












ISO 14064 Series, GHG Quantification & Reporting, GHG Validation & Verification, and related Accreditation Services



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24 February 2021



Related ISO Standards

- Greenhouse Gas (GHG) Quantification and Reporting (溫室氣體量化和報告)
 - [ISO 14064-1](#), ISO 14064-2 and ISO 14067
- GHG Validation and Verification (溫室氣體審定和核査)
 - [ISO/IEC 17029](#), [ISO 14065](#), [ISO 14064-3](#) and ISO 14066
- Accreditation (認可)
 - ISO/IEC 17011

GHG Quantification and Reporting

溫室氣體量化和報告

International Standards

- ISO 14064-1: 2018
 - at the organization level for quantification and reporting of GHG emissions and removals
- ISO 14064-2: 2019
 - at the project level for quantification, monitoring and reporting of GHG emission reductions or removal enhancements
- ISO 14067: 2018
 - for quantification and reporting of carbon footprint of products

Benefits

- 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
- Facilitates the ability to track performance



ISO 14064-1: 2018

- Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals
- The 1st edition was published in March 2006.
- The 2nd edition was published in December 2018.
 - cancels and replaces the 1st edition
 - has been technically revised
- 3-year transition period

ISO 14064-1 – Major Change 1

- A new approach of reporting boundaries - facilitating the inclusion and expansion of indirect emissions

- ISO 14064-1: 2006 **Mandatory**

- Scope 1 - Direct GHG emissions and removals
- Scope 2 - Energy indirect GHG emissions
- Scope 3 - Other indirect GHG emissions

