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Second edition
2018-12

Greenhouse gases —

Part 1:

Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

Gaz à effet de serre —

*Partie 1: Spécifications et lignes directrices, au niveau des organismes,
pour la quantification et la déclaration des émissions et des
suppressions des gaz à effet de serre*



Reference number
ISO 14064-1:2018(E)

奥邦检验认证集团

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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 14064-1:2006), which has been technically revised.

The main changes compared to the previous edition are as follows.

- A new approach has been introduced to reporting boundaries, facilitating the inclusion and expansion of indirect emissions. This change is a response to a growing number of organizations that are recognizing the importance and significance of indirect emissions and are developing GHG inventories that include more types of indirect emissions across the value chain.
- The GHG emissions category “other indirect GHG emissions” has been renamed “indirect GHG emissions.” Requirements and guidance have been provided for classification of indirect GHG emissions into five specific categories. “Operational boundaries” has been renamed “reporting boundaries” for clarification and simplicity.
- New requirements and guidance for GHG quantification and reporting of specific items, such as the treatment of biogenic carbon and GHG emissions related to electricity, have been added for clarification.

A list of all parts in the ISO 14064 series can be found on the ISO website.

This document is the generic standard for the quantification and reporting of greenhouse gas emission and removals at an organizational level.

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 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:

- 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 include:

- corporate decisions, such as identifying emission reduction opportunities and increasing profitability by reducing energy consumption;
- risks and opportunities management, such as climate-related risks, including financial, regulatory, supply chain, product and customer, litigation, reputational risks and its opportunity for business (e.g. new market, new business model);
- 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.

This document 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.

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 the 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 phases of the product.

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

[Figure 1](#) illustrates the relationship among the ISO 14060 family of GHG standards.

