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Second edition
2019-04

Greenhouse gases —

Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements

Gaz à effet de serre —

Partie 2: Spécifications et lignes directrices, au niveau des projets, pour la quantification, la surveillance et la rédaction de rapports sur les réductions d'émissions ou les accroissements de suppressions des gaz à effet de serre

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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 14064-2:2006), which has been technically revised. The main changes compared with the previous edition are as follows:

— the concept of additionality and the baseline scenario have been changed;

— text related to the Kyoto mechanism has been deleted.

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 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.

This document 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.

ISO 14064-3 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 have to 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.

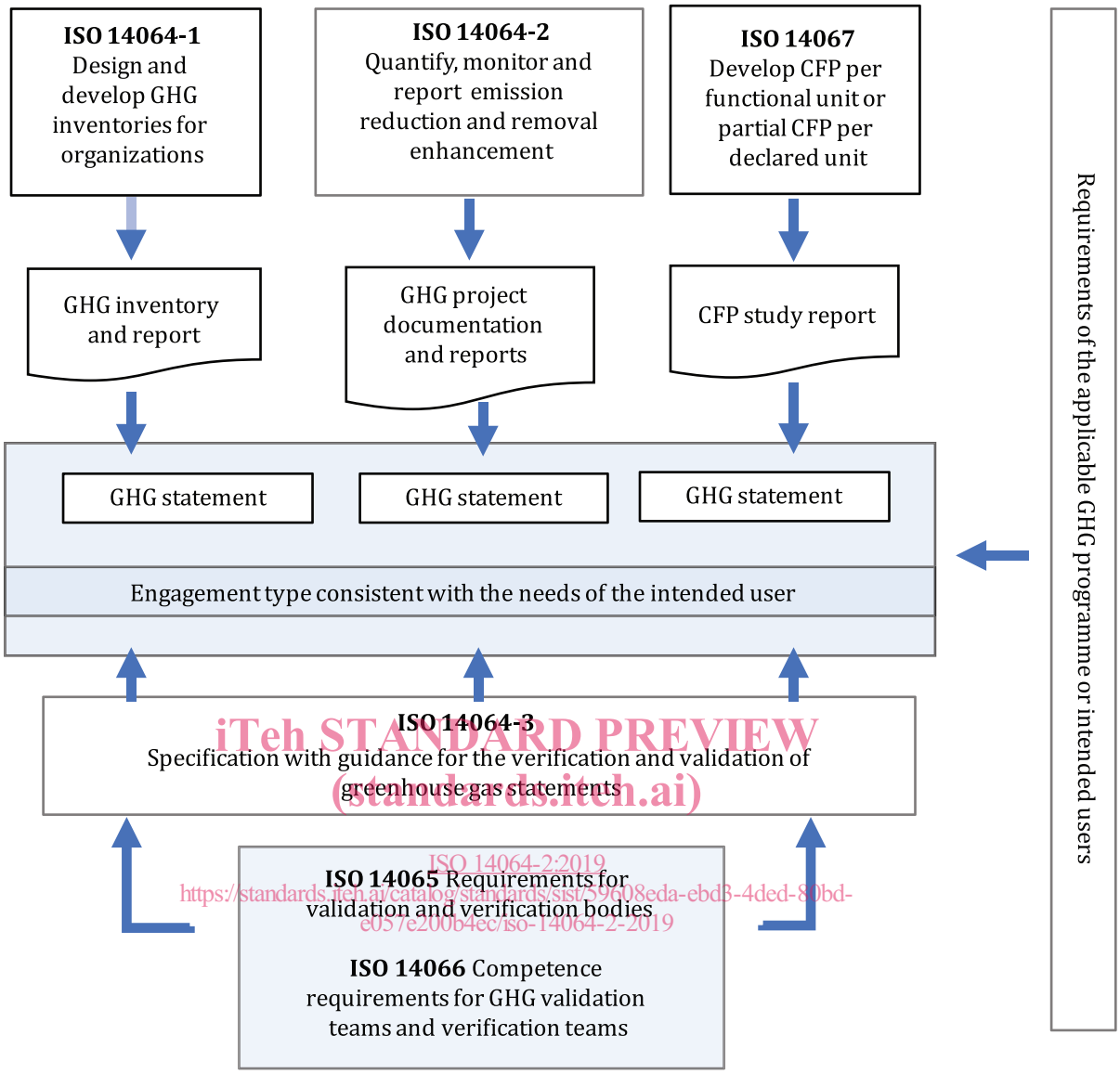

Figure 1 — Relationship among the ISO 14060 family of GHG standards

0.2 Approach of this document

A standardized approach for quantification, monitoring and reporting is needed for GHG projects and any resulting GHG emission reductions and/or removal enhancements, in order that they are comparable among intended users and GHG programmes. Accordingly, this document specifies a general, GHG programme-neutral framework and uses terms and concepts designed to be compatible with other requirements and guidance from relevant GHG policies and programmes, good practice, legislation and standards. Reference [14] provides an example of good practice guidance.