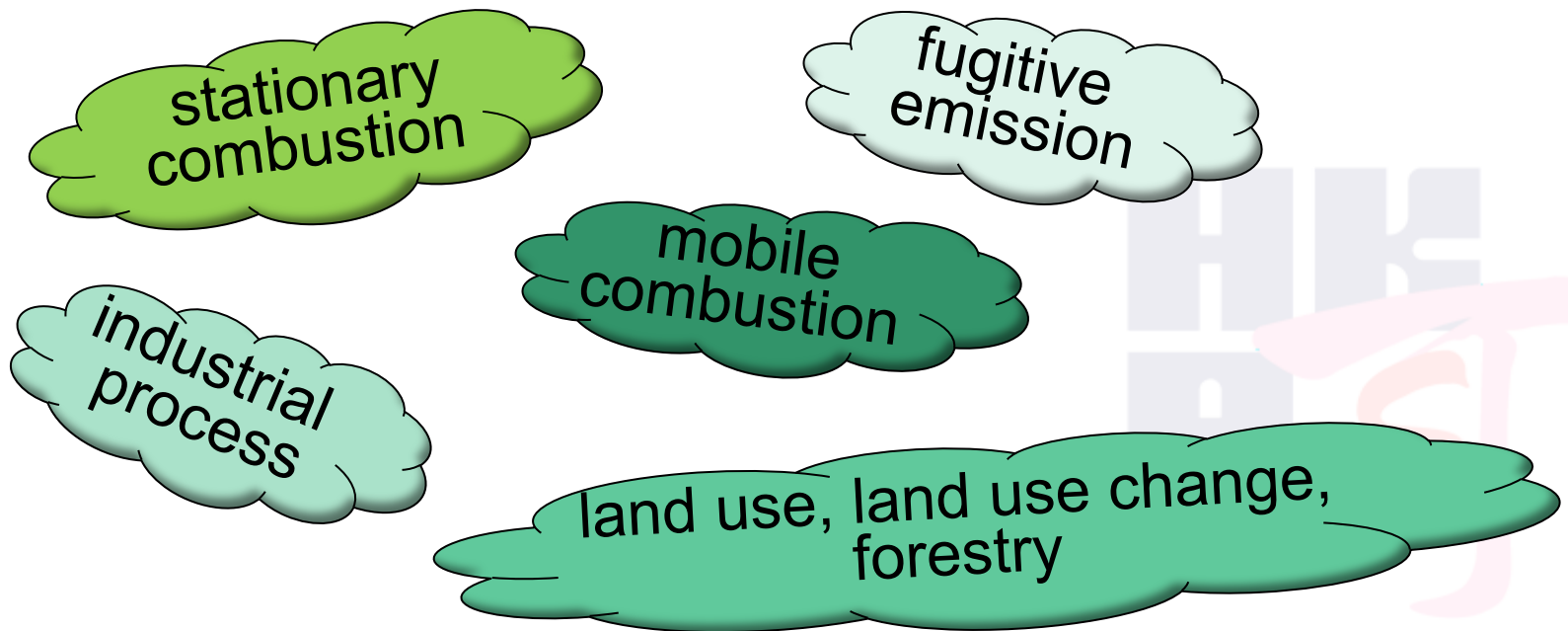
Optional

- ISO 14064-1: 2018 **Mandatory**

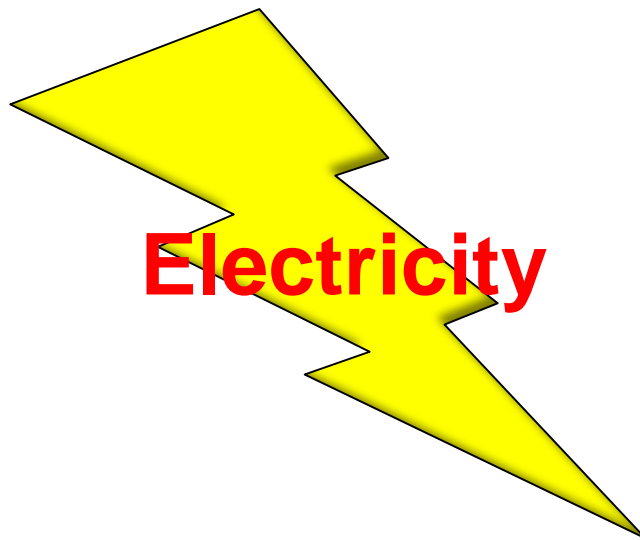
- Scope 1 → Category 1
- Scope 2 → Category 2
- Scope 3 → Categories 3, 4, 5 and 6

Mandatory if significant

- **Category 1:** Direct GHG emissions and removals
 - Mandatory
 - Separately for CO₂, CH₄, N₂O, NF₃, SF₆ and other appropriate GHG groups (HFCs, PFCs, etc.)




- **Category 2:** Indirect GHG emissions from imported energy
 - Mandatory if significant



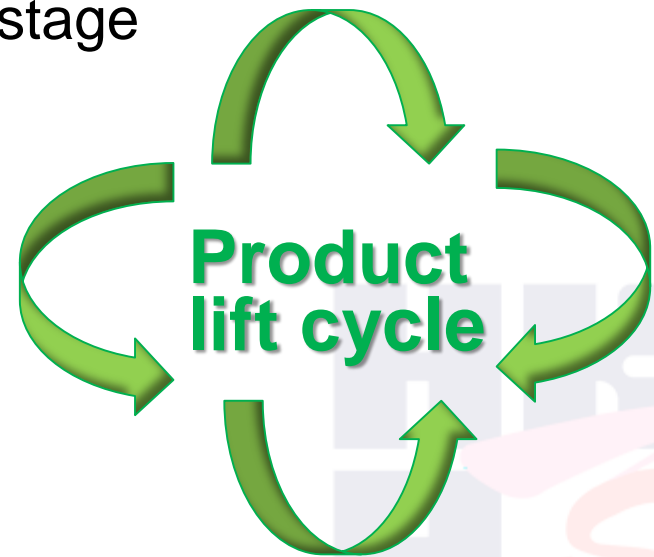


- **Category 3:** Indirect GHG emissions from transportation
 - Mandatory if significant
 - Mobile source mostly due to fuel burnt in transport equipment



- 
- **Category 4:** Indirect GHG emissions from products used by an organisation
 - Mandatory if significant
 - “Cradle to supplier output gate” approach

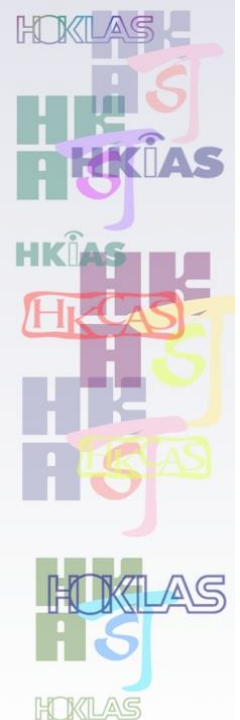
- **Category 5:** Indirect GHG emissions associated with the use of products from an organisation
 - Mandatory if significant
 - Use (and disposal) of products supplied by an organisation during its life stage



- **Category 6:** Indirect GHG emissions from other sources

- Setting pre-determined criteria for significance of indirect GHG emissions, e.g.
 - Magnitude / volume of the emissions
 - Level of influence on sources / sinks
 - Access to information
 - Level of accuracy of associated data
 - Buyer requirements
 - Regulatory requirements
 - Concern of interested parties
 - Scale of operation





