INTERNATIONAL STANDARD

ISO 14068-1

First edition
2023-11

Climate change management — Transition to net zero —

Part 1: Carbon neutrality

Gestion du changement climatique — Transition vers le zéro émission nette —

Partie 1: Neutralité carbone

Reference number
ISO 14068-1:2023(E)

COPYRIGHT PROTECTED DOCUMENT

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

Published in Switzerland

Contents

Page

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 document 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).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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 and climate change management and related activities*.

A list of all parts in the ISO 14068 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 Climate change and the ISO 14060 family of standards

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

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

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

Climate change mitigation initiatives rely on the quantification, monitoring, reporting, validation and verification of GHG emissions and removals.

The ISO 14060 family of standards benefits organizations, GHG project proponents and stakeholders worldwide by providing clarity and consistency for quantifying, monitoring, reporting, validating and verifying GHG emissions and removals and carbon neutrality. Specifically, the use of the ISO 14060 family of standards:

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

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

— facilitates the development and implementation of mitigation actions that provide GHG emission reductions or GHG removal enhancements;

— facilitates the ability to track performance and progress in the reduction of either GHG emissions or the increase in GHG removals, or both;

— supports sustainable development and the actions needed to achieve a low-carbon economy.

Applications of the ISO 14060 family of standards include:

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

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

— voluntary initiatives, such as participation in voluntary GHG programmes 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.

The following summarizes each of the documents in the ISO 14060 family of standards:

— 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 organizational 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 baseline scenarios and for the monitoring, quantifying and reporting of project emissions and removals. It focuses on GHG projects or project-based activities specifically designed to reduce either GHG emissions or enhance GHG removals, or both. It provides the basis for GHG projects to be validated and verified.

— 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 validation or verification, including validation or verification 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 the carbon footprint of products (e.g. goods or services, including buildings and events). It describes the process 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/TS 14064-4[1)] assists users in the application of ISO 14064-1, providing guidelines and examples for improving transparency in the quantification of emissions and their reporting.

0.2 ISO 14068-1 (this document) — Carbon neutrality

This document is designed to build upon existing International Standards addressing GHG quantification, reporting, validation and verification, such as ISO 14064-1, ISO 14064-3 and ISO 14067. Figure 1 illustrates the relationship with documents within the ISO 14060 family of GHG standards as well as some related International Standards on environmental labels and declarations.

1) Under preparation. Stage at the time of publication: ISO/CD TS 14064-4:2023.

