows, as well as adverse effects on the local and global environment. This includes health risks and risks to the environment. The type of design, construction and operation of buildings, together with the future construction of building stocks, have a great effect on sustainable development.

Against the background of climate change and the related SDG Goal 13 on Climate Action, and the importance of energy-saving, resource-saving, and healthy and cost-effective design, construction and management of buildings, there is a need for the creation of a basis for the assessment of environmental, social and economic performance; this is one purpose of this document. This document aims to bridge the gap between regional and national methods for the assessment of the environmental, social and economic performance of buildings, by providing a common framework for their expression. Practical, relevant rules and recommendations concerning methods for the assessment of the environmental, social and economic performance of buildings, which can exist on either a national or regional basis, can be examined and improved by the use of the framework of assessment, which is the basis of this document. Furthermore, general criteria for the determination and assessment of the environmental, social and economic performance of buildings are specified. These are derived from the areas of protection of sustainable development according to ISO 21929-1. The contribution of individual buildings to sustainable development can only be assessed if the technical and functional requirements are met and the results of the assessment of the environmental, social and economic performance are simultaneously and equally weighted.

Life-cycle-based approaches play an increasingly significant role for setting performance criteria within methods of assessment of environmental, social and economic performance of buildings. However, methods of assessment of the environmental, economic and social performance of buildings need to refer to limited criteria and seek a balance between rigour and practicality.

Target conflicts can occur when attempting to plan environmentally- and health-friendly buildings, which are characterized by a high user acceptance and are at the same time economically advantageous. These target conflicts can be identified through the combined analysis of ecological, social and economic aspects. Already in the planning phase, the consequences of decisions on the energy and material flows with resulting environmental impacts, on the life cycle costs as well as on the social performance can be identified and influenced. The effects of decisions on the size and shape, the construction method, the choice of materials or the energy sources, among others, can be analysed.

The subject of this document is the building on its site (curtilage) throughout its life cycle. This document can be used to support planning and decision-making for new constructions and refurbishment actions. This particularly affects the comparison of variants, the provision of information for sustainability assessment and certification systems, as well as the provision of information for funders, valuers, facility and portfolio managers, risk analysts and others.

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Such assessments can also be used for benchmarking performance and monitoring progress towards improvement of performance; their communication provides a basis for demonstrating and communicating the result of efforts to improve environmental, social and economic performance in construction works.

This document aims at builders, planners and developers of sustainability assessment systems for individual buildings.

This document is one of a suite of documents dealing with sustainability in building construction, which includes ISO 21929-1, ISO 21930 and ISO 15392, along with the terminology of sustainability in building construction (ISO/TR 21932). The relationship among the documents is illustrated in [Figure 1](#).

ISO/TC59/SC17	Environmental aspects	Social aspects	Economic aspects	Technical aspects	Functional aspects	
Principles	ISO 15392 General principles					
	ISO/TS 12720 Guidelines on the application of ISO 15392					
	ISO/TR 21932 A review of terminology					
Buildings (Parts 1) + Civil engineering works, CEW (Parts 2)	ISO 21929-1 Framework for the development of indicators – Part 1: Buildings					
	ISO 21929-2 Framework for the development of indicators – Part 2: CEW					
	ISO 21931-1 Framework for methods of assessment of the environmental, social and economic performance of construction works as a basis for sustainability assessment – Part 1: Buildings					
	ISO 21931-2 Framework for methods of assessment of the environmental, social and economic performance of construction works as a basis for sustainability assessment – Part 2: Civil engineering works					
	ISO 20887 Design for disassembly and adaptability – Principles, requirements and guidance					
		ISO 16745-1+ 2 Carbon metric of an existing building during use stage – Part 1: Calculation, reporting, communication. – Part 2: Verification				
		ISO 21678 Indicators and benchmarks – Principles, requirements and guidelines				
Products	ISO 22057 Data templates for the use of environmental product declarations (EPDs) for construction products in building information modelling (BIM)					
	ISO 21930 Core rules for environmental product declarations of construction products and services					

Figure 1 — Suite of related documents for sustainability