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# Achieving Carbon Neutrality

## A Step-by-Step Guide to ISO 14068-1 Verification

Live webinar

วันศุกร์ที่ 4 เมษายน 2568

เวลา 10.00-11.00 น.

บรรยายโดย

พศ.ดร. ภาณุวัฒน์ อู่สำหเพียร

Product Manager; BSI Thailand





# ***Introduction***





# *Importance of ISO 14068-1 for Carbon Neutrality and Net Zero Goals*

## What is ISO 14068-1?

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- A standard for verifying carbon neutrality claims.
- Establishes clear guidelines for credible carbon neutrality.

## Why is it Important?

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- Ensures transparency and integrity in carbon neutrality efforts.
- Aligns with global frameworks (ISO 14064-1, GHG Protocol, SBTi).
- Helps businesses **and** organizations achieve science-based net zero goals.

## Who Benefits?

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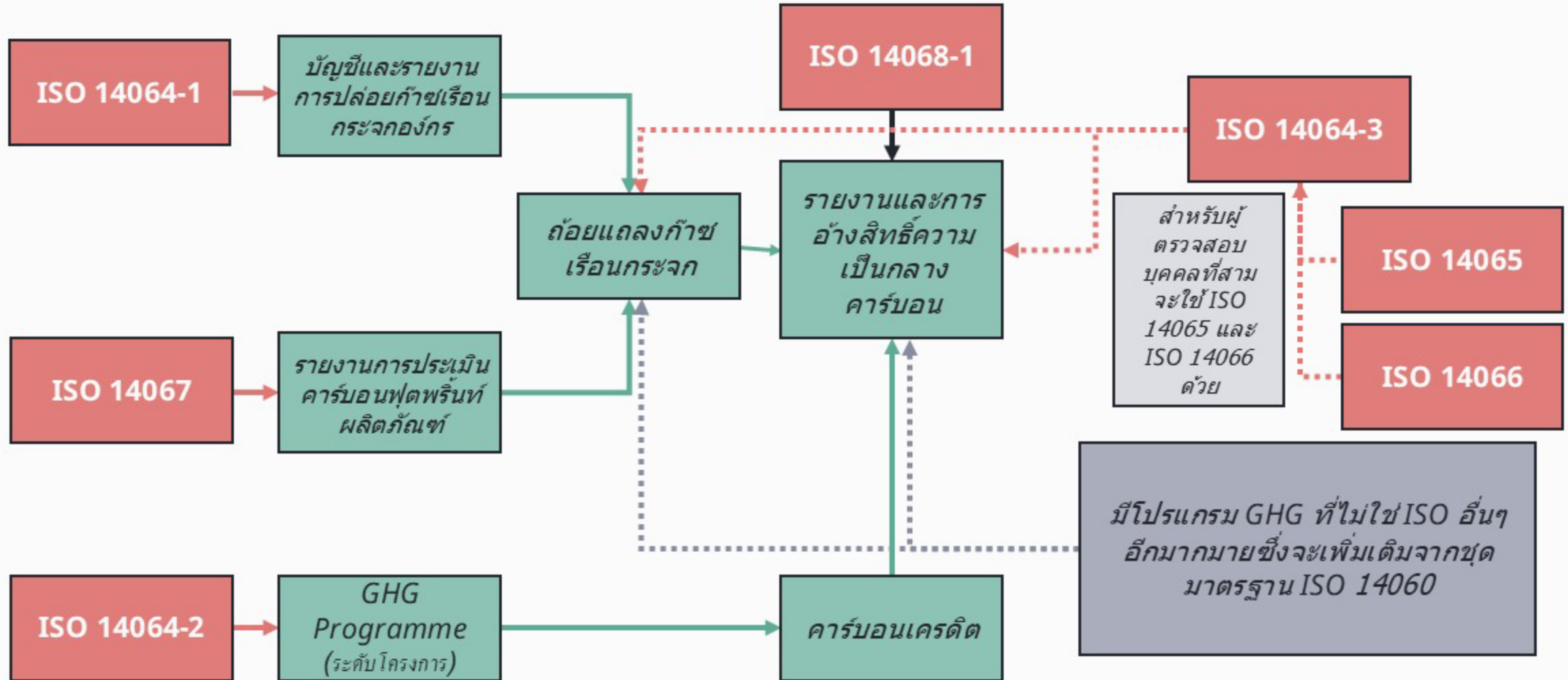
- Companies aiming for net zero.
- Industries seeking sustainability credibility.
- Stakeholders demanding verified carbon reduction commitments.

# Standard contributing to net zero goals

Key Aspects of ISO 14068-1 Implementation



# ชุดมาตรฐาน ISO GHG



BS ISO 14068-1:2023



BSI Standards Publication

## Climate change management — Transition to net zero

Part 1: Carbon neutrality

bsi.

PD ISO IWA 42:2022



BSI Standards Publication

## Net zero guidelines

bsi.