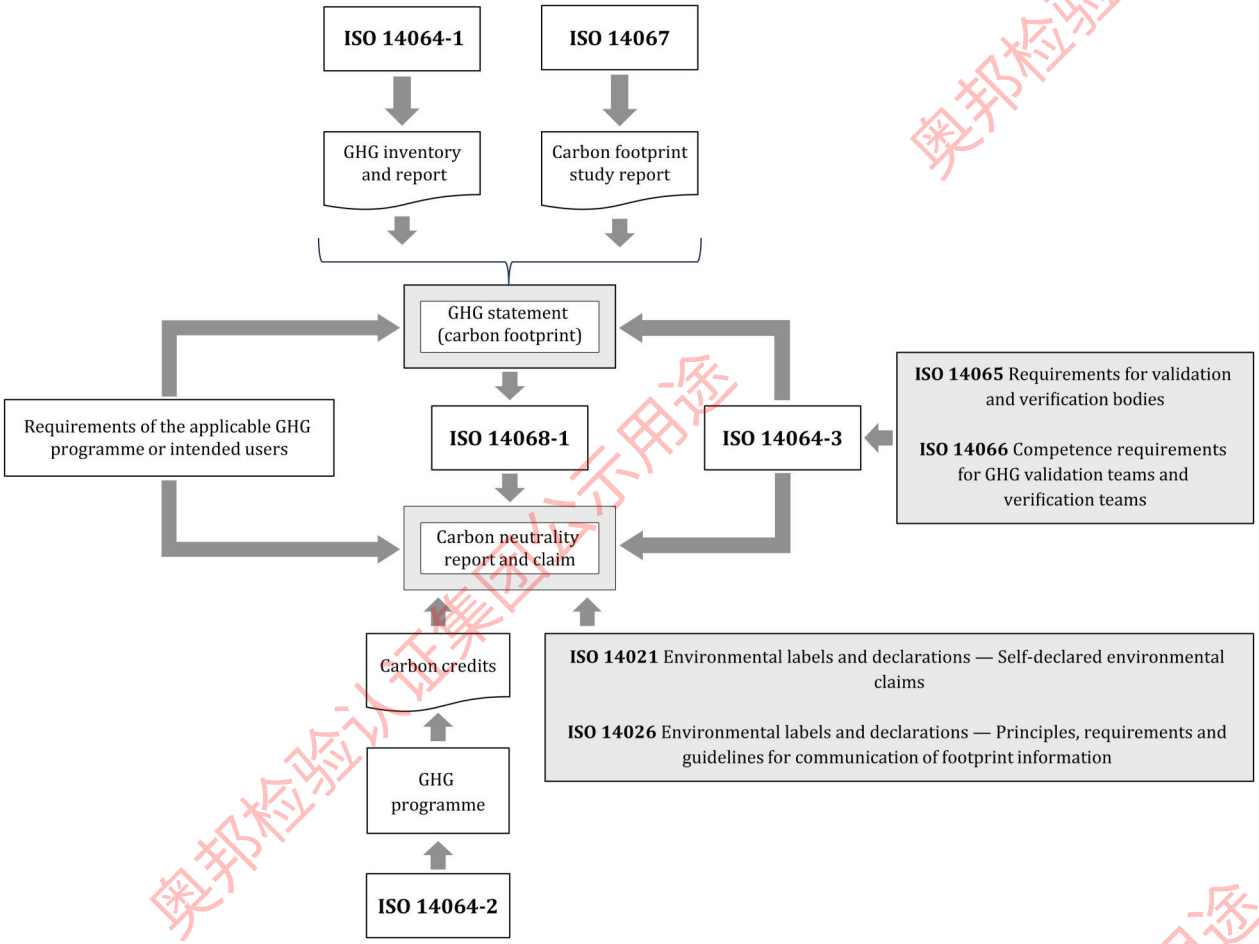

Figure 1 — ISO 14068-1 (this document) in relation to other International Standards

This document provides a standardized approach to achieving and demonstrating carbon neutrality. It is applicable to subjects, i.e. organizations and products (e.g. goods and services, including events and buildings).

The hierarchy approach presented in this document prioritizes actions to reduce the direct and indirect GHG emissions and enhance GHG removals of the subject, with offsetting used only for the carbon footprint remaining after these actions.

Avoided GHG emissions, for example by the use of goods or services, are not addressed in this document but they also have a role to play in the strategy of organizations to support the global objective of carbon neutrality. Avoided GHG emissions reflect the efforts of organizations to provide low-carbon products or solutions.

The quantification, monitoring and reporting related to GHG projects undertaken with the primary purpose of creating GHG emission reductions or GHG removal enhancements are also outside the scope of this document.

Achievement of carbon neutrality by organizations and products entails actions that reduce GHG emissions and enhance GHG removals, and thus can help support countries to fulfil their nationally determined contributions (NDCs) and to meet the goals of the Paris Agreement.[14]

0.3 Carbon neutrality and net zero GHG emissions

Carbon neutrality (as defined in this document) and net zero GHG emissions are related concepts. At a global scale, these terms are defined by the Intergovernmental Panel on Climate Change (IPCC)[2] as

2) The IPCC is the United Nations body for assessing the science related to climate change. https://www.ipcc.ch/

being equivalent, both referring to the condition in which anthropogenic GHG emissions are balanced by anthropogenic GHG removals over a specified period. In this document, this condition is referred to as “global net zero GHG emissions”.

At sub-global scale, carbon neutrality is generally used for organizations and products, and achieving carbon neutrality commonly involves offsetting to counterbalance the carbon footprint of the subject. In this document, carbon neutrality is considered as a pathway of continual improvement along which the carbon footprint of the subject is reduced by implementing emissions reduction and removal enhancement activities, and therefore the need for offsetting decreases over time.

