INTERNATIONAL STANDARD

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Second edition
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Greenhouse gases —

Part 3: Specification with guidance for the verification and validation of greenhouse gas statements

Gaz à effet de serre —

Partie 3: Spécifications et lignes directrices pour la vérification et la validation des déclarations des gaz à effet de serre

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

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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 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 207, *Environmental management*, Subcommittee SC 7, *Greenhouse gas management and related activities*.

This second edition cancels and replaces the first edition (ISO 14064-3:2006), which has been technically revised. The main changes compared with the previous edition are as follows.

— The structure of the document has been changed so that verification and validation are discussed in sequence (see Clauses 6 and 7) rather than in parallel, because the processes of verification and validation are significantly different.

— The definitions of verification and validation and other key terms have been changed (see Clause 3).

— A new section on validation has been added (see Clause 7). It applies to future estimates of emissions, removals, emission reductions and removal enhancements. The purpose of validation is to provide assurance on the assumptions, limitations and methods used to develop a GHG statement.

— A new Annex A has been added that defines requirements for verifiers to follow when undertaking engagements at a limited level of assurance.

— A new Annex B has been added on considerations for verification.

— A new Annex C has been added on a new process called agreed-upon procedures (AUP), which allows for a selection of verification activities to be performed and reported upon. No opinion is expressed on the result of an AUP engagement as the intended user(s) are responsible for interpreting the information reported on by the verifier.

— A new Annex D has been added that provides guidance on how verifiers and validators can provide statements on engagements that are mixed.

— Requirements and guidance on the use of levels of assurance have been added.

A list of all parts in the ISO 14064 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

0.1 Background

Climate change arising from anthropogenic activity has been identified as one of the greatest challenges facing the world and will continue to affect business and citizens over future decades.

Climate change has implications for both human and natural systems and could lead to significant impacts on resource availability, economic activity and human wellbeing. In response, international, regional, national and local initiatives are being developed and implemented by public and private sectors to mitigate greenhouse gas (GHG) concentrations in the Earth's atmosphere as well as to facilitate adaptation to climate change.

There is a need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge. ISO produces documents that support the transformation of scientific knowledge into tools that will help address climate change.

GHG initiatives on mitigation rely on the quantification, monitoring, reporting and verification of GHG emissions and/or removals.

The ISO 14060 family of standards provides clarity and consistency for quantifying, monitoring, reporting and validating or verifying GHG emissions and removals to support sustainable development through a low-carbon economy and to benefit organizations, project proponents and interested parties worldwide. Specifically, the use of the ISO 14060 family of standards:

— enhances the environmental integrity of GHG quantification;

— enhances the credibility, consistency and transparency of GHG quantification, monitoring, reporting, verification and validation;

— facilitates the development and implementation of GHG management strategies and plans;

— facilitates the development and implementation of mitigation actions through emission reductions or removal enhancements;

— facilitates the ability to track performance and progress in the reduction of GHG emissions and/or increase in GHG removals.

Applications of the ISO 14060 family of standards include:

— corporate decisions, such as identifying emission reduction opportunities and increasing profitability by reducing energy consumption;

— carbon risk management, such as the identification and management of risks and opportunities;

— voluntary initiatives, such as participation in voluntary GHG registries or sustainability reporting initiatives;

— GHG markets, such as the buying and selling of GHG allowances or credits;

— regulatory/government GHG programmes, such as credit for early action, agreements or national and local reporting initiatives.

ISO 14064-1 details principles and requirements for designing, developing, managing and reporting organization-level GHG inventories.

It includes requirements for determining GHG emission and removal boundaries, quantifying an organization's GHG emissions and removals, and identifying specific company actions or activities aimed at improving GHG management.

It also includes requirements and guidance on inventory quality management, reporting, internal auditing and the organization's responsibilities in verification activities.

ISO 14064-2 details principles and requirements for determining baselines, and monitoring, quantifying and reporting of project emissions. It focuses on GHG projects or project-based activities specifically designed to reduce GHG emissions and/or enhance GHG removals. It provides the basis for GHG projects to be verified and validated.

This document details requirements for verifying GHG statements related to GHG inventories, GHG projects, and carbon footprints of products. It describes the process for verification or validation, including verification or validation planning, assessment procedures, and the evaluation of organizational, project and product GHG statements.

ISO 14065 defines requirements for bodies that validate and verify GHG statements. Its requirements cover impartiality, competence, communication, validation and verification processes, appeals, complaints, and the management system of validation and verification bodies. It can be used as a basis for accreditation and other forms of recognition in relation to the impartiality, competence, and consistency of validation and verification bodies.

ISO 14066 specifies competence requirements for validation teams and verification teams. It includes principles and specifies competence requirements based on the tasks that validation teams or verification teams must be able to perform.

