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**Greenhouse gases —**

Part 3:

**Specification with guidance for the  
validation and verification of greenhouse  
gas assertions**

iTeh STANDARD PREVIEW

*Gaz à effet de serre —*

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

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Published in Switzerland

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 14064-3 was prepared by Technical Committee ISO/TC 207, *Environmental management*.

ISO 14064 consists of the following parts, under the general title *Greenhouse gases*:

- *Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*
- *Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements*
- *Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions*

## Introduction

**0.1** Climate change has been identified as one of the greatest challenges facing nations, governments, business and citizens over future decades. Climate change has implications for both human and natural systems and could lead to significant changes in resource use, production and economic activity. In response, international, regional, national, and local initiatives are being developed and implemented to limit greenhouse gas (GHG) concentrations in the Earth's atmosphere. Such GHG initiatives rely on the quantification, monitoring, reporting and verification of GHG emissions and/or removals.

ISO 14064-1 details principles and requirements for designing, developing, managing and reporting organization- or company-level GHG inventories. It includes requirements for determining GHG emission 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 focuses on GHG projects or project-based activities specifically designed to reduce GHG emissions or increase GHG removals. It includes principles and requirements for determining project baseline scenarios and for monitoring, quantifying and reporting project performance relative to the baseline scenario and provides the basis for GHG projects to be validated and verified.

This part of ISO 14064 details principles and requirements for verifying GHG inventories and validating or verifying GHG projects. It describes the process for GHG-related validation or verification and specifies components such as validation or verification planning, assessment procedures and the evaluation of organization or project GHG assertions. This part of ISO 14064 can be used by organizations or independent parties to validate or verify GHG assertions.

Figure 1 displays the relationships between the three parts of ISO 14064.

**0.2** ISO 14064 is expected to benefit organizations, governments, project proponents and stakeholders worldwide by providing clarity and consistency for quantifying, monitoring, reporting and validating or verifying GHG inventories or projects. Specifically, use of ISO 14064 could

- enhance the environmental integrity of GHG quantification,
- enhance the credibility, consistency and transparency of GHG quantification, monitoring and reporting, including GHG project emission reductions and removal enhancements,
- facilitate the development and implementation of an organization's GHG management strategies and plans;
- facilitate the development and implementation of GHG projects,
- facilitate the ability to track performance and progress in the reduction of GHG emissions and/or increase in GHG removals, and
- facilitate the crediting and trade of GHG emission reductions or removal enhancements.

Users of ISO 14064 could find benefit from some of the following applications:

- a) corporate risk management: for example, the identification and management of risks and opportunities;
- b) voluntary initiatives: for example, participation in voluntary GHG registry or reporting initiatives;
- c) GHG markets: for example, the buying and selling of GHG allowances or credits;
- d) regulatory/government reporting: for example, credit for early action, negotiated agreements or national reporting programmes.