This standard allows companies to

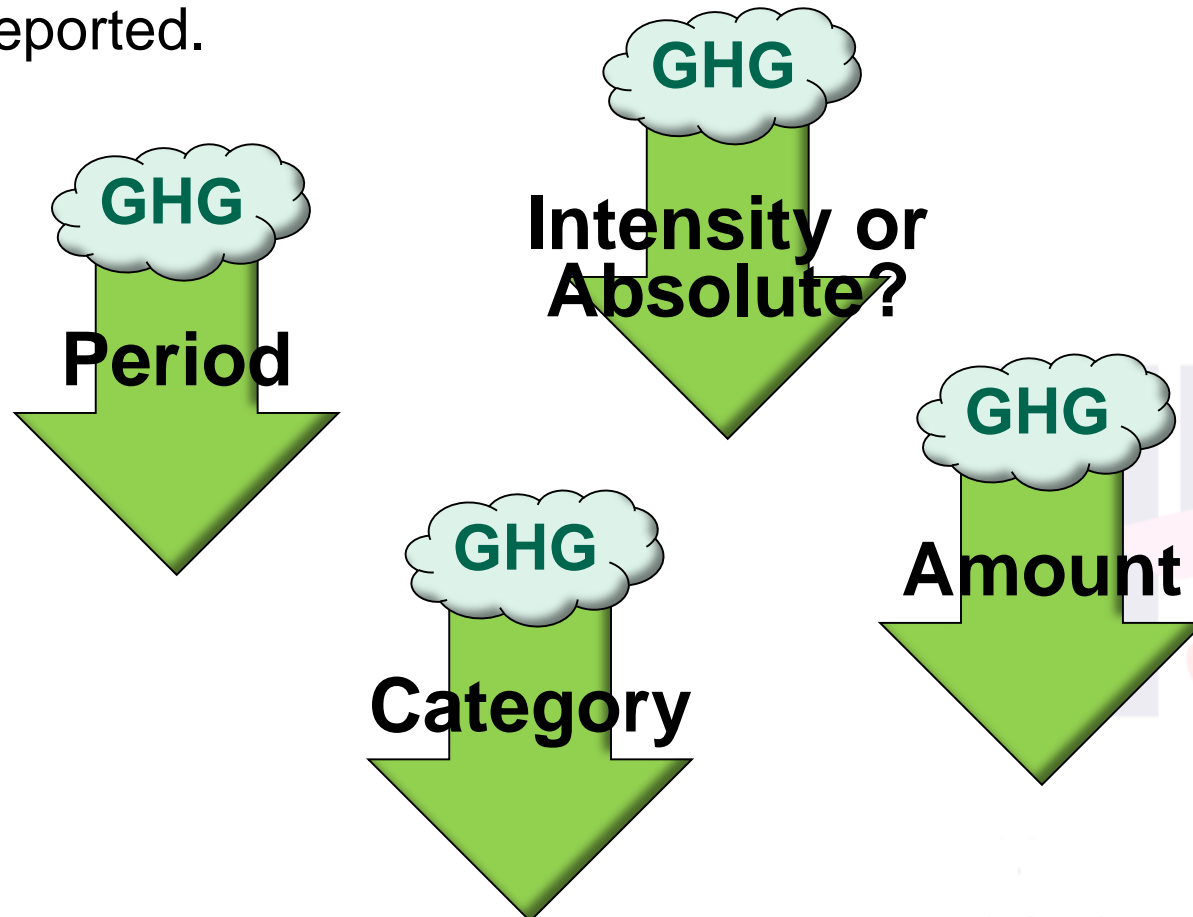
1. assess their entire value chain emissions impact, and
2. identify where to focus reduction activities.



ISO 14064-1 – Major Change 2

- Relating to mitigation activities – reduce or prevent GHG emissions, or enhance GHG removals
 - GHG emission reduction and removal enhancement initiatives (if implemented, the organization should quantify and report)
 - GHG emission reduction or removal enhancement projects



- (NEW) GHG emission reduction or removal targets
 - Setting targets to reduce GHG emissions (optional)
 - If report, a list of information shall be specified and reported.