ISO 14067 defines the principles, requirements and guidelines for the quantification of carbon footprint of products. The aim of ISO 14067 is to quantify GHG emissions associated with the life cycle stages of a product, beginning with resource extraction and raw material sourcing and extending through the production, use and end-of-life stages of the product.

ISO/TR 14069 assists users in the application of ISO 14064-1, providing guidelines and examples for improving transparency in the quantification of emissions and their reporting. It does not provide additional guidance to ISO 14064-1.

Figure 1 illustrates the relationship among the ISO 14060 family of GHG standards.

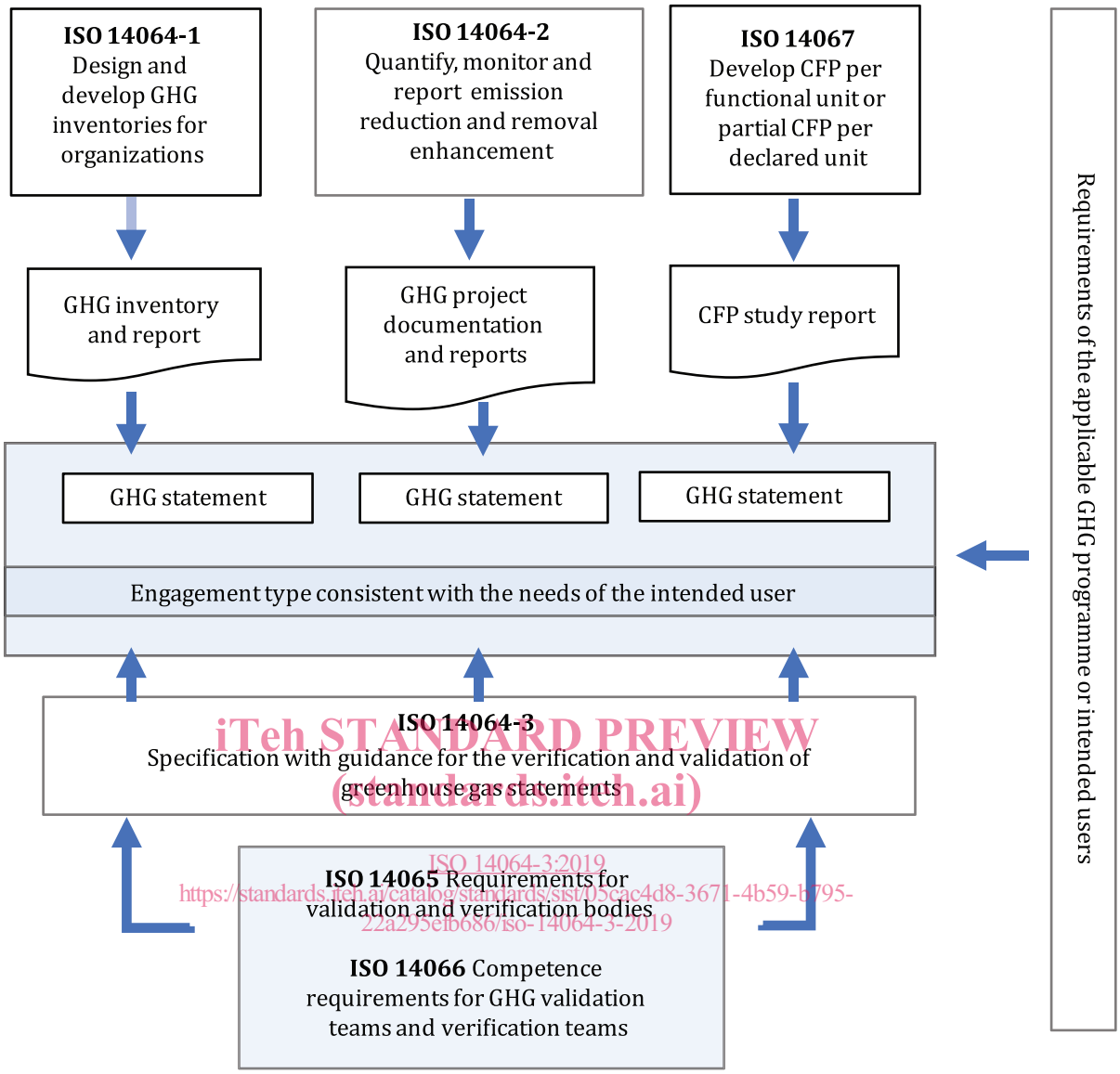

Figure 1 — Relationship among the ISO 14060 family of GHG standards

0.2 Approach of this document

This document details requirements for verifying GHG statements related to GHG inventories, GHG projects and carbon footprints of products. It describes verification activities that can enable a verifier to issue an opinion on GHG statements regarding emissions that are attributed to any organization, project or normalized unit (e.g. product). The data and information that are subject to verification are historical in nature.