# ***Understanding ISO 14068-1***





# *The importance of ISO 14068-1 for carbon neutrality and net zero goals*

## Carbon neutrality (ISO 14068-1: 2023)

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“สถานะที่ในระหว่างระยะเวลาที่กำหนด คาร์บอนฟุตพริ้นลดลงอันเป็นผลมาจากการลดก๊าซเรือนกระจก หรือการปรับปรุงการดูดกลับก๊าซเรือนกระจก และหากผลลัพธ์มากกว่าศูนย์ ก็จะถูกถ่วงดุล (Counterbalance) โดยการชดเชย (Offset)”

## Net zero (ISO IWA 42:2022)

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สถานะที่การปล่อยก๊าซเรือนกระจกที่เหลือจากการกระทำของมนุษย์ (GHG residual emissions) ได้รับการปรับสมดุลโดยการดูดกลับดำเนินการโดยมนุษย์ ในช่วงระยะเวลาที่กำหนดและภายในขอบเขตที่กำหนด

## Achievement and continuation of Net Zero (ISO IWA 42:2022)

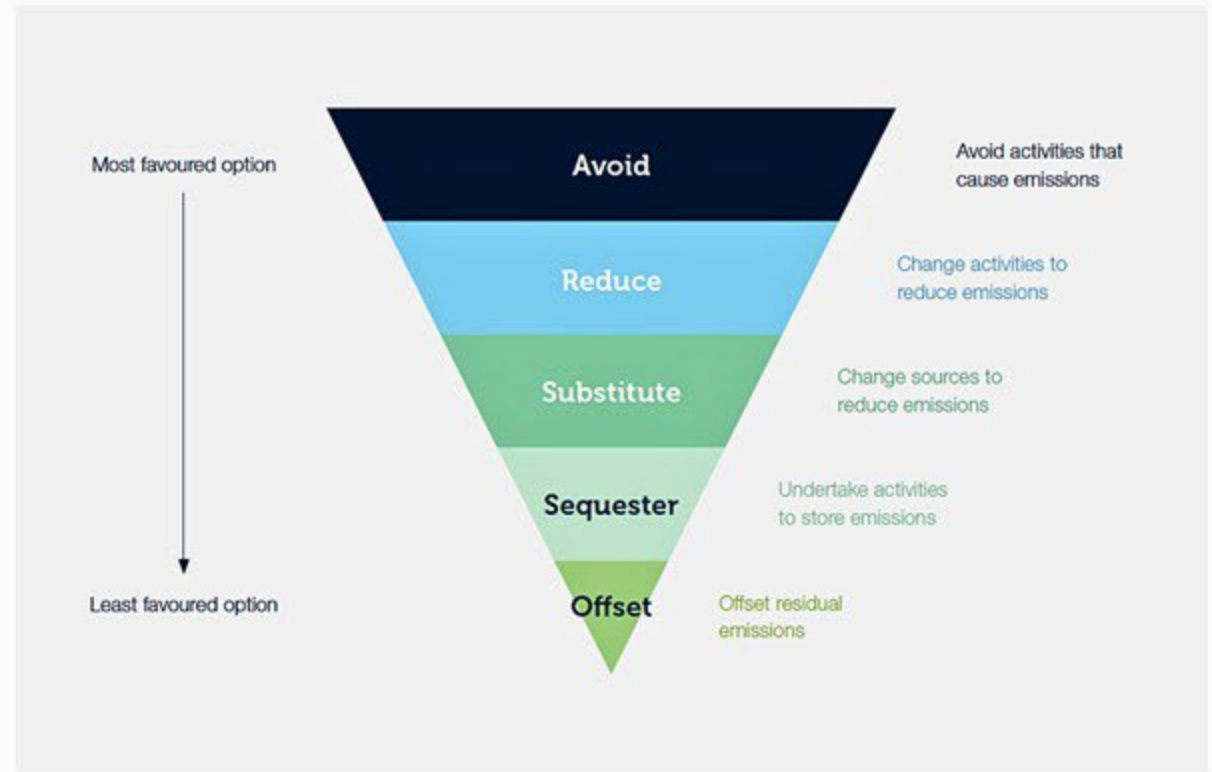
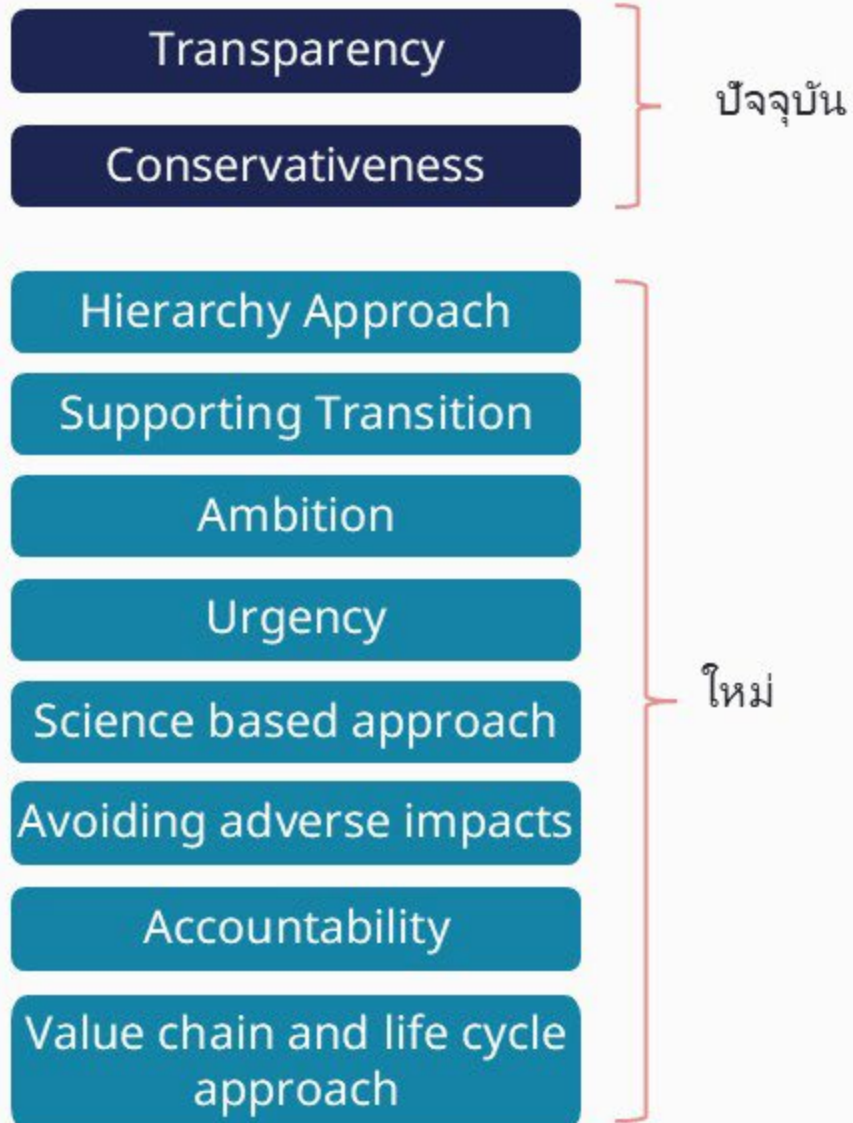
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การดำเนินการในทุกระดับตามหลักการของความเท่าเทียม (Equity) และ ความยุติธรรม (Justice) รวมถึงการแบ่งปันอย่างยุติธรรม เพื่อให้แน่ใจว่ามีการลดการปล่อยก๊าซเรือนกระจกที่เป็นไปได้ทั้งหมด และก๊าซเรือนกระจกที่เหลือ (Residual GHG emissions) จะถูกชดเชยด้วยการดูดกลับ ในระยะยาวอย่างถาวร หรือยาวนานเพียงพอ เพื่อชดเชยการปล่อยก๊าซเรือนกระจก