This document contains general requirements for GHG projects and does not prescribe specific criteria and procedures. GHG programmes (e.g. GHG offset programmes) may apply additional requirements on GHG projects in relation to additionality, specific methodologies, project baselines, etc. Although this document leaves specific criteria and requirements related to additionality to individual programmes, it does require that the GHG project should result in emission reductions or removal enhancements in addition to what would have happened in the absence of the project.

This document requires the project proponent to identify and select GHG sources, sinks and reservoirs (SSRs) relevant for the GHG project and to determine the GHG baseline. GHG project emissions/removals and baseline scenario emissions/removals are quantified separately, and the emission reductions

and/or removal enhancements are calculated by comparison of the GHG project emissions/removals with the baseline scenario emissions/removals. It is important to demonstrate that the GHG baseline is consistent with the principles of this document, including conservativeness and accuracy, in order to increase the level of confidence that GHG emission reductions and/or removal enhancements are credible and not over-estimated. Generally, the GHG baseline could be determined based on historical information or setting of alternative scenarios according to the requirements of the intended user/programme. For both the project emissions and the baseline scenario, the quantification, monitoring and reporting of GHG emissions and removals are based on procedures developed by the project proponent or adopted from a GHG programme.

This document does not use the term "project boundary". In order to be compatible with the broadest range of GHG programmes, project boundary is referred to as SSR that are relevant to the project. If any GHG programme requires a specific time period or methodology, these can be compared to the GHG baseline and estimated project emissions. Any discrepancies are recorded and reported in the GHG report.

This document does not specify requirements for verification/validation bodies or verifiers/validators in providing assurance against GHG statements or claims by GHG projects. Such requirements may be specified by the authority of the applicable GHG programme or can be found in ISO 14064-3. The process to recognize certified GHG emission reductions or removal enhancements as GHG units, credits or offsets is an extension of the GHG project cycle. The certification and crediting process, which may be under the authority of a GHG programme and may vary among GHG programmes, is also not included in the specifications of this document.

Annex A provides guidance on the use of this document.

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 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements

1 Scope

This document specifies principles and requirements and provides guidance at the project level for the quantification, monitoring and reporting of activities intended to cause greenhouse gas (GHG) emission reductions or removal enhancements. It includes requirements for planning a GHG project, identifying and selecting GHG sources, sinks and reservoirs (SSRs) relevant to the project and baseline scenario, monitoring, quantifying, documenting and reporting GHG project performance and managing data quality.

The ISO 14060 family of standards is GHG programme neutral. If a GHG programme is applicable, the 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 relating 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: Other examples of GHGs are provided in the latest Intergovernmental Panel on Climate Change (IPCC) Assessment Report[11].

3.1.2
greenhouse gas source
GHG source
process that releases a *GHG* (3.1.1) into the atmosphere

3.1.3
greenhouse gas sink
GHG sink
process that removes a *GHG* (3.1.1) from the atmosphere

3.1.4
greenhouse gas reservoir
GHG reservoir
component, other than the atmosphere, that has the capacity to accumulate *GHGs* (3.1.1), and to store and release them

3.1.5
greenhouse gas emission
GHG emission
release of a *GHG* (3.1.1) into the atmosphere

3.1.6
greenhouse gas removal
GHG removal
withdrawal of a *GHG* (3.1.1) from the atmosphere by *GHG sinks* (3.1.3)

3.1.7
greenhouse gas emission reduction
GHG emission reduction
quantified decrease in *GHG emissions* (3.1.5) between a *baseline scenario* (3.2.6) and the *GHG project* (3.2.3)

3.1.8
greenhouse gas removal enhancement
GHG removal enhancement
quantified increase in *GHG removals* (3.1.6) between a *baseline scenario* (3.2.6) and the *GHG project* (3.2.3)

3.1.9
greenhouse gas emission factor
GHG emission factor
coefficient relating GHG activity data with the *GHG emission* (3.1.5)

3.1.10
greenhouse gas removal factor
GHG removal factor
coefficient relating GHG activity data with the *GHG removal* (3.1.6)

3.1.11
affected greenhouse gas source, sink and reservoir
affected GHG SSR
GHG source (3.1.2), *GHG sink* (3.1.3) and *GHG reservoir* (3.1.4) influenced by a *GHG project* (3.2.3), through changes in market demand or supply for associated products or services, or through physical displacement

Note 1 to entry: An affected GHG SSR is generally off the project site.