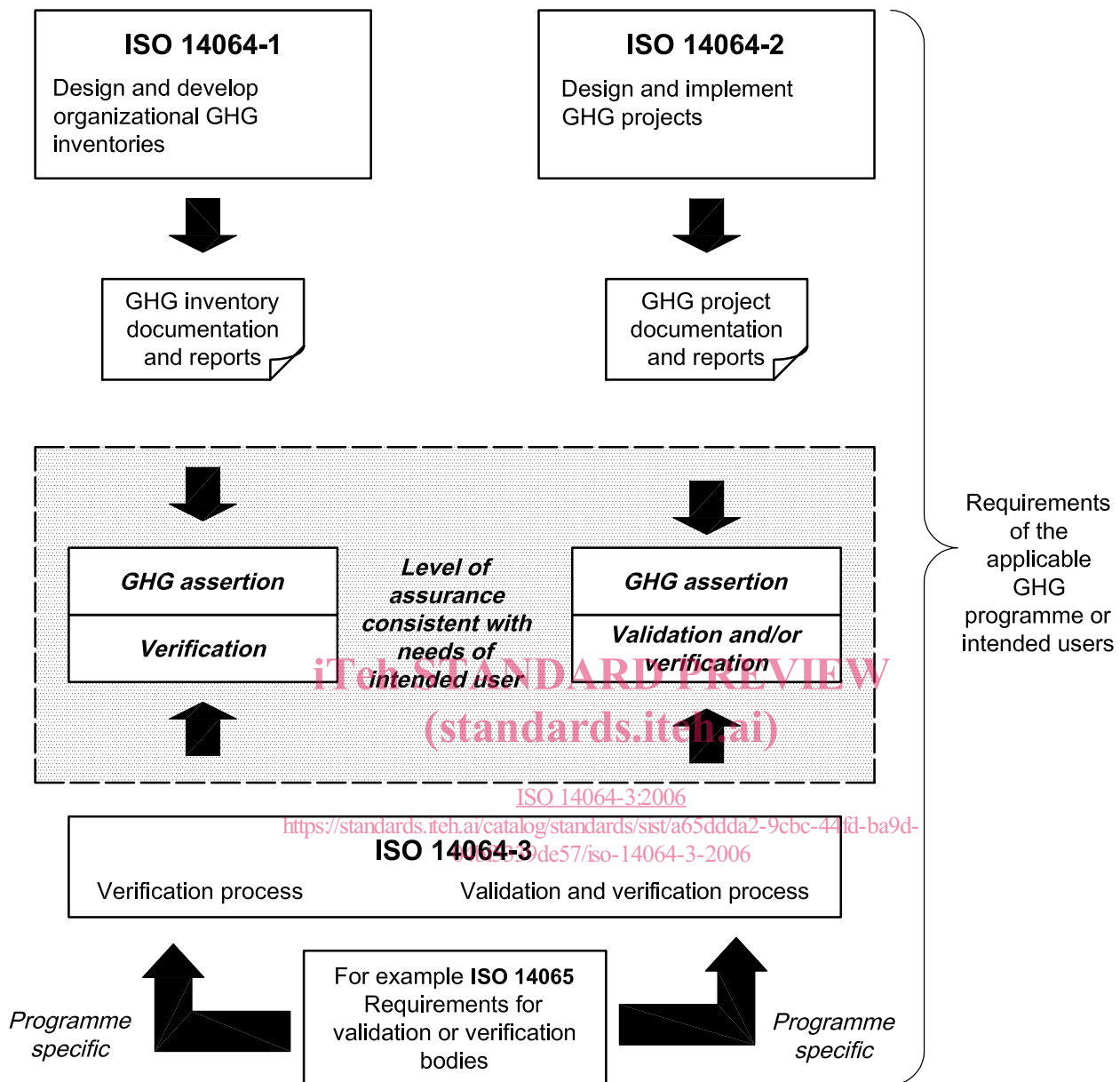


Figure 1 — Relationship between the parts of ISO 14064

0.3 This part of ISO 14064 provides principles, requirements and guidance for those conducting GHG information validation and verification. It is intended to be useful to a broad range of potential users, including:

- 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> party GHG validators and verifiers;
- organizations and individuals involved in developing and commissioning GHG projects;
- organizations conducting internal audits of their GHG information;
- organizations involved in GHG validator or verifier 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 programs.

**0.4** The requirements of this part of ISO 14064 describe a process for providing assurance to intended users that an organization's or project's GHG assertions are complete, accurate, consistent, transparent and without material discrepancies. The processes of validation and verification are similar; however, there are differences in the emphasis of the activities. The process can be applied in two ways: internal and external. Internal applications can use this part of ISO 14064 as a guideline, whereas external applications can use it as a set of requirements.

The extent of the validation and verification activities depends on

- the level of assurance required,
- needs of the intended user,
- objectives of the validation or verification activities, and
- the validation or verification criteria.

A GHG assertion can be a statement about different aspects of performance, such as the following:

- a) quantification of organizational GHG emissions or removals;
- b) quantification of project GHG emission reductions or removal enhancements;
- c) conformity with the requirements of ISO 14064-1 or ISO 14064-2;
- d) compliance with the principles and requirements of regulatory regimes or GHG programmes;
- e) performance or effectiveness of internal systems and control processes;
- f) performance or effectiveness of operational processes.

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Clause 3 describes the principles and fundamentals of validation and verification. These will help the user to appreciate the essential nature of validation and verification and they are a necessary prelude to the requirements in Clause 4 for conducting the validation of GHG projects and the verification of organizations or GHG project assertions. These requirements include the establishment of validation or verification objectives, criteria and scope (including the level of assurance required), coordination of validation or verification activities, development of a validation or verification approach of an organization's or GHG project's GHG information, establishment of appropriate sampling regimes for the validation and verification of GHG information, and the testing of the organization's or GHG project's controls. This clause also provides requirements for the drafting and communication of the validation or verification statement.

The guidance contained in the informative Annex A provides additional information for validation and verification under a range of GHG programmes or conditions. Annex A provides guidance on the validation and verification requirements contained in Clause 4, but does not include mandatory requirements.

**0.5** Some clauses require users of this part of ISO 14064 to explain the use of certain approaches or decisions taken. Explanation will generally include documentation of the following:

- How approaches were used or decisions taken.
- Why approaches were chosen or decisions made.

Some clauses require users of this part of ISO 14064 to justify the use of certain approaches or decisions taken. Justification will generally include documentation of the following:

- How approaches were used or decisions taken.
- Why approaches were chosen or decisions made.
- Why alternative approaches were not chosen.