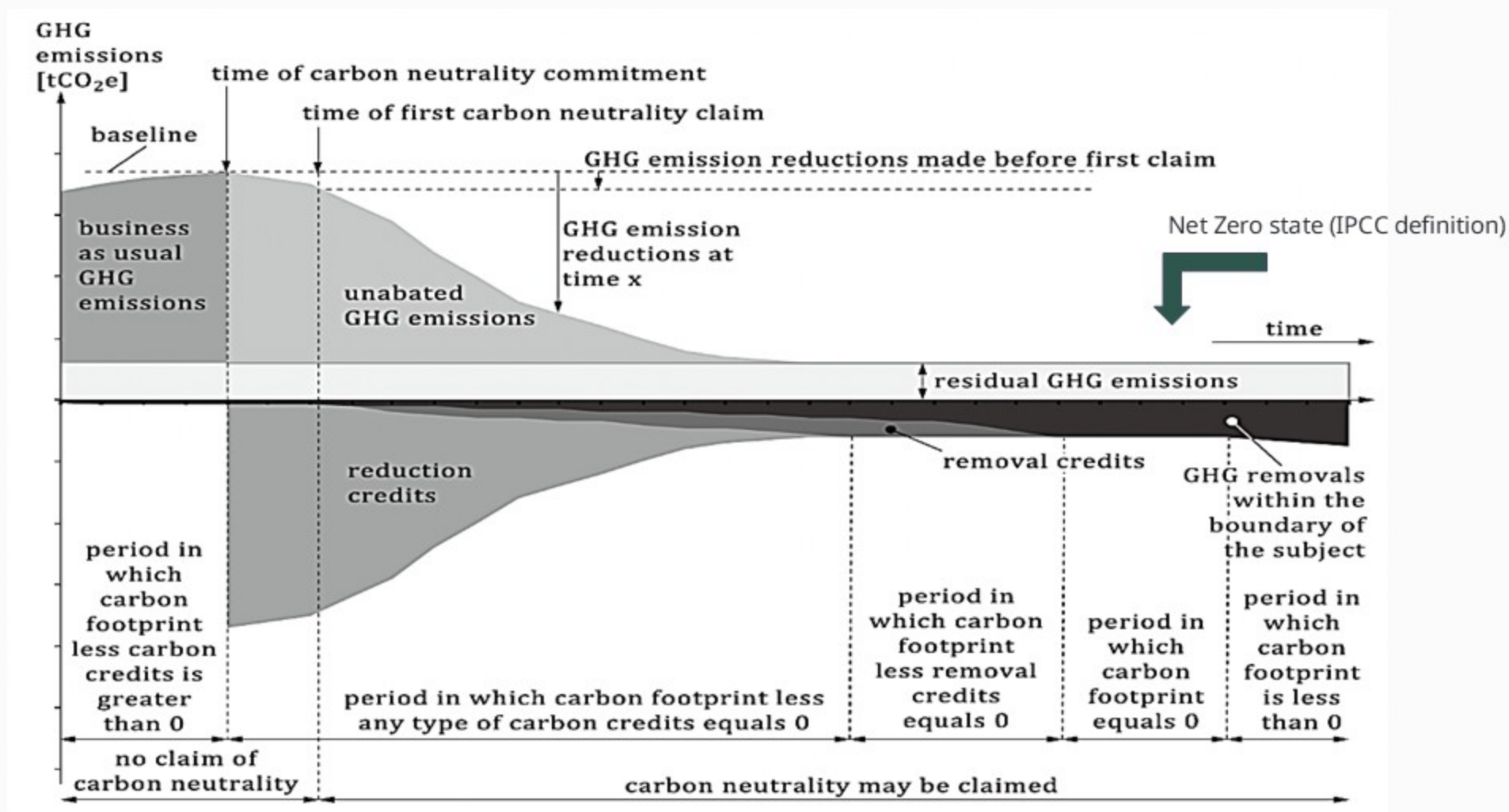
# ISO14068-1:2020

## Climate Change Management Transition to Net Zero: Part 1 Carbon Neutrality