ISO 14064-1 – Major Change 3

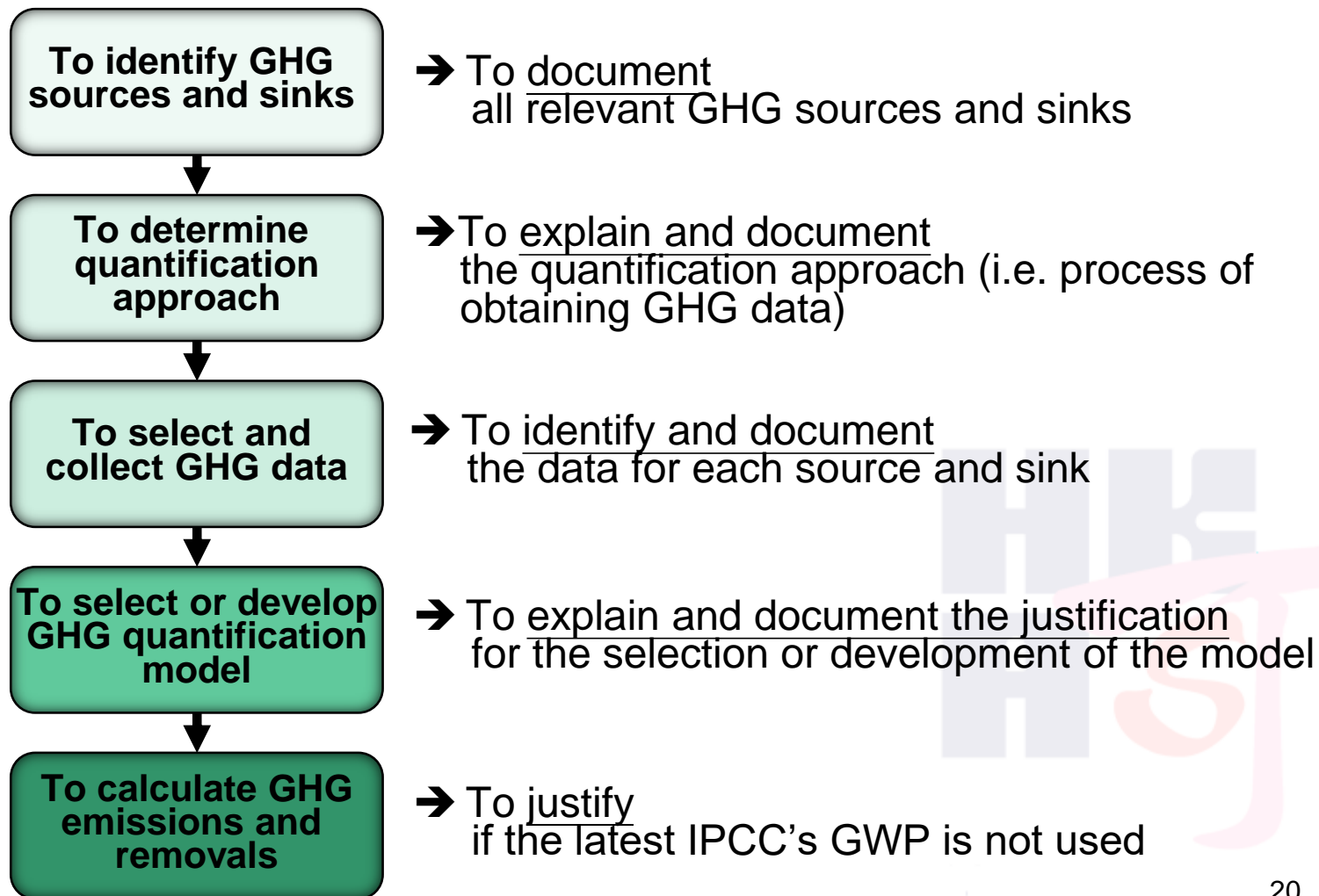
- GHG related data and information to be documented, explained and justified
 - “Document” – capturing and storing the information in writing
 - “Explain” – describing how approaches were used or decisions taken, and why approaches were chosen or decision made
 - “Justify” – explaining why alternative approaches were not chosen, and providing supporting data or analysis


How to manage GHG data and information?

- 
- Cl. 5.2.3 – Indirect GHG emissions
 - Apply and document a process to determine which indirect emissions to include in the GHG inventory
 - Define and explain the pre-determined criteria for significance of indirect emissions
 - Justify the exclusions of significant indirect emissions
 - Retain documented information (records) when the pre-determine criteria is changed
- 

- Cl. 5.2.4 – GHG inventory categories
 - (should) document each category of GHG emission separately at the facility level

• Cl. 6 – Quantification of GHG emissions and removals



- 
- Cl. 8 – GHG inventory quality management
 - document the required considerations of setting the quality management system



ISO 14064-1 – Major Change 4

- New term – GHG statement
 - Factual and objective declaration that provides the subject matter for the verification or validation
 - Replace the old term “GHG assertion”
 - Could be provided in a GHG report

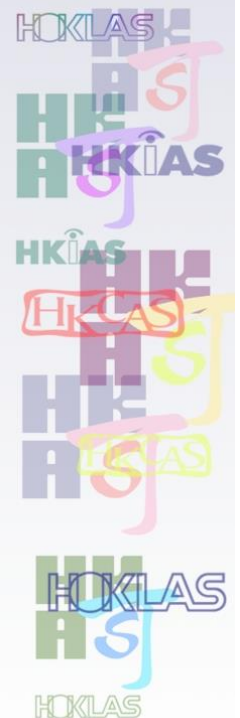


ABC Company
Address: ABC Building, Hong Kong
Reporting Period: 1 Jan – 31 Dec 2020
GHG Emissions:
Cat. 1: XX tonnes of CO₂e
Cat. 2: YY tonnes of CO₂e
Cat. 5: ZZ tonnes of CO₂e
.....