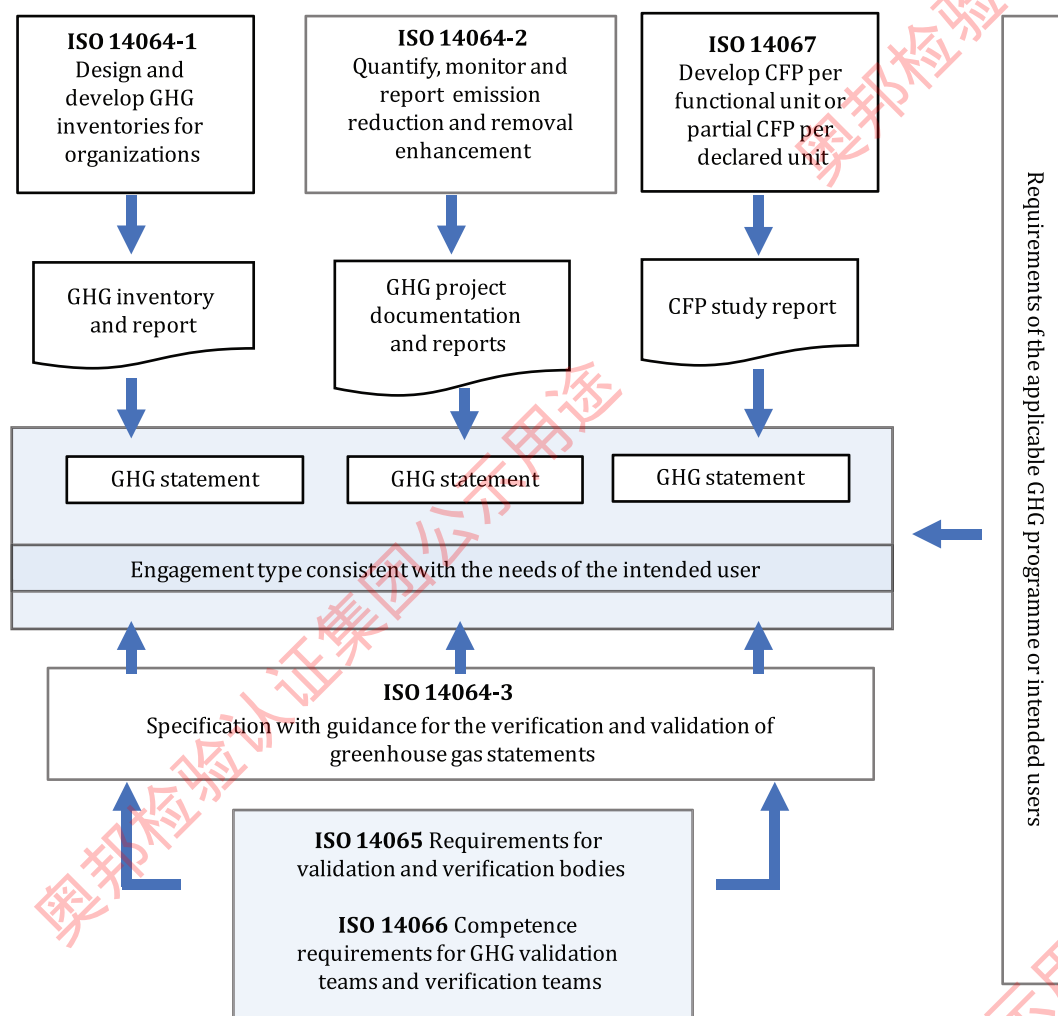


Figure 1 — Relationship among the ISO 14060 family of GHG standards

0.2 Base GHG quantification concepts used by this document

This document incorporates many key concepts developed over a number of years. References listed in the Bibliography provide (examples of) additional guidance on these concepts.

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

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

Document involves capturing and storing the pertinent information in writing.

Explain involves two additional criteria:

- a) describe how approaches were used or decisions taken, and
- b) describe why approaches were chosen or decisions made.

Justify involves an additional third and fourth criteria:

- c) explain why alternative approaches were not chosen, and
- d) provide supporting data or analysis.

Greenhouse gases —

Part 1:

Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals

1 Scope

This document specifies principles and requirements at the organization level for the quantification and reporting of greenhouse gas (GHG) emissions and removals. It includes requirements for the design, development, management, reporting and verification of an organization's GHG inventory.

The ISO 14064 series is GHG programme neutral. If a GHG programme is applicable, requirements of that GHG programme are additional to the requirements of the ISO 14064 series.

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: For a list of GHGs, see the latest Intergovernmental Panel on Climate Change (IPCC) Assessment Report.

Note 2 to entry: Water vapour and ozone are anthropogenic as well as natural GHGs, but are not included as recognized GHGs due to difficulties, in most cases, in isolating the human-induced component of global warming attributable to their presence in the atmosphere.

3.1.2

greenhouse gas source

GHG source

process that releases a GHG (3.1.1) into the atmosphere

国际标准

ISO 14064-1

第二版

2018-12

温室气体——

第一部分：

组织层级上对温室气体排放和清除的量化和报告的规范及指南

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引言

ISO（国际标准化组织）是各国家标准机构（ISO 成员机构）的全球联合会。制定国际标准的工作通常由 ISO 技术委员会进行。任一会员机构对技术委员会已建立之主题有兴趣者皆有权利参加该委员会。与 ISO 有联系的政府和非政府的国际组织也参与了这项工作。ISO 与国际电工委员会（IEC）在所有电工标准化事宜上密切合作。

ISO/IEC 指令第 1 部分中描述了制定本文件的流程以及旨在对其进行进一步维护的流程。请特别注意，不同类型的 ISO 文件所需的批准标准不同。本文件根据 ISO/IEC 指令第 2 部分的编辑规则（见 www.iso.org/directives）起草。

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关于标准自愿性质的解释、与合格评定有关的 ISO 特定术语和表达的含义、以及有关 ISO 遵守世界贸易组织（WTO）贸易技术壁垒（TBT）原则的信息，请见 www.iso.org/iso/foreword.html。

本文件由 ISO/TC 207 环境管理技术委员会的温室气体管理及相关活动第 7 分技术委员会（SC 7）编制。

本第二版取消并取代第一版（ISO 14064-1: 2006），该版已经过技术修订。

与上一版本相比，主要变化如下：

- 引入了一种新的方法来报告边界，促进间接排放的纳入和扩展。越来越多的组织认识到间接排放的重要性和显著性，并正在制定温室气体盘查清单，将整个价值链中更多类型的间接排放纳入其中，这一变化也就应运而生。
- 温室气体排放种类“其他间接温室气体排放”被重新命名为“间接温室气体排放”。对间接温室气体排放分为五个特定类别，提出要求和指引。“运营边界”重新命名为“报告边界”，以作澄清和简化。
- 增加了对特定项目温室气体量化和报告的新要求和指引，例如与电力有关的生物碳和温室气体排放的处理，以作澄清。