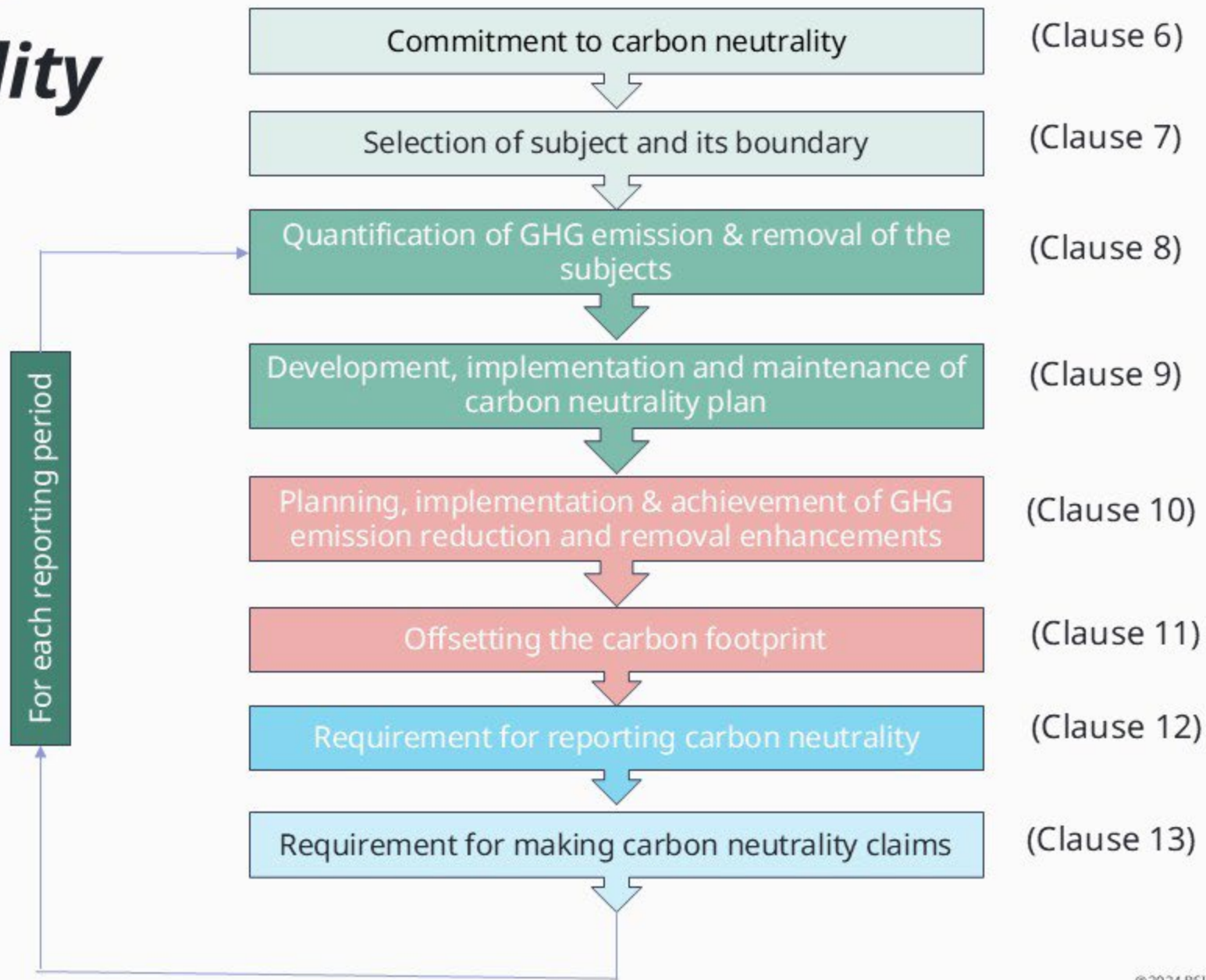
Source: RMIT University Carbon Management Plan in  
[Carbon management: a step by step guide - Paia Consulting](#)