Note 2 to entry: *GHG emission reductions* (3.1.7) or *GHG removal enhancements* (3.1.8) offset by affected GHG SSRs are often referred to as leakage.

3.1.12
controlled greenhouse gas source, sink and reservoir
controlled GHG SSR
GHG source (3.1.2), *GHG sink* (3.1.3) and *GHG reservoir* (3.1.4) where the operation is under the direction and influence of the *GHG project proponent* (3.3.2) through financial, policy, management or other instruments

Note 1 to entry: A controlled GHG SSR is generally on the GHG project site.

3.1.13
related greenhouse gas source, sink and reservoir
related GHG SSR
GHG source (3.1.2), *GHG sink* (3.1.3) and *GHG reservoir* (3.1.4) that has material or energy flows into, out of, or within the *GHG project* (3.2.3)

Note 1 to entry: A related GHG SSR is generally upstream or downstream from the GHG project, and can be either on or off the GHG project site.

Note 2 to entry: A related GHG SSR also can include activities related to design, construction and decommissioning of a GHG project.

Note 3 to entry: "Material flow" is defined in ISO 14051:2011, 3.14.

Note 4 to entry: "Energy flow" is defined in ISO 14040:2006, 3.13.

3.1.14
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[11].

3.1.15
carbon dioxide equivalent
CO_2e
unit for comparing the radiative forcing of a *GHG* (3.1.1) to that of carbon dioxide

3.2 Terms relating to the GHG quantification process

3.2.1
greenhouse gas statement
GHG statement
DEPRECATED: GHG assertion
factual and objective declaration that provides the subject matter for the *verification* (3.4.2) or *validation* (3.4.3)

Note 1 to entry: The GHG statement could be presented at a point in time or could cover a period of time.

Note 2 to entry: The GHG statement provided by the responsible party should be clearly identifiable, capable of consistent evaluation or measurement against suitable criteria by a *verifier* (3.4.4) or *validator* (3.4.5).

Note 3 to entry: The GHG statement could be provided in *a GHG report* (3.2.4), *GHG project* (3.2.3) plan or CFP study report. "CFP study report" is defined in ISO 14067:2018, 3.1.1.5.

3.2.2
greenhouse gas information system
GHG information system
policies, processes and procedures to establish, manage, maintain and record *GHG* (3.1.1) information

Note 1 to entry: Maintain includes the amendment, removal and addition of GHG information.

3.2.3
greenhouse gas project
GHG project
activity or activities that alter the conditions of a *GHG baseline* (3.2.5) and which cause *GHG emission reductions* (3.1.7) or *GHG removal enhancements* (3.1.8)

Note 1 to entry: Activity can include technologies used to alter the conditions of the GHG baseline.

3.2.4
greenhouse gas report
GHG report
standalone document intended to communicate an organization's or *GHG project's* (3.2.3) GHG-related information to its *intended users* (3.3.1)

Note 1 to entry: A GHG report can include a *GHG statement* (3.2.1).

3.2.5
greenhouse gas baseline
GHG baseline
quantitative reference(s) of *GHG emissions* (3.1.5) and/or *GHG removals* (3.1.6) that would have occurred in the absence of a *GHG project* (3.2.3) and provides the *baseline scenario* (3.2.6) for comparison with project GHG emissions and/or GHG removals

3.2.6
baseline scenario
hypothetical reference case that best represents the conditions most likely to occur in the absence of a proposed *GHG project* (3.2.3)

3.2.7
monitoring
continuous or periodic assessment of *GHG emissions* (3.1.5), *GHG removals* (3.1.6) or other GHG-related data

3.2.8
uncertainty
parameter associated with the result of quantification that characterizes the dispersion of the values that could be reasonably attributed to the quantified amount

Note 1 to entry: Uncertainty information typically specifies quantitative estimates of the likely dispersion of values and a qualitative description of the likely causes of the dispersion and can be included in a greenhouse gas report.

3.3 Terms relating to organizations and interested parties

3.3.1
intended user
individual or organization 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, the responsible party, *GHG programme* (3.3.4) administrators, regulators, the financial community or other affected *interested parties* (3.3.3), such as local communities, government departments or non-governmental organizations.