At sub-global scale, net zero GHG emissions is generally applied to territories (e.g. a country, a municipality) and to organizations, but not to products. Net zero GHG emissions is defined and assessed differently in different contexts. For organizations, net zero GHG emissions is commonly considered as the condition in which emissions have been reduced such that only residual emissions remain, and offsetting is restricted to removal credits only.

With respect to territories, assessment of net zero GHG emissions considers the emissions and removals under direct control or jurisdiction of the territory, and offsetting is sometimes excluded.

This document does not address requirements or recommendations for net zero GHG emissions at either the global or a sub-global scale.

0.4 General

In this document, the following verbal forms are used:

— “shall” indicates a requirement;

— “should” indicates a recommendation;

— “may” indicates a permission;

— “can” indicates a possibility or a capability.

Climate change management — Transition to net zero —

Part 1: Carbon neutrality

1 Scope

This document specifies principles, requirements and guidance for achieving and demonstrating carbon neutrality through the quantification, reduction and offsetting of the carbon footprint.

This document defines terms used in relation to carbon neutrality and provides guidance on the actions necessary to achieve and demonstrate carbon neutrality. In accordance with common practice, it uses the word "carbon" to refer to all greenhouse gases (GHGs) in compound expressions such as "carbon neutrality".

It is applicable to a wide range of subjects such as organizations (including companies, local authorities and financial institutions) and products (goods or services, including buildings and events). It is not intended to be used for territories (such as regions, countries, states or cities), including signatories to the United Nations Framework Convention on Climate Change (UNFCCC) when reporting national outcomes for the purposes of that Convention.

This document establishes a hierarchy for carbon neutrality where GHG emission reductions (direct and indirect) and GHG removal enhancements within the value chain take priority over offsetting. It includes requirements for carbon neutrality commitments and making carbon neutrality claims.

This document is GHG programme neutral. If a GHG programme is applicable, the requirements of that GHG programme are additional to the requirements of this document.

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 14064-1, *Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*

ISO 14064-3, *Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements*

ISO 14067, *Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 14064-1, ISO 14067 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

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

国际标准

ISO 14068-1

第一版 2023-11

气候变化管理—向净零排放过渡—第 1 部分: 碳中和

气候变化管理 — 向零排放过渡 — 第 1 部分：碳中和

参考号 ISO 14068-1:2023(E)

版权保护文件

ISO 版权办公室
CP401·Ch.de Blandonnet 8
CH-1214 Vernier,Geneva 电
话：+41227490111
电子邮件：
copyright@iso.org 网站：
www.iso.org

瑞士出版

目录

页

前言

ISO（国际标准化组织）是一个由国家标准机构（1SO 成员机构）组成的全球联盟。国际标准的制定工作通常由ISO技术委员会进行。每个对已设立技术委员会的主题感兴趣的成员团体都有权在该委员会中派代表参加。政府和非政府国际组织也与 ISO 合作参与这项工作。 ISo与国际电工委员会（IEC）在电工标准化的所有事务上密切合作。

用于制定本文件的程序及其进一步维护的程序在 ISO/IEC 指令第 1 部分中进行了描述。特别是，应注意不同类型的 ISO 文件所需的不同批准标准。本文件是根据 ISO/IEC 指令第 2 部分的编辑规则起草的（参见www.iso.org/directives).

ISO 提请注意本文件的实施可能涉及使用专利的可能性。 ISO 对于任何所主张的专利权的证据、有效性或适用性不采取任何立场。截至本文件发布之日，ISO 尚未收到实施本文件可能需要的专利通知。然而，实施者请注意，这可能并不代表最新信息，这些信息可以从专利数据库中获得，网址为www.iso.org/patents . ISO 不负责识别任何或所有此类专利权。

本文档中使用的任何商品名称都是为了方便用户而提供的信息，并不构成认可。

有关标准自愿性的解释、与合格评定相关的 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）技术性贸易壁垒（TBT）原则的信息，看www.iso.org/iso/foreword.html.