# ISO14068-1:2023





# Framework for carbon neutrality





# *Case Study*





# Case studies

## GreenTech Manufacturing Ltd.

Industry: Electronics Manufacturing

Location: Germany

Certification: ISO 14068-1 – Carbon  
Neutrality Verification

### Background:

GreenTech Manufacturing Ltd. is a leading producer of energy-efficient electronic components. As part of its sustainability commitment, the company set a goal to achieve carbon neutrality for its operations by 2030. To ensure credibility and transparency, it pursued ISO 14068-1 verification to validate its claims.



# Case studies

## GHG Emissions Profile (Baseline Year: 2023)

**Scope 1** (Direct Emissions): 100,000 tCO<sub>2</sub>e (fuel combustion in manufacturing & company vehicles)

**Scope 2** (Indirect Energy Emissions): 50,000 tCO<sub>2</sub>e (electricity consumption from the grid)

**Scope 3** (Value Chain Emissions): 60,000 tCO<sub>2</sub>e (purchased goods, transportation, and logistics)

**Total Carbon Footprint:** 210,000 tCO<sub>2</sub>e

High Scope 1 emissions

Reducing  
Scope 2  
dependency

Managing  
Scope 3  
emissions

**Challenges**





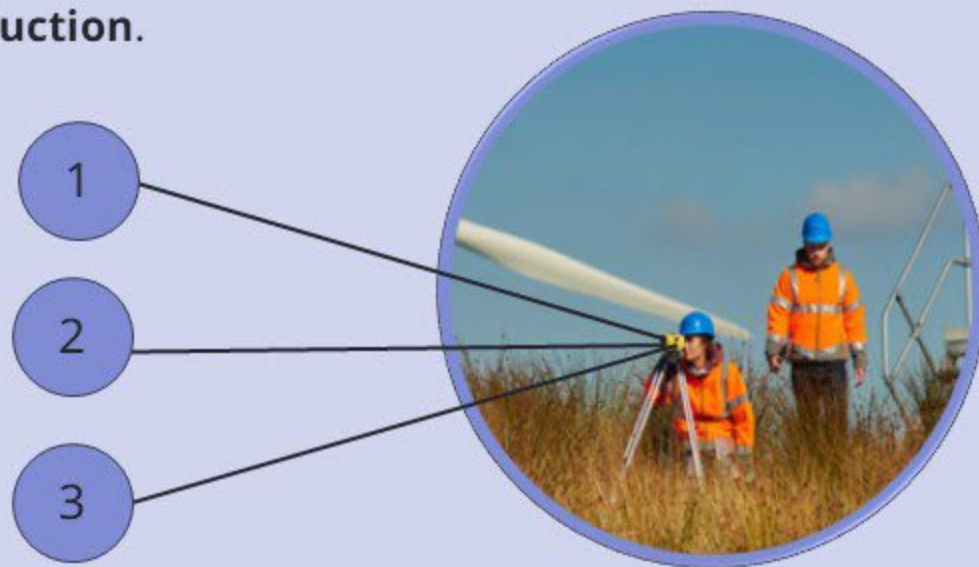
# Case studies

## Implementation Steps

### 1. Carbon Footprint Assessment

- Conducted a detailed **ISO 14064-1-compliant GHG inventory**.
- Verified emission sources and identified **hotspots for reduction**.

**Hotspots** are areas or processes that contribute the most to total emissions. Identifying them helps **prioritize reduction efforts**.