ISO 14064 系列各部分的清单请见 ISO 网站。

本文件是在组织层级上对温室气体排放和清除的量化和报告的通用标准。

对本文件有任何反馈或问题的，请发送至用户的国家标准机构。国家标准机构的完整清单请见 www.iso.org/members.html。

介绍

0.1 背景

人类活动引起的气候变化是世界面临的最大挑战之一,将在未来几十年继续影响企业和民众。

气候变化影响着人类和自然界,可能引发资源可获得性、经济活动和人类健康方面的巨变。为此,在国际、区域、国家和地方等各个层面上,公私领域均在制定措施和采取行动,限制大气层中温室气体(GHG)的浓度,促进对气候变化的适应。

有必要根据现有的最佳科学知识,对气候变化的紧迫威胁作出有效和逐步的反应。ISO制作相关文件,支持将科学知识转化为帮助应对气候变化的工具。

温室气体减缓举措依赖于对温室气体排放和/或清除的量化、监测、报告和核查。

ISO 14060 系列对温室气体排放和清除的量化、监测、报告和审定或核查作出澄清和统一,通过低碳经济来支持可持续发展,使全世界的组织、项目支持者和利害关系方受益。具体而言,使用 ISO 14060 系列可以:

- 增强温室气体量化的环境完整性;
- 增强温室气体量化、监测、报告、核查和审定的可信度、一致性和透明度;
- 促进温室气体管理战略和计划的制定和实施;
- 通过减少排放或增加清除来促进缓解措施的制定和实施;
- 有助于跟踪在减少温室气体排放和/或增加温室气体清除方面的表现和进展。

ISO 14060 系列可应用于下列方面:

- 公司决策:如确定减排机会并通过减少能耗来提高盈利能力;
- 风险和机会管理:如与气候相关的风险,包括财务、监管、供应链、产品和客户、诉讼、声誉风险及其业务机会(例如新市场、新商业模式);
- 自愿性举措:如参与温室气体自愿性登记册或可持续性报告举措;
- 温室气体市场:如温室气体配额或信用额的买卖;
- 监管/政府温室气体方案:如因早期行动、协议或国家和地方报告举措取得的信用额度。

本文件详细规定了在组织层面上,温室气体盘查清单的设计、制定、管理和报告的原则和要求。其中包括确定温室气体排放和清除边界、量化组织的温室气体排放和清除,识别旨在改善温室气体管理的具体公司措施或活动等方面的要求。此外,本文件还包括对盘查清单的质量管理、报告、内部审核,以及组织在核查活动中的职责等方面的要求和指引。

ISO 14064-2 详述了确定项目排放基准线,以及监测、量化和报告项目排放(量)的原则和要求,重点说明了减少温室气体排放和/或增加温室气体清除的温室气体项目或基于项目的活动,并阐明了核查和审定温室气体项目的依据。

ISO 14064-3 详细规定了核查与温室气体盘查清单、温室气体项目及产品碳足迹相关的温室气体声明的要求,说明了审定或核查程序,包括核查或审定的计划、评定程序以及对组织、

项目和产品温室气体声明的评估等。

ISO 14065 界定了温室气体声明审定和核查机构的要求，具体涵盖公正性、权限、沟通、审定和核查程序、申诉、投诉以及审定和核查机构的管理体系。该标准可用作认可和以其他形式正式承认审定和核查机构的公正性、权限和一致性的基础。

ISO 14066 明确了对审定团队与核查团队的能力要求，内含原则，并根据核定团队或核查团队必须能够执行的任务，具体说明各项能力要求。

ISO 14067 界定了产品碳足迹量化的原则、要求和指引。ISO 14067 的目的在于量化与产品生命周期阶段有关的温室气体排放，从资源开采和原材料采购开始，一直延伸到产品的生产、使用和报废阶段。