Published by EMSD and EPD

**Applicable for buildings
(commercial, residential or
institutional purposes)**





GHG Validation and Verification

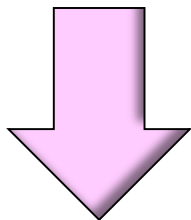
溫室氣體審定和核査



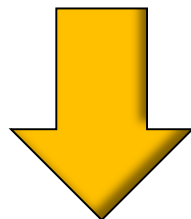
Related ISO Standards

In the past.....

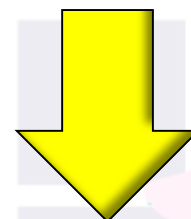
No Change



Requirements for GHG validation and verification bodies



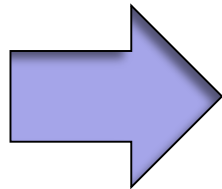
Competence Requirements for GHG validation teams and verification teams



Specification (with guidance) for GHG validation and verification process

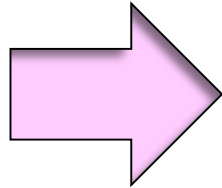
Now.....

(New)
ISO/IEC 17029:
2019



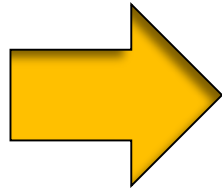
Requirements for validation and verification bodies

(Updated)
ISO 14065:
2020



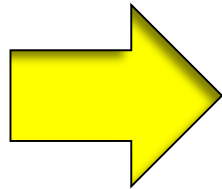
Requirements for bodies validating and verifying [environmental information](#)

ISO 14066:
2011



Competence Requirements for GHG validation teams and verification teams

(Updated)
ISO 14064-3:
2019



Specification (with guidance) for the verification and validation of greenhouse gas statements



(New)
ISO/IEC 17029:
2019

- Conformity assessment — General principles and requirements for validation and verification bodies (V/VBs)
- Published in October 2019
- Applicable to validation/verification bodies in any sector
- Contains general principles and requirements for the competence, consistent operation and impartiality of V/VBs



(Updated)
ISO 14065:
2020

- General principles and requirements for bodies validating and verifying environmental information
- Published in December 2020
- The Scope has been expanded to include bodies performing validation, verification and agreed upon procedures in all areas of environmental information
- Aligned with the requirements of ISO/IEC 17029: 2019
- 3-year transition period (with ISO/IEC 17029: 2019)



(Updated)
ISO 14064-3:
2019

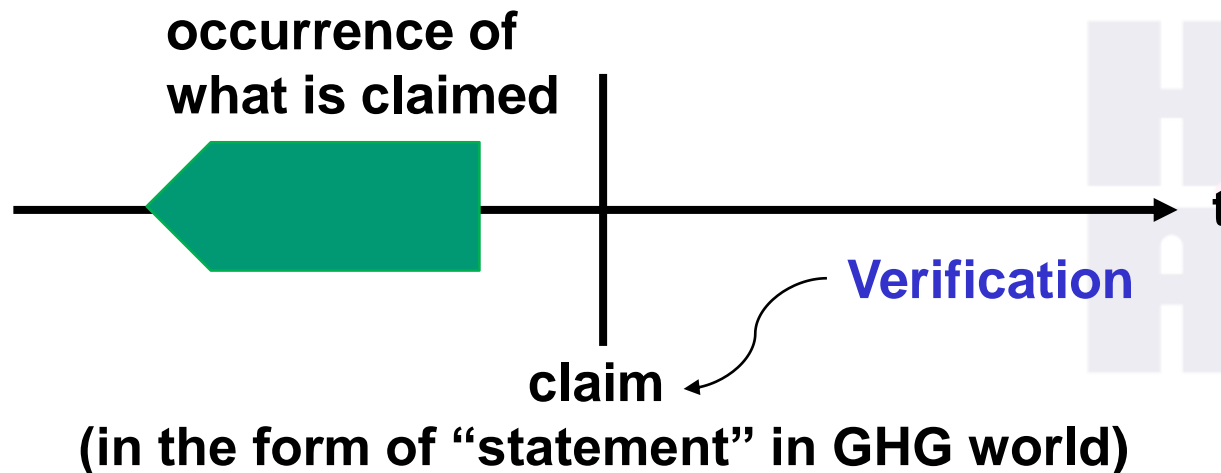
- Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements
- Published in April 2019
- Specific for verifying and validating GHG statement
- Technically revised; substantial changes