This document also details requirements for validating the assumptions, limitations and methods that support a statement about the outcome of future activities. Validation differs from verification because its subject is data and information that are prospective and generally based on past performance. This document recognizes the different process requirements that apply to the validation of assumptions and methods.

This document can be used by first-, second- and third-party GHG verifiers and validators. It is regime neutral, meaning that it can be used for verifying and validating GHG statements regardless of the criteria used to develop those statements.

This document provides requirements and guidance for those persons performing verification and validation of GHG data and information. It is intended to be useful to a broad range of potential users, including:

— first-, second- and third-party GHG verifiers and validators;

— organizations and individuals involved in developing and commissioning GHG projects;

— organizations conducting internal audits of their GHG data and information;

— organizations involved in GHG verifier or validator training;

— voluntary and mandatory GHG programme administrators;

— investor, finance and insurance communities;

— regulators and those involved in the accreditation and conformity assessment of emissions trading and emission or removal offset programmes.

Figure 2 explains the application of verification, validation and AUP.

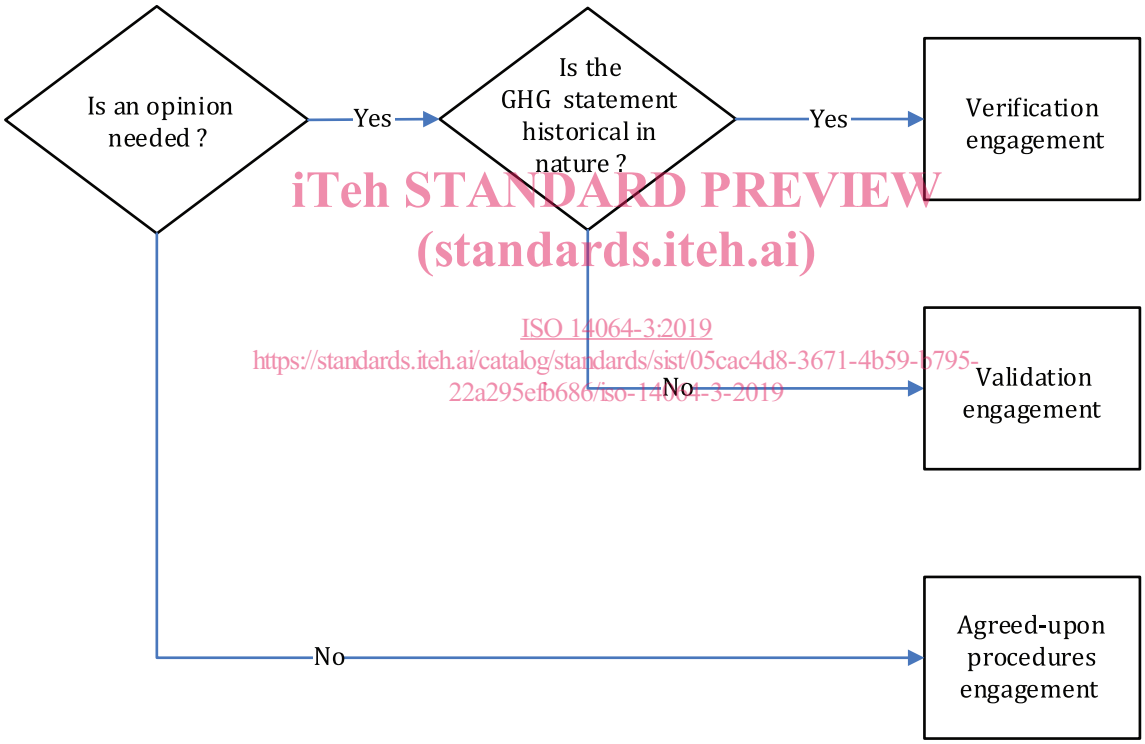

Figure 2 — Decision process for engagement type

In this document, validation is described as a specific type of engagement that assesses the assumptions, limitations and methods that generate hypothetical or projected data and information, i.e. estimates of the outcomes of future events.

0.3 Significance of the terms “explain” and “justify” in this document

Some clauses require users of this document to explain and justify the use of certain approaches or decisions taken.

Explanation generally includes:

a) how approaches were used or decisions taken;

b) why approaches were chosen or decisions made.

Justification has two more criteria:

c) explain why alternative approaches were not chosen;

d) provide supporting data or analysis.

Greenhouse gases —

Part 3: Specification with guidance for the verification and validation of greenhouse gas statements

1 Scope

This document specifies principles and requirements and provides guidance for verifying and validating greenhouse gas (GHG) statements.

It is applicable to organization, project and product GHG statements.

