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Sustainability in buildings and civil engineering works — Carbon metric of an existing building during use stage —

Part 2: Verification

Développement durable dans les bâtiments et les ouvrages de génie civil — Métrique du carbone des bâtiments existants pendant la phase opérationnelle —

Partie 2: Vérification

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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 on 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 the following URL: 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 edition of ISO 16745-2 together with ISO 16745-1 cancels and replaces ISO 16745:2015, of which they constitute a minor revision.

ISO 16745:2015, Clause 7 has been transferred to ISO 16745-2 to keep the requirements for the verification of the carbon metric declaration independent of the requirements for the carbon metric calculation, reporting and communication, as well as other minor editorial modifications.

A list of all the parts of the ISO 16745 series can be found on the ISO website.

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Introduction

Buildings contribute approximately one-third of global greenhouse gas (GHG) emissions. With its high share of emissions, the building and construction sector has the responsibility to take the global lead in implementing strategies to reduce GHG emissions. The building and construction sector has more potential and opportunity to deliver quick, deep, and cost-effective GHG mitigation than any other sectors. Carbon dioxide (CO_2) emissions contribute to global warming, which is one of the most recognized environmental impacts attributable to buildings.

In this context, measurement and reporting of GHG emissions from existing buildings are critical for enabling significant and cost-effective GHG mitigation. Currently, there has not been a globally agreed method established to measure, report, and verify potential reductions of GHG emissions from existing buildings in a consistent and comparable way. If such a method existed, it could be used as a universal tool for measurement and reporting of GHG emissions, providing the foundation for accurate performance baselines of buildings to be drawn, national targets to be set, and carbon trading to occur on a level playing field.

In principle, accurate and precise reporting can only be achieved if GHG emissions (and removals) from all life cycle stages of buildings are measured and/or quantified. However, not all countries in the world have sufficient capacity or resources to use and apply life cycle assessment (LCA) methodologies.

Respecting the need for collaboration on a global scale, the need exists for a metric that is usable not only in countries with sufficient number of experts and a precise database, but also in those countries where experts' services are limited and databases have considerable gaps. For instance, with the potential for global scale carbon trading within building-related sectors, a method that is consistently usable in both the well-developed and developing world is needed.

Operational energy use in buildings typically accounts for 70 % to 80 % of energy use over the building life cycle. Therefore, the operating stage of the building's life cycle is the focus of measurement and reporting of direct and indirect GHG emissions.

This document aims to set out a globally applicable common method of measuring and reporting of associated GHG emissions (and removals) attributable to existing buildings, by providing requirements for the determining and reporting of a carbon metric(s) of a building.

The carbon metric is a measure (a partial carbon footprint) that is based on energy use data and related building information for an existing building in operation. It provides information related to the calculation of GHG emissions and can be used as an environmental indicator. Using this approach, the metric and its protocol can be applied by all stakeholders in both developing and well-developed countries, where building energy consumption and other relevant data can be retrieved or collected, making it useful and globally transferable.

This document aims to be practical for many stakeholders (i.e. not only for the building profession), who are expected to use the carbon metric of a building as reference for decision making in their business activities, governmental policies, and as a baseline for benchmarking.

The simplicity of approach provides applicability at all scales, ranging from cities and building portfolios to individual buildings.

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Sustainability in buildings and civil engineering works — Carbon metric of an existing building during use stage —

Part 2: Verification

1 Scope

This document specifies requirements for the verification of a carbon metric calculation for GHG emissions of an existing building during the use stage, where the carbon metric calculation is performed in accordance with ISO 16745-1.

NOTE Before verification, the carbon metric according to ISO 16745-1 is a claim. Only after the verification according to this document can the carbon metric be communicated as a carbon metric declaration.

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.

ISO 16745-1:2017, *Environmental performance of buildings — Carbon metric of a building during use stage — Part 1: Calculation, reporting and communication*

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 http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
carbon metric
sum of annual greenhouse gas emissions and removals, expressed as CO_2 equivalents, associated with the use stage of a building

Note 1 to entry: For the purposes of this definition, the following terms are used as per their definitions in the following reference documents: *greenhouse gas emissions*, *removals* (ISO 14064-1:2006, 2.5), *CO_2 equivalents* (ISO 14064-1:2006, 2.6) and *building* (ISO 6707-1:2014, 3.1.3).

3.2
verifier
party who makes sure or demonstrates that the process of measurement of a *carbon metric* (3.1) is true, accurate, and justified

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