Major Change 1

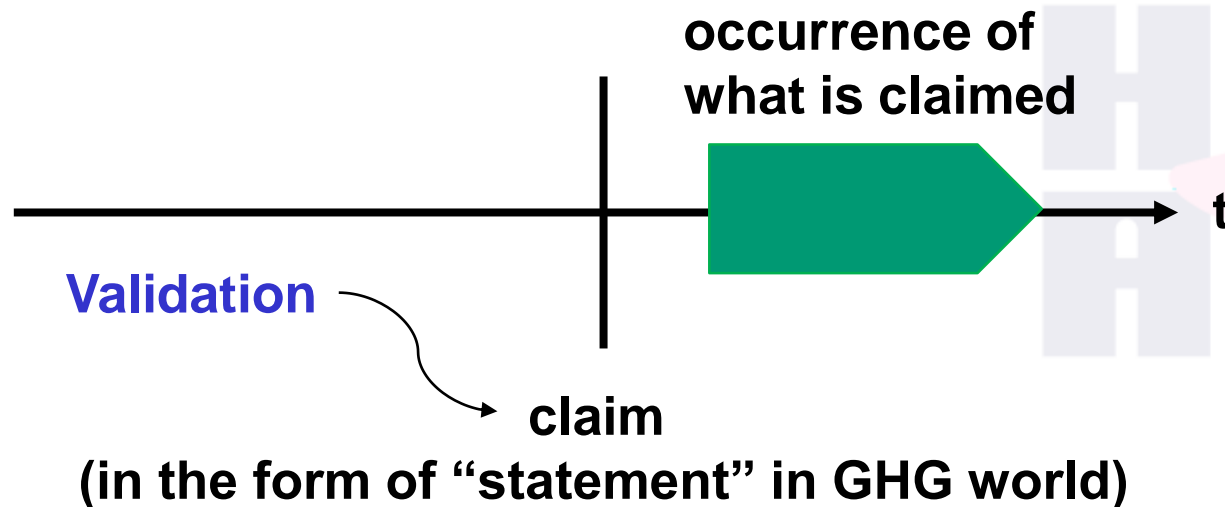
- New Definitions of “Verification” and “Validation”
 - Confirmation that claims are either plausible with regards to the intended future use (validation) or truthfully stated (verification)



- (ISO 17029) ‘Verification’ refers to confirmation of a claim, through the provision of objective evidence, that specified requirements have been fulfilled.
- (ISO 14065 & ISO 14064-3) ‘Verification’ refers to process for evaluating a statement of historical data and information to determine if the statement is materially correct and conforms to criteria