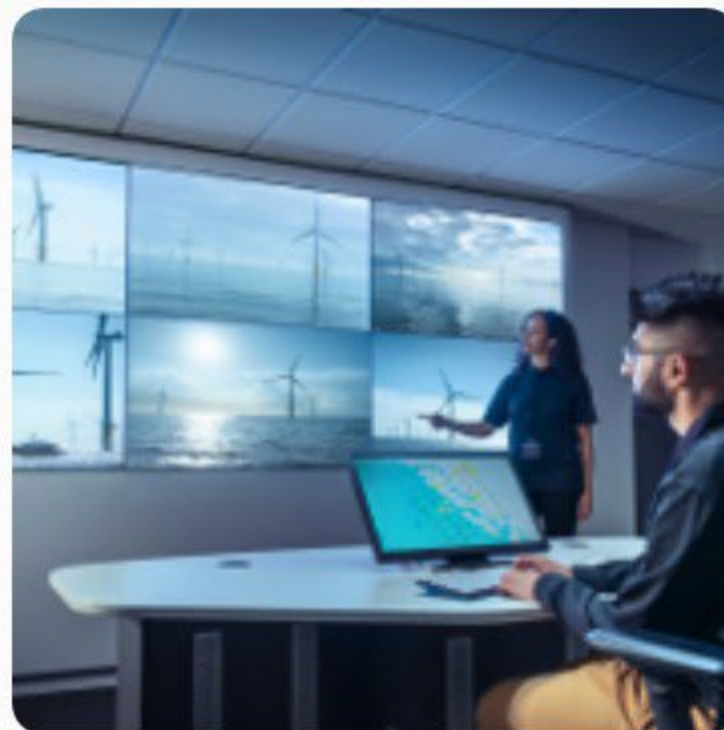
# Case studies

## 2. Emission Reduction Strategy

Scope 1 Reduction (100,000 tCO<sub>2</sub>e → 60,000 tCO<sub>2</sub>e)



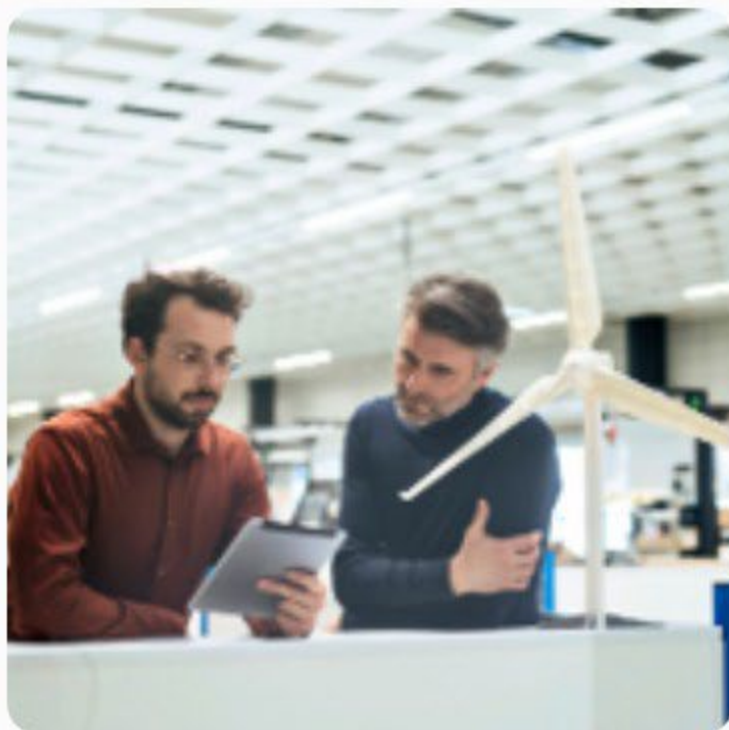
- Switched to biogas and electrified heating systems in production.
- Replaced diesel trucks with electric vehicles (EVs) for internal logistics.
- Optimized manufacturing processes, cutting direct emissions by 40,000 tCO<sub>2</sub>e (40%).





# Case studies

Scope 2 Reduction (50,000 tCO<sub>2</sub>e → 20,000 tCO<sub>2</sub>e)



- Installed onsite solar PV (covering 50% of energy needs).
- Purchased 100% renewable energy for remaining power demand.
- Achieved a 60% reduction in Scope 2 emissions.