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# Greenhouse gases —

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

### 1 Scope

This part of ISO 14064 specifies principles and requirements and provides guidance for those conducting or managing the validation and/or verification of greenhouse gas (GHG) assertions. It can be applied to organizational or GHG project quantification, including GHG quantification, monitoring and reporting carried out in accordance with ISO 14064-1 or ISO 14064-2.

This part of ISO 14064 specifies requirements for selecting GHG validators/verifiers, establishing the level of assurance, objectives, criteria and scope, determining the validation/verification approach, assessing GHG data, information, information systems and controls, evaluating GHG assertions and preparing validation/verification statements.

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

NOTE If a requirement of ISO 14064 prohibits an organization or GHG project proponent from complying with a requirement of the GHG programme, the requirement of the GHG programme takes precedence.

### 2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 2.1

##### **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 GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF<sub>6</sub>).

#### 2.2

##### **greenhouse gas source**

physical unit or process that releases a GHG into the atmosphere

#### 2.3

##### **greenhouse gas sink**

physical unit or process that removes a GHG from the atmosphere

#### 2.4

##### **greenhouse gas reservoir**

physical unit or component of the biosphere, geosphere or hydrosphere with the capability to store or accumulate a GHG removed from the atmosphere by a **greenhouse gas sink** (2.3) or a GHG captured from a **greenhouse gas source** (2.2)

NOTE 1 The total mass of carbon contained in a GHG reservoir at a specified point in time could be referred to as the carbon stock of the reservoir.

NOTE 2 A GHG reservoir can transfer greenhouse gases to another GHG reservoir.

NOTE 3 The collection of a GHG from a GHG source before it enters the atmosphere and storage of the collected GHG in a GHG reservoir could be referred to as GHG capture and storage.

## 2.5

### **greenhouse gas emission**

total mass of a GHG released to the atmosphere over a specified period of time

## 2.6

### **greenhouse gas removal**

total mass of a GHG removed from the atmosphere over a specified period of time

## 2.7

### **greenhouse gas emission reduction**

calculated decrease of GHG emissions between a **baseline scenario** (2.21) and the project

## 2.8

### **greenhouse gas removal enhancement**

calculated increase of GHG removals between a **baseline scenario** (2.21) and the project

## 2.9

### **greenhouse gas emission or removal factor**

factor relating activity data to GHG emissions or removals

NOTE A greenhouse gas emission or removal factor could include an oxidation component.

## 2.10

### **greenhouse gas activity data**

quantitative measure of activity that results in a GHG emission or removal

NOTE Examples of GHG activity data include the amount of energy, fuels or electricity consumed, material produced, service provided or area of land affected.

## 2.11

### **greenhouse gas assertion**

declaration or factual and objective statement made by the **responsible party** (2.24)

NOTE 1 The GHG assertion could be presented at a point in time or could cover a period of time.

NOTE 2 The GHG assertion provided by the responsible party should be clearly identifiable, capable of consistent evaluation or measurement against suitable criteria by a **validator** (2.35) or **verifier** (2.37).

NOTE 3 The GHG assertion could be provided in the form of a **greenhouse gas report** (2.17) or GHG project plan.

## 2.12

### **greenhouse gas information system**

policies, processes and procedures to establish, manage and maintain GHG information

## 2.13

### **greenhouse gas inventory**

an organization's **greenhouse gas sources** (2.2), **greenhouse gas sinks** (2.3), GHG emissions and removals

## 2.14

### **greenhouse gas project**

activity or activities that alter the conditions identified in the **baseline scenario** (2.21) which cause **greenhouse gas emission reductions** (2.7) or **greenhouse gas removal enhancements** (2.8)

**2.15****greenhouse gas project proponent**

individual or organization that has overall control and responsibility for a **greenhouse gas project** (2.14)

**2.16****greenhouse gas programme**

voluntary or mandatory international, national or sub-national system or scheme that registers, accounts or manages GHG emissions, removals, **greenhouse gas emission reductions** (2.7) or **greenhouse gas removal enhancements** (2.8) outside the organization or GHG project

**2.17****greenhouse gas report**

stand-alone document intended to communicate an organization's or project's GHG-related information to its **intended users** (2.26)

NOTE A GHG report can include a **greenhouse gas assertion** (2.11).

**2.18****global warming potential****GWP**

factor describing the radiative forcing impact of one mass-based unit of a given GHG relative to an equivalent unit of carbon dioxide over a given period of time

**2.19****carbon dioxide equivalent****CO<sub>2</sub>e**

unit for comparing the radiative forcing of a GHG to carbon dioxide

NOTE The carbon dioxide equivalent is calculated using the mass of a given GHG multiplied by its **global warming potential** (2.18).