ISO/TR 14069 协助用户应用本文件，提供指引和示例，提高排放量化和报告的透明性，但不会对本文件提供其他指引。

图 1 展示温室气体标准的 ISO 14060 系列之间的关系。

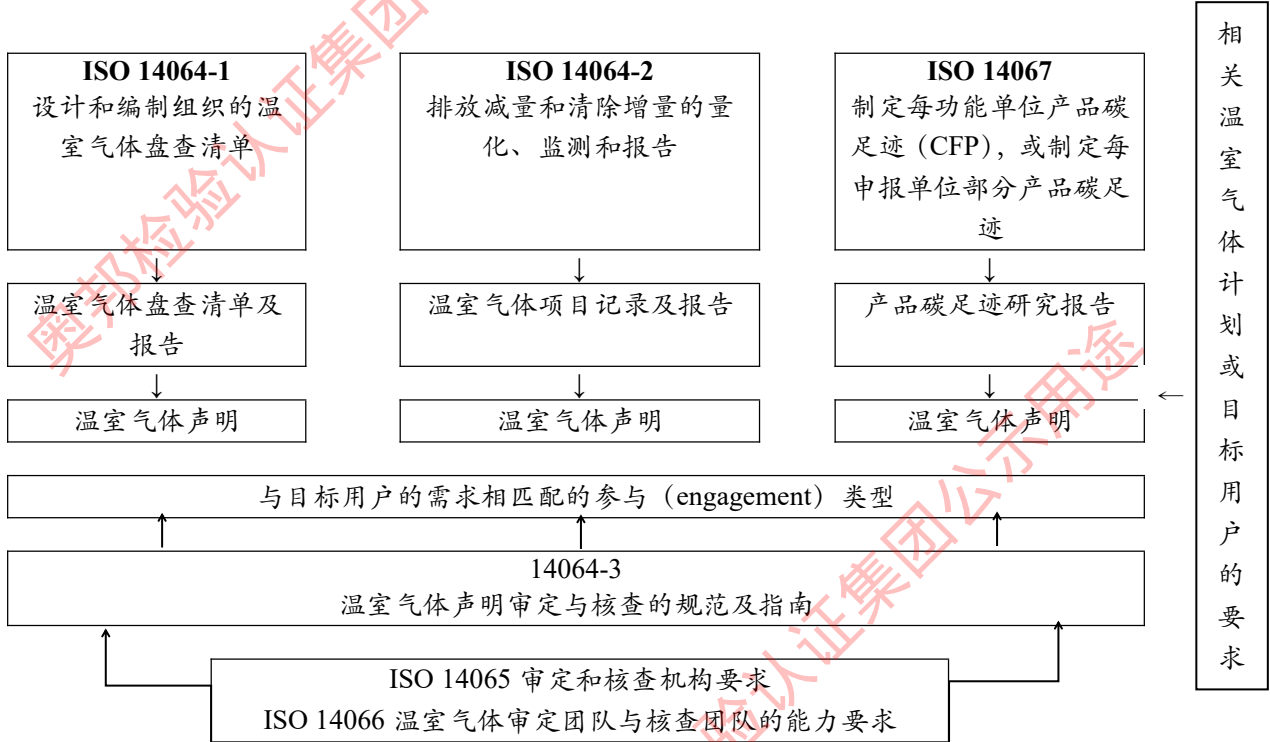


图 1 - 温室气体标准的 ISO 14060 系列之间的关系

0.2 本文件使用的基本温室气体量化概念

本文件加入了过去若干年间制定的许多关键概念。参考文献中所列的参考书目提供了关于这些概念的额外指引（示例）。

0.3 本文件中“文件”、“解释”和“说明理由 (justify)”等术语的重要意义

一些条款要求本文件用户记录所采取的特定方法或决定的使用情况，并解释和说明理由。

记录涉及以书面形式捕获和存储相关信息。

解释涉及两项额外标准：

a) 描述如何使用这些方法或作出这些决定，和

b) 描述为何选择这些方法或作出这些决定。

说明理由涉及另外第三项和第四项标准：

c) 解释为何不选用替代性方法，和

d) 提供数据或分析予以支持。

温室气体——

第一部分：

组织层级上对温室气体排放和清除的量化和报告的规范及指南

1 范围

本文件规定了组织层级上对温室气体（GHG）排放和清除的量化和报告的原则和要求，其中包括设计、编制、管理、报告和核查某一组织的温室气体盘查清单的要求。

ISO 14064 系列对温室气体方案无倾向性。当某一温室气体方案适用时，该计划的要求可作为 ISO 14064 系列的附加要求。

2 引用标准

本文件无引用标准。

3 术语和定义

下列术语和定义适用于本文件。

ISO 和 IEC 的标准化术语数据库地址如下：

- ISO 在线浏览平台请见：<https://www.iso.org/obp>
- IEC Electropedia 专业术语数据库请见：<http://www.electropedia.org/>

3.1 温室气体相关术语

温室气体

GHG

大气层中自然存在的和人类活动产生的，能够吸收和散发由地球表面、大气层和云层所产生的、波长在红外光谱内的辐射的气态成分。

注 1：对于温室气体列表，请见政府间气候变化专门委员会（IPCC）最新的评估报告。

注 2：水蒸气和臭氧既是人为的，也是自然的温室气体，但由于在大多数情况下很难将其在大气中存在而引起的全球变暖的人为因素区分开，因此不被列为公认的温室气体。

3.1.2

温室气体源

GHG 源

向大气中排放温室气体（3.1.1）的过程。

3.1.3

温室气体汇