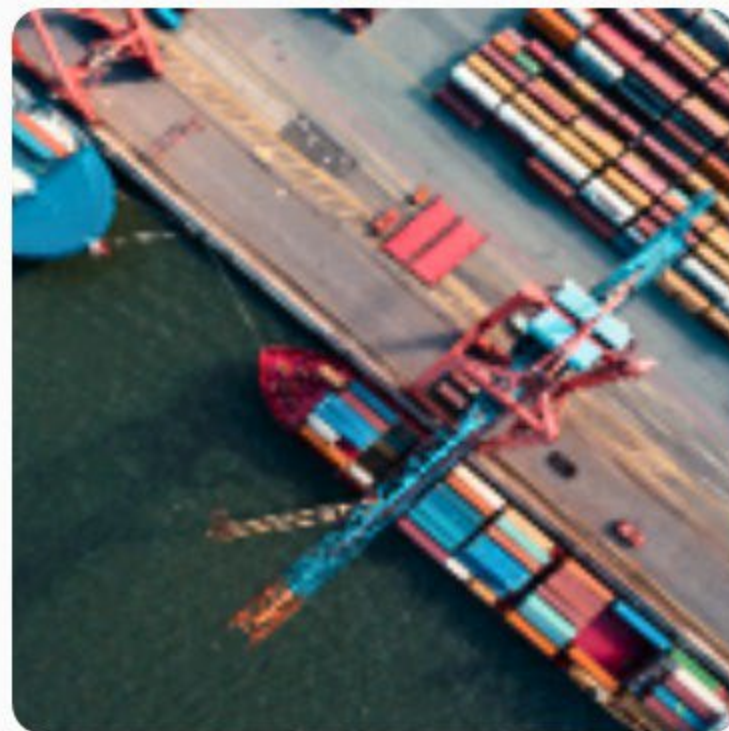


# Case studies

Scope 3 Reduction (60,000 tCO<sub>2</sub>e → 45,000 tCO<sub>2</sub>e)



- Installed onsite solar PV (covering 50% of energy needs).
- Purchased 100% renewable energy for remaining power demand.
- Achieved a 60% reduction in Scope 2 emissions.





# Case studies

## 3. Offsetting Residual Emissions

After reductions, the company offset the remaining **125,000 tCO<sub>2</sub>e** through:

- **Reforestation projects (40%)** certified by **Gold Standard**.
- **Renewable energy projects (30%)** in developing countries.
- **Carbon capture & storage investments (30%).**



CDM



**Verified Carbon  
Standard**

A VERRA STANDARD

**Gold Standard<sup>®</sup>**

*Climate Security & Sustainable Development*

**Gold standard**

# Case studies

## 4. Independent Verification & Certification

- Engaged a **third-party verification body** for ISO 14068-1 assessment.
- Stage 1:** Document review and verification planning.
- Stage 2:** On-site audit of reduction and offset implementation.
- Successfully obtained **ISO 14068-1 verification** for carbon neutrality.

VERIFICATION



**CARBON NEUTRALITY**  
**ISO 14068-1:2023**

**OBJECTIVES AND SCOPE**  
**YOUR CERTIFICATION LIMITED**  
has undertaken independent third-party verification of carbon neutrality within the following boundaries:  
**Activities relating to the supply of automation products and services including service, repair, design and assembly of bespoke systems; Development and delivery of technology skills and specialist training and consulting services for industries; including all applicable Scopes 1, 2 and 3.**

On behalf of:  
**Make My Auto Parts Ltd**  
Applied Automation Centre, Brunel Road, Brunel Industrial Estate, Rushden, NN1 0BE  
Northampton Marketing & Finance Office -111-112 Cherry Blossom Rd, Northampton NN1 1AN

**Attestation**  
Date of Verification: xx/xx/202x  
Verification No: 123456, 123457  
Period Verified: xx/01/202x to xx/12/202x  
Future Commitment: xx/01/202x to xx/12/202x

This verification exercise has been performed to:  
**ISO 14068-1:2023**  
Climate change management  
Transition to net zero  
Part 1: Carbon neutrality

  
Jacqui Parker  
Lead Verifier

  
Alan Wilson  
Independent Reviewer

This verification statement, including the opinion expressed herein, is provided to the reporting entity and is solely for their benefit in accordance with the standards in relation to third verification. Your Certification Ltd. accepts no liability on our part to any other party which may have access to this statement.  
v1 - December 2023

**Your Certification Ltd**  
Independent Assurance Statement on GNG assertions

**Declaration of carbon neutrality in accordance with: ISO 14068-1:2023**

**Declaration**  
Type of declaration: Achievement of Carbon Neutrality

**Data Report Details**  
Name of reporting entity: Make My Auto Parts Ltd  
Address of reporting entity: Applied Automation Centre, Brunel Road, Brunel Industrial Estate, Rushden, NN1 0BE

**Subject matter scope & objectives:**  
Activities relating to the supply of automation products and services including service, repair, design and assembly of bespoke systems; Development and delivery of technology skills and specialist training and consulting services for industries; including the following Scopes:  
- Scope 1: Biogas, Refrigerant, Company Fleet  
- Scope 2: Electricity  
- Scope 3:  
- Category 1 Purchased Goods and Services (limited to water supply and treatment)  
- Category 3 Electricity Transmission & Distribution (excluding WTT)  
- Category 5 Waste Generated in Operations (including wastewater)  
- Category 6 Business Travel  
- Category 7 Employee Commuting (limited to homeworking)  
- Category 9 Downstream Transportation and Distribution  
- Excluded Scope 3:  
- Category 2 Capital Goods  
- Category 4 Upstream Transportation and Distribution (excluded as parent company accounts for these)  
- Category 8 Upstream Leased Assets  
- Category 10 Processing of solid products  
- Category 11 Use of solid products  
- Category 12 End-of-life treatment of solid products  
- Category 13 Downstream leased assets (none)  
- Category 14 Franchises (none)  
- Category 15 Investments (none)