本文件由 ISO/TC 207 环境管理技术委员会、SC 7 温室气体和气候变化管理及相关活动小组委员会编写。

ISO14068 系列所有零件的列表可以在 ISO 网站上找到。

有关本文件的任何反馈或问题应直接提交给用户的国家标准机构。这些机构的完整列表可以在以下位置找到：www.iso.org/members.html.

引 言

0.1 气候变化和 ISO 14060 系列标准

人类活动引起的气候变化已被确定为世界面临的最大挑战之一，并将在未来几十年继续影响企业和公民。

气候变化对人类和自然系统都有影响，并可能对资源供应、经济活动、生物多样性和人类福祉产生重大影响。为此，公共和私营部门正在制定和实施国际、区域、国家和地方举措，通过减少地球大气中的温室气体（GHG）来缓解气候变化，并促进适应气候变化。

需要在现有最佳科学知识的基础上，对气候变化的紧迫威胁采取有效和变革性的应对措施。ISO 制定文件，支持将科学知识转化为有助于应对气候变化的工具。减缓气候变化举措依赖于温室气体排放和清除的量化、监测、报告、验证和核实。

ISO 14060 系列标准为量化、监测、报告、验证和核实温室气体排放和清除以及碳中和提供了明确性和一致性，使全世界的组织、温室气体项目支持者和利益相关者受益。具体来说，ISO 14060 系列标准的使用：

—提高温室气体量化、监测、报告、验证和核查的可信度和透明度；

— 促进温室气体管理战略和计划的制定和实施；

—促进制定和实施缓解行动，以减少温室气体排放或增强温室气体清除；

—促进跟踪温室气体排放减少或温室气体清除增加或两者的绩效和进展的能力；

—支持可持续发展和实现低碳经济所需的行动。 ISO14060 系列标准的应用包括：

—企业决策，例如识别温室气体减排机会和通过减少能源消耗来提高盈利能力；

—风险管理，例如气候风险和机遇的识别和管理；

—自愿倡议，例如参与自愿温室气体计划或可持续性报告倡议；

—温室气体市场，例如温室气体配额或信用额的买卖；

—监管/政府温室气体计划，例如早期行动信贷、协议或国家和地方报告举措。

以下总结了 ISO 14060 系列标准中的每个文档：

—ISO 14064-1详细介绍了设计、开发、管理和报告组织级温室气体清单的原则和要求。它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以及确定旨在改进温室气体管理的具体组织行动或活动的要求。它还包括有关库存质量管理、报告、内部审核以及组织在验证活动中的责任的要求和指南。

—ISO14064-2详细说明了确定基准情景以及监测、量化和报告项目排放和清除的原则和要求。它侧重于专门旨在减少温室气体排放或增加温室气体清除或两者兼而有之的温室气体项目或基于项目的活动。它为温室气体项目的验证和核实提供了基础。

—ISO14064-3详细说明了验证与温室气体清单、温室气体项目和产品碳足迹相关的温室气体声明的要求。它描述了验证或验证的过程，包括验证或验证计划、评估程序以及组织、项　目和产品温室气体声明的评估。

— ISQ14065 定义了对验证和核实温室气体声明的机构的要求。其要求公正性、能力、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。可以用作与验证和核查机构的公正性、能力和一致性有关的认可和其他形式的认可的基础。

—ISO14066规定了验证团队和验证团队的能力要求。它包括原则并根据验证团队或验证团队必须能够执行的任务指定能力要求。

—ISO14067定义了产品（例如商品或服务，包括建筑物和活动）碳足迹量化的原则、要求和指南。它描述了量化与产品生命周期阶段相关的温室气体排放的过程，从资源开采和原材　料采购开始，一直延伸到产品的生产、使用和生命周期结束阶段。

—ISO/TS 14064-41）帮助用户应用ISO14064-1，为提高排放量化及其报告的透明度提供指南和示例。

0.2 ISO14068-1（本文件）——碳中和

本文件旨在建立解决温室气体量化、报告、验证和核查的现有国际标准，例如 ISO14064-1、ISO14064-3 和 ISO14067。图 1 说明了 ISO 14060 温室气体标准系列以及一些相关环境标签和声明国际标准中文件的关系。