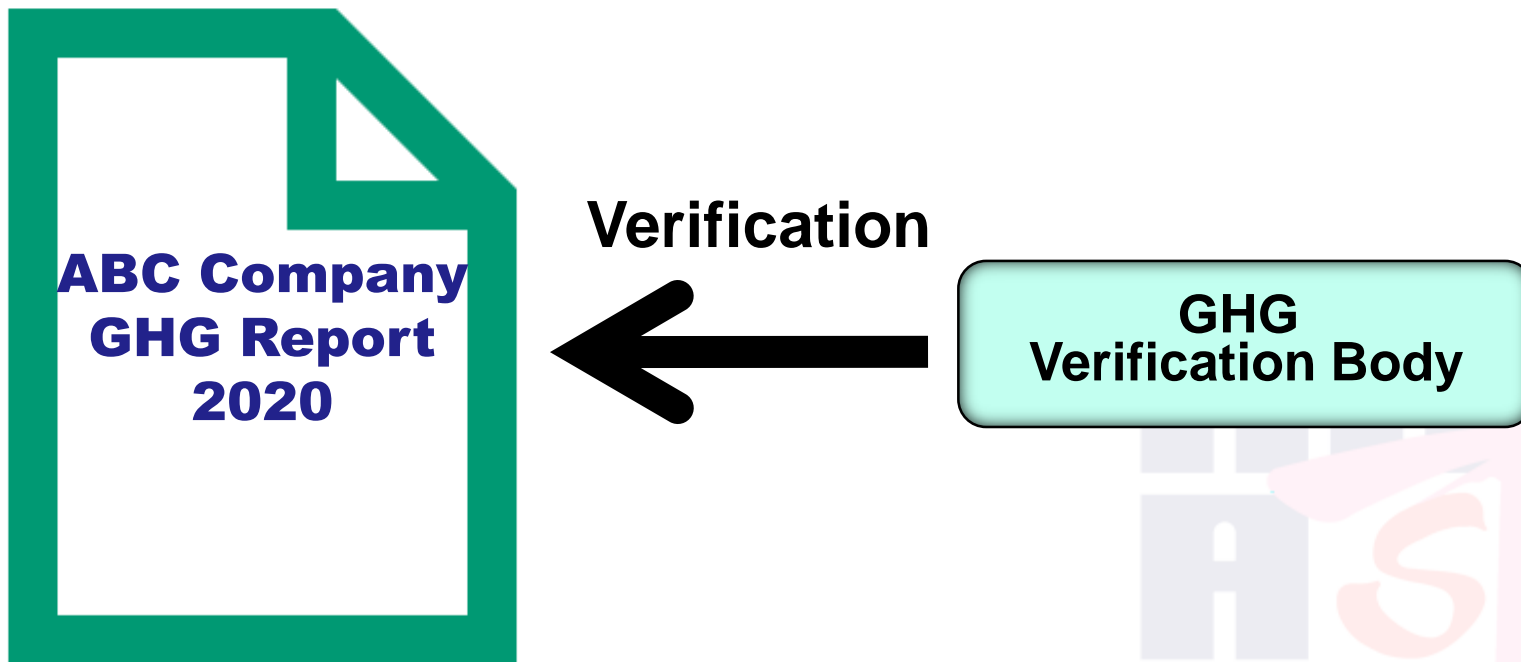


- (ISO 17029) ‘Validation’ refers to confirmation of a claim, through the provision of objective evidence, that the requirements for a specific intended future use or application have been fulfilled.
- (ISO 14065 & ISO 14064-3) ‘Validation’ refers to process for evaluating the reasonableness of the assumptions, limitations and methods that support a statement about the outcome of future activities



BIG impact to GHG reporting at organization level !!

In the past.....



Now.....



Verification

To determine if the claim is truthfully stated

Cat. 1: Direct GHG emissions
Cat. 2: Indirect GHG emissions from imported energy
(Claims related to past activities)

Cat. 1: XX tonnes of CO₂e
Cat. 2: YY tonnes of CO₂e

Cat. 5: ZZ tonnes of CO₂e
.....

Cat. 5: Indirect GHG emissions associated with the use of products from the organization
(Claim related to future activities)



Validation

To determine if the claim is plausible

- Mixed engagement
 - An engagement combining verification and validation activities performed at the same time and on the same GHG statement
 - V/VB – competent in both verification and validation

Verification
+
Validation

Major Change 2

- Deliverables of “Verification” and “Validation”
 - (NEW) Verification / validation report
 - Verification / validation opinion (named as verification / validation statement in the past)



Summary of verification / validation process



Formal written declaration that provides confidence on the GHG statement and confirms conformity with the criteria



Table 1 — Verification/validation opinion name variants

| Programme A | Programme B | Programme C | Programme D | Programme E |
|-------------------------------------|--------------------|--------------------|----------------------------|--------------------|
| Unmodified | Unqualified | Positive | Satisfactory | Positive |
| Modified | Qualified | Qualified positive | Satisfactory with comments | |
| Adverse | Adverse | Adverse | Unsatisfactory | Negative |
| Disclaim the issuance of an opinion | | | | |

(Source: ISO 14064-3: 2019)



What is the competences of
GHG validation and verification
bodies?

Accreditation



**Accreditation
Body**



Accreditation

**GHG Validation/
Verification Body**



Validation / Verification

**Reported GHG
Information**

**Standards:
ISO/IEC 17029, ISO 14065,
ISO 14066 and ISO 14064-3**

**Standards:
ISO 14064-1 / ISO 14064-2 /
ISO/TS 14067**



Hong Kong Accreditation Service 香港認可處





Hong Kong Accreditation Service

香港認可處

- Hong Kong Accreditation Service (HKAS) is part of Innovation and Technology Commission of the Hong Kong Special Administrative Region (HKSAR) Government.