The ISO 14060 family of standards is GHG programme neutral. If a GHG programme is applicable, requirements of that GHG programme are additional to the requirements of the ISO 14060 family of standards.

2 Normative references

There are no normative references in this document.

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:

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

— IEC Electropedia: available at http://www.electropedia.org/

3.1 Terms related to greenhouse gases

3.1.1
greenhouse gas
GHG
gaseous constituent of the atmosphere, both natural and anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere and clouds

Note 1 to entry: GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6).

Note 2 to entry: *Criteria* (3.6.10) may specify other radiative forcing constituents.

3.1.2
global warming potential
GWP
index, based on radiative properties of *GHGs* (3.1.1), measuring the radiative forcing following a pulse emission of a unit mass of a given GHG in the present-day atmosphere integrated over a chosen time horizon, relative to that of carbon dioxide (CO_2)

Note 1 to entry: A list of GHGs with their recognized GWPs is provided in the latest Intergovernmental Panel on Climate Change (IPCC) Assessment Report[15].

3.1.3
greenhouse gas emission or removal factor
GHG emission or removal factor
coefficient relating GHG activity data with *GHG emissions* (3.3.2) or *GHG removals* (3.3.4)

3.1.4
carbon footprint of product
CFP
sum of *GHG emissions* (3.3.2) and *GHG removals* (3.3.4) in a product system, expressed as CO_2 equivalents and based on a life cycle assessment using the single impact category of climate change

Note 1 to entry: A CFP can be disaggregated into a set of figures identifying specific GHG emissions and GHG removals. A CFP can also be disaggregated into the stages of the life cycle.

Note 2 to entry: The results of the quantification of the CFP are documented in the CFP study report, called *GHG statement* (3.4.3) in this document, expressed in mass of CO_2e per functional unit.

[SOURCE: ISO 14067:2018, 3.1.1.1, modified — A reference to "GHG statement" has been added to Note 2 to entry.]

3.2 Terms related to entities involved in GHG verification and validation

3.2.1
greenhouse gas programme
GHG programme
voluntary or mandatory international, national or subnational system or scheme that registers, accounts or manages *GHG emissions* (3.3.2), *GHG removals* (3.3.4), *GHG emission reductions* (3.4.8) or *GHG removal enhancements* (3.4.9) outside the *organization* (3.2.2) or *GHG project* (3.4.1)

Note 1 to entry: In this document, a GHG programme may also register, account or manage GHG emissions, GHG removals, GHG emission reductions or GHG removal enhancements from products.

3.2.2
organization
person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

3.2.3
responsible party
person or persons responsible for the provision of the *GHG statement* (3.4.3) and the supporting *GHG* (3.1.1) information

Note 1 to entry: The responsible party can be either individuals or representatives of an *organization* (3.2.2), *GHG project* (3.4.1) or product, and can be the party who engages the *verifier* (3.2.6) or *validator* (3.2.7).

3.2.4
intended user
individual or *organization* (3.2.2) identified by those reporting GHG-related information as being the one who relies on that information to make decisions

Note 1 to entry: The intended user can be the *client* (3.2.5), the *responsible party* (3.2.3), *GHG programme* (3.2.1) administrators, regulators, the financial community or other interested parties, such as local communities, government departments or non-governmental organizations.

3.2.5
client
organization (3.2.2) or person requesting *verification* (3.6.2) or *validation* (3.6.3)

Note 1 to entry: The client could be the *responsible party* (3.2.3), *GHG programme* (3.2.1) administrator or other interested party.

3.2.6
verifier
competent and impartial person with responsibility for performing and reporting on a *verification* (3.6.2)

3.2.7
validator
competent and impartial person with responsibility for performing and reporting on a *validation* (3.6.3)

3.2.8
verification/validation team
person or persons conducting *verification* (3.6.2) / *validation* (3.6.3) activities

Note 1 to entry: One person of the verification/validation team is appointed as the team leader.

3.2.9
independent reviewer

competent person, who is not a member of the *verification/validation team* (3.2.8), who reviews the *verification* (3.6.2) or *validation* (3.6.3) activities and conclusions

3.2.10
retracing
test (3.6.21) that uncovers errors in *GHG* (3.1.1) information by following *data trails* (3.5.2) back to primary data

3.2.11
tracing
test (3.6.21) that uncovers errors in *GHG* (3.1.1) information by following primary data to GHG information

3.3 Terms related to the GHG inventory

3.3.1
greenhouse gas source
GHG source
process that releases a *GHG* (3.1.1) into the atmosphere

3.3.2
greenhouse gas emission
GHG emission
release of a *GHG* (3.1.1) into the atmosphere

3.3.3
greenhouse gas sink
GHG sink
process that removes a *GHG* (3.1.1) from the atmosphere