1）正在准备中。发布时的阶段：ISO/CD TS 14064-4:2023。

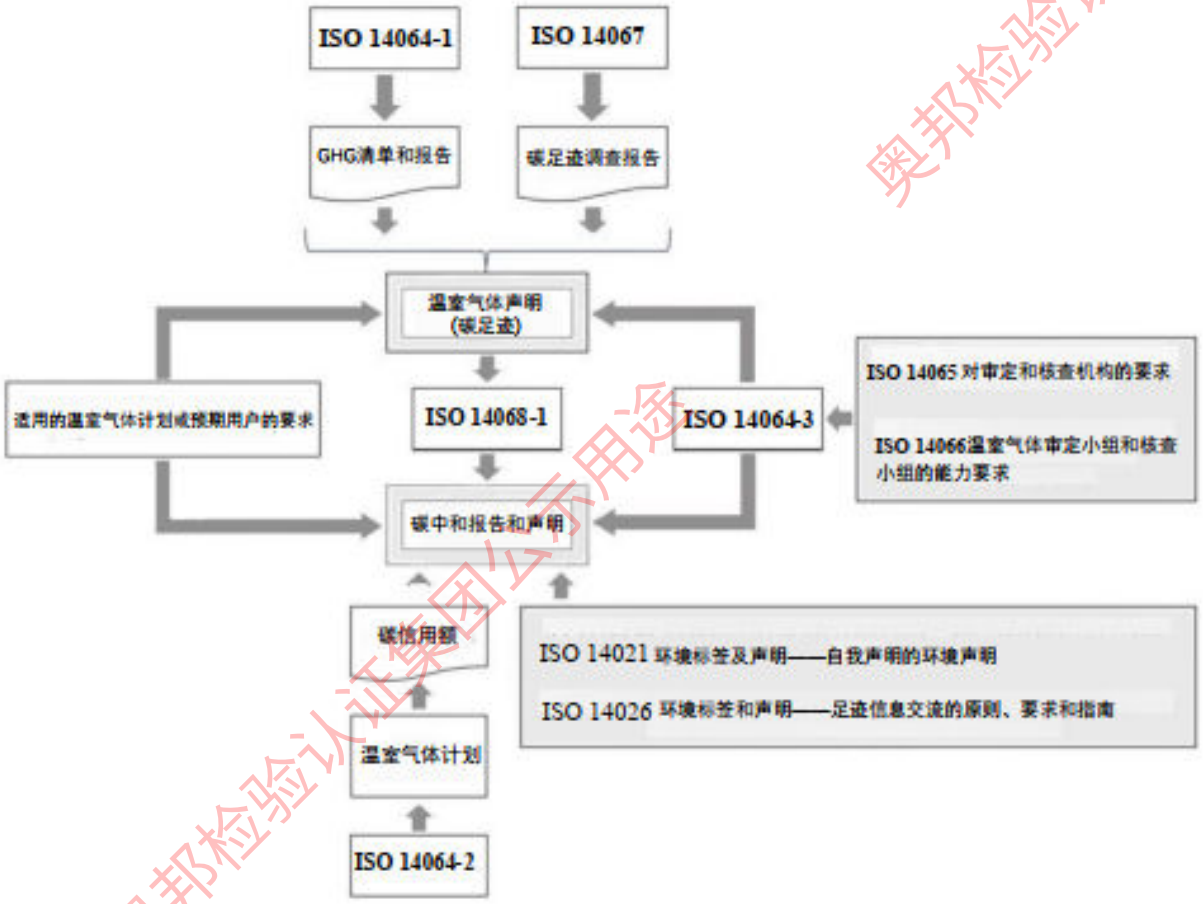

图 1 —IS014068-1（本文件）与其他国际标准的关系

本文件提供了实现和展示碳中和的标准化方法。它适用于主体，即组织和产品（例如商品和服务，包括活动和建筑物）

本文件中提出的层次方法优先考虑减少直接和间接温室气体排放并加强主体温室气体清除的行动，仅用于这些行动后剩余的碳足迹的抵消。

本文件未讨论通过使用商品或服务等方式避免的温室气体排放，但它们在组织支持全球碳中和目标的战略中也可以发挥作用。避免的温室气体排放反映了组织为提供低碳产品或解决方案所做的努力。