香港特別行政區政府
創新科技署

- Established in 1985 (formerly named as HOKLAS)
- Provide independent and impartial accreditation services

- 
- Support the Hong Kong testing and certification industry, provide accreditation services under 3 schemes:

➤ HOKLAS (香港實驗所認可計劃)



➤ HKCAS (香港認證機構認可計劃)





➤ HKIAS (香港檢驗機構認可計劃)





Accreditation Programme for GHG Validation & Verification Bodies

- Under Hong Kong Certification Body Accreditation Scheme (HKCAS)
- For GHG validation/verification bodies (V/VBs) providing third-party GHG validation/verification services
 - at organisation and project levels (launched in Dec 2012)
 - for carbon footprint of a product (CFP) study report (launched in Jun 2014)
- Two accredited GHG verification body (at organisation level)

- 
- Some GHG programmes may require certification by GHG V/VB of the greenhouse gas performance achieved by responsible parties over a specified period of time. Such certification activities are not covered under this HKAS accreditation.
 - HKAS accredited GHG V/VBs are allowed to issue accredited GHG verification/validation statements / opinions.
- 



Features of HKAS Accreditation

- Voluntary
- Rigorous assessment and monitoring (through surveillance and reassessment) based on international standards
- Independent and impartial
- International recognition





International Recognition

- HKAS is a signatory (GHG validation and verification) to
 - Mutual Recognition Arrangement (MRA) of Asia Pacific Accreditation Cooperation (APAC)
 - Multilateral Recognition Arrangement (MLA) of International Accreditation Forum (IAF)



How to identify accredited GHG validation / verification statement / opinion?



GHG

For more information on HKAS ...

Please visit HKAS website at
[http: www.hkas.gov.hk](http://www.hkas.gov.hk)



Innovation and Technology Commission
The Government of the Hong Kong Special Administrative Region
of the People's Republic of China



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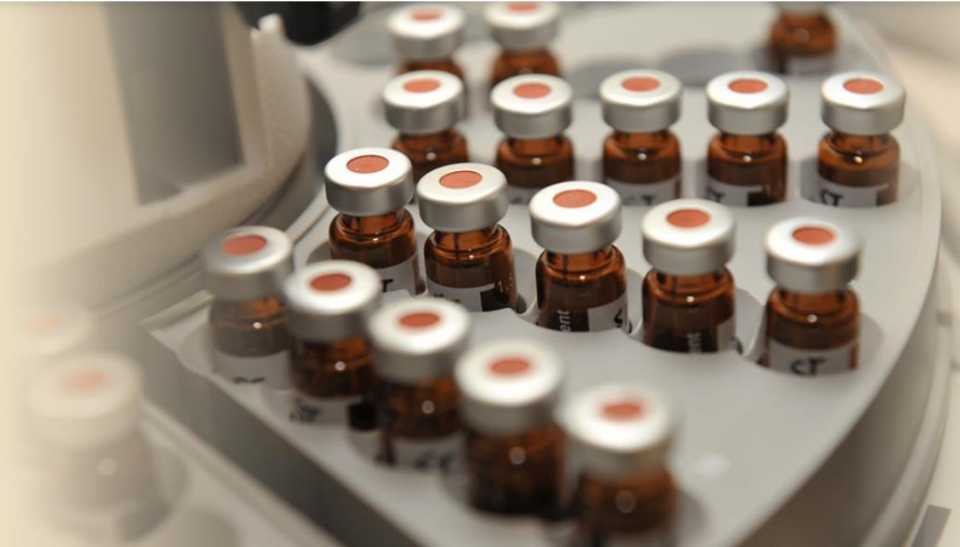
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Home > Accreditation, Standards and Calibration Services: Hong Kong Accreditation Service

For more information on testing and certification industry ...

Please visit HKCTC website at <http://www.hkctc.gov.hk>



The screenshot shows the homepage of the Hong Kong Council for Testing and Certification (HKCTC). At the top left is the HKCTC logo, followed by the text "Hong Kong Council for Testing and Certification" and "The Government of the Hong Kong Special Administrative Region". On the top right, there are links for "Text Size A A A", "Related Sites", "Contact Us", and "繁簡 EN" with a search icon. Below this is a blue banner with the text "Tested in Hong Kong Certified in Hong Kong" and images of laboratory equipment and a certificate. A navigation menu below the banner includes: Home, About HKCTC, About T&C Sector, Support to T&C Sector, Career Development, CEPA, Events and Activities, Publications and Reports, and What's New. The main content area features four columns with images and titles: 1. "General Public" with a globe image and a list of links: "Events and Activities", "Profile and Role of T&C Sector", and "Services Provided by T&C Sector". 2. "T&C Bodies and Practitioners" with a laboratory image and a link: "HKCTC Exhibition Program". 3. "T&C Service Users" with a test tubes image and a list of links: "Strengths of Hong Kong's T&C Sector" and "Services for Different Business". 4. "Teachers and Students" with a student using a microscope image and a link: "Teaching Kit on Chemical Testing for New Senior Secondary".

Hong Kong Council for Testing and Certification
The Government of the Hong Kong Special Administrative Region

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Teachers and Students

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Q & A