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**2.20****base year**

historical period specified for the purpose of comparing GHG emissions or removals or other GHG-related information over time

NOTE Base-year emissions or removals may be quantified based on a specific period (e.g. a year) or averaged from several periods (e.g. several years).

**2.21****baseline scenario**

hypothetical reference case that best represents the conditions most likely to occur in the absence of a proposed **greenhouse gas project** (2.14)

NOTE The baseline scenario concurs with the GHG project timeline.

**2.22****facility**

single installation, set of installations or production processes (stationary or mobile), which can be defined within a single geographical boundary, organizational unit or production process

**2.23****organization**

company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration

**2.24****responsible party**

person or persons responsible for the provision of the **greenhouse gas assertion** (2.11) and the supporting GHG information

NOTE The responsible party can be either individuals or representatives of an organization or project and can be the party who engages the **validator** (2.35) or **verifier** (2.37). The validator or verifier may be engaged by the client or by other parties, such as the GHG programme administrator.

**2.25  
stakeholder**

individual or organization that is affected by the development or implementation of a **greenhouse gas project** (2.14)

**2.26  
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 The intended user could be the **client** (2.27), the **responsible party** (2.24), GHG programme administrators, regulators, the financial community or other affected **stakeholders** (2.25), such as local communities, government departments or non-governmental organizations.

**2.27  
client**

organization or person requesting **validation** (2.32) or **verification** (2.36)

NOTE The client could be the **responsible party** (2.24), the GHG programme administrator or other **stakeholder** (2.25)

**2.28  
level of assurance**

degree of assurance the **intended user** (2.26) requires in a **validation** (2.32) or **verification** (2.36)

NOTE 1 The level of assurance is used to determine the depth of detail that a validator or verifier designs into their validation or verification plan to determine if there are any material errors, omissions or misrepresentations.

NOTE 2 There are two levels of assurance, reasonable or limited, which result in differently worded validation or verification statements. Refer to A.2.3.2 for examples of validation and verification statements.

**2.29  
materiality**

concept that individual or the aggregation of errors, omissions and misrepresentations could affect the **greenhouse gas assertion** (2.11) and could influence the **intended users'** (2.26) decisions

NOTE 1 The concept of materiality is used when designing the validation or verification and sampling plans to determine the type of substantive processes used to minimize risk that the validator or verifier will not detect a **material discrepancy** (2.30) (detection risk).

NOTE 2 The concept of materiality is used to identify information that, if omitted or mis-stated, would significantly misrepresent a GHG assertion to intended users, thereby influencing their conclusions. Acceptable materiality is determined by the validator, verifier or GHG programme based on the agreed level of assurance. See A.2.3.8 for further explanation of this relationship.

**2.30  
material discrepancy**

individual or the aggregate of actual errors, omissions and misrepresentations in the **greenhouse gas assertion** (2.11) that could affect the decisions of the **intended users** (2.26)

**2.31  
monitoring**

continuous or periodic assessment of GHG emissions and removals or other GHG-related data

**2.32  
validation**

systematic, independent and documented process for the evaluation of a **greenhouse gas assertion** (2.11) in a GHG project plan against agreed **validation criteria** (2.33)

NOTE 1 In some cases, such as in first-party validations, independence can be demonstrated by the freedom from responsibility for the development of GHG data and information.

NOTE 2 The content of a GHG project plan is described in ISO 14064-2:2006, 5.2.

### 2.33

#### validation criteria

#### verification criteria

policy, procedure or requirement used as a reference against which evidence is compared

NOTE Validation or verification criteria may be established by governments, GHG programmes, voluntary reporting initiatives, standards or good practice guidance.

### 2.34

#### validation statement

#### verification statement

formal written declaration to the **intended user** (2.26) that provides assurance on the statements in the responsible party's **greenhouse gas assertion** (2.11)

NOTE Declaration by the validator or verifier can cover claimed GHG emissions, removals, emission reductions or removal enhancements.

### 2.35

#### validator

competent and independent person or persons with responsibility for performing and reporting on the results of a validation

NOTE This term can be used to refer to a validation body.

### 2.36

#### verification

systematic, independent and documented process for the evaluation of a **greenhouse gas assertion** (2.11) against agreed verification criteria **verification criteria** (2.33)

NOTE In some cases, such as in first-party verifications, independence can be demonstrated by the freedom from responsibility for the development of GHG data and information.

### 2.37

#### verifier

competent and independent person, or persons, with responsibility for performing and reporting on the verification process

NOTE This term can be used to refer to a verification body.

### 2.38

#### uncertainty

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

NOTE Uncertainty information typically specifies quantitative estimates of the likely dispersion of values and a qualitative description of the likely causes of the dispersion.

## 3 Principles

### 3.1 General

The application of principles is fundamental to validation and verification. The principles are the basis for, and will guide the application of, requirements in this part of ISO 14064.