与以减少温室气体排放或增加温室气体清除为主要目的的温室气体项目相关的量化、监测和报告也不属于本文件的范围。

组织和产品实现碳中和需要采取减少温室气体排放和增加温室气体清除的行动，因此可以帮助支持各国履行其国家自主贡献（NDC）并实现《巴黎协定》的目标。[14]

0.3 碳中和和温室气体净零排放

碳中和（如本文件中定义）和温室气体净零排放是相关概念。在全球范围内，这些术语由政府间气候变化专门委员会（IPCC)[2]）定义为

2） IPCC是联合国评估气候变化相关科学的机构。https://wwwipcc.ch/

两者是等价的，都是指在特定时期内人为温室气体排放量与人为温室气体清除量达到平衡的情况。在本文件中，这种情况被称为“全球温室气体净零排放”。

在次全球范围内，碳中和通常用于组织和产品，实现碳中和通常涉及抵消以抵消主体的碳足迹。在本文件中，碳中和被认为是一种持续改进的途径，通过实施减排和清除增强活动来减少主体的碳足迹，因此抵消的需求随着时间的推移而减少。

在次全球范围内，温室气体净零排放通常适用于地区[例如：国家、直辖市）和组织，但不包括产品。温室气体净零排放在不同情况下有不同的定义和评估。对于组织而言，温室气体净零排放通常被认为是排放量已减少，仅保留残余排放的情况，并且抵消仅限于清除信用。

就领土而言，温室气体净零排放评估考虑了该领土直接控制或管辖下的排放和清除，有时不包括抵消。

本文件不涉及全球或次全球范围内温室气体净零排放的要求或建议。

0.4 概述

在本文档中，使用以下口头形式：

—— “应当”表示要求；

—— “应该”表示建议；

—— “可以”表示许可；

—— “能”表示可能性或能力。

气候变化管理 — 向净零过渡 — 第 1 部分：碳中和

1 范围

本文件规定了通过量化、减少和抵消碳足迹来实现和展示碳中和的原则、要求和指南。

本文件定义了与碳中和相关的术语，并为实现和证明碳中和所需的行动提供了指导。按照惯例，它在“碳中和”等复合表达中使用“碳”一词来指代所有温室气体（GHG）。

它适用于广泛的主题，例如组织（包括公司、地方当局和金融机构）和产品（商品或服务，包括建筑物和活动）。它不适用于领土（例如地区、国家、州或城市），包括《联合国气候变化框架公约》（UNFCCC）的签署国在为该公约目的报告国家成果时。

本文件建立了碳中和的层次结构，其中温室气体减排（直接和间接）和价值链内温室气体清除的增强优先于抵消。它包括碳中和承诺和碳中和声明的要求。

本文件是温室气体计划中性的。如果温室气体计划适用，则该温室气体计划的要求是本文件要求的补充。

2 规范性引用文件

正文中引用下列文件时，其部分或全部内容构成本文件的要求。对于注明日期的参考文献，仅引用的版本适用。对于未注明日期的参考文献，适用参考文件的最新版本（包括任何修订）。

ISO 14064-1，温室气体 — 第 1 部分：在组织层面量化和报告温室气体排放和清除的规范和指导

ISO14064-3，温室气体 — 第 3 部分：温室气体声明验证和确认的规范及指导

ISO14067，温室气体—产品的碳足迹—量化要求和指南

3 术语、定义和缩写术语

就本文件而言，ISO 14064-1、ISO 14067 及以下给出的术语和定义适用。

ISO 和 IEC 在以下地址维护用于标准化的术语数据库：

— ISO在线浏览平台：可在https://www.iso.org/obp

—IEC 电子百科全书：可在https://www.electropedia.org/

如需获取全文，请联系奥邦检验认证集团客户服务部门：

1）通过邮件提出申请。请发送到邮箱：**17312273399@163.com**

2）也可通过客服电话咨询 **025-85307007**。