**Level of assurance provided:** Limited Assurance  
**Date of assertion:** xx/xx/202x  
**Period of assertion:** Baseline Year: xx/01/202x to xx/12/202x Offsetting Date: xx/xx/202x  
Future commitment: xx/01/202x to xx/12/202x  
**Reference document:** ISO14068-1:2023 Qualifying Explanatory Statement v3.4

	Baseline/Prior period footprint xx/01/202x to xx/12/202x (Period)	Current footprint xx/01/202x to xx/12/202x (Period)
Scope 1 emissions (tCO <sub>2</sub> e)	64	64
Scope 2 emissions (tCO <sub>2</sub> e)	4	4
Scope 3 emissions (tCO <sub>2</sub> e)	224	224
Total emissions (tCO <sub>2</sub> e)	293	293
Reduction declared (tCO <sub>2</sub> e)		N/A
Offset declared (tCO <sub>2</sub> e)		293

This verification statement, including the opinion expressed herein, is provided to the reporting entity and is solely for their benefit in accordance with the standards in relation to third verification. Your Certification Ltd. accepts no liability on our part to any other party which may have access to this statement.  
v1 - December 2023



# ***Results & Business Impact***

- **ISO 14068-1 certification achieved** for verified carbon neutrality.

- **Reduced direct and indirect emissions by 55%** (Scope 1 & 2).

- **Strengthened ESG credibility, attracting new sustainable investors.**

- **Secured a long-term supply contract with sustainability-focused clients.**

# Case studies

## Lessons Learned

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- **Prioritize reduction over offsetting** – Companies gain credibility by cutting emissions first.
- **Scope 3 emissions require supplier engagement** – Collaborating with the value chain is essential.
- **ISO 14068-1 verification enhances transparency** – Independent verification builds trust with stakeholders.





# ***Verification Process***



# *What Verifiers Look For: Documentation, Data Consistency, Traceability*

When verifying carbon neutrality under **ISO 14068-1**, auditors focus on three key areas:





# 1. Documentation (Evidence of Compliance)

- **GHG Inventory Report** (aligned with ISO 14064-1 or the GHG Protocol)
- **Emission Calculation Methodologies** (e.g., emission factors used, boundaries defined)
- **Reduction Action Plans** (energy efficiency projects, renewable energy adoption, fleet electrification)
- **Offsetting Certificates** (e.g., CDM, Gold Standard, Verified Carbon Standard (VCS))
- **Third-Party Verification Reports** (if prior assessments have been conducted)

✦ **Key Expectation:** Verifiers ensure that documents are complete, up to date, and aligned with ISO 14068-1 requirements.

## 2. Data Consistency (Accuracy & Reliability of Calculations)

- **Logical alignment between activity data and emission factors** (e.g., fuel consumption vs. reported CO<sub>2</sub> emissions)
- **Consistency across reporting periods** (ensuring year-over-year trends make sense)
- **Comparison with industry benchmarks** (identifying unusual or unrealistic figures)

✦ **Key Expectation:** Any discrepancies in data must be explained and justified.



### 3. Traceability (Ability to Track & Verify Data Sources)

- **Raw data sources** (utility bills, fuel purchase records, supplier data)
- **Calculation transparency** (clear documentation of assumptions, formulas used)
- **Offset project verification** (ensuring offsets are from certified programs with clear tracking mechanisms)

✦ **Key Expectation:** Organizations must provide clear **audit trails** to confirm data reliability.



# ***How to Prepare for Verification?***







# How to Prepare for Verification?

- ✓ Conduct an **internal review** before the audit.
- ✓ Ensure **all documents are up to date and cross-checked** for accuracy.
- ✓ Establish **clear data tracking mechanisms** for emissions, reductions, and offsets.
- ✓ Be prepared to **explain methodologies and justifications** for assumptions used.



# ***How ISO 14068-1 Aligns with Other Standards***

GHG Protocol (Corporate & Product Standards)

## **Alignment:**

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- Both ISO 14068-1 and the **GHG Protocol** use the same **three scopes approach (Scope 1, 2, and 3)** for emissions accounting.
- Organizations using the **GHG Protocol** (Corporate or Product Standard) can align their GHG inventory with **ISO 14068-1 verification**.
- ◆ **Example:** A company following the **GHG Protocol for Scope 3 emissions** can use the same data for ISO 14068-1 verification.



# How ISO 14068-1 Aligns with Other Standards

## Science-Based Targets (SBTi) & Net-Zero Guidelines

### Alignment:

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- ISO 14068-1 complements **science-based targets** by requiring **real reductions before offsetting**.
- Companies using **SBTi-aligned reduction targets** can use ISO 14068-1 to verify their **net-zero claims**.

♦ **Example:** A company reducing emissions by **90% before 2050 (SBTi-aligned)** can use ISO 14068-1 to verify its **final carbon neutrality** claim.

# ***How ISO 14068-1 Aligns with Other Standards***

Carbon Offsetting Standards (Gold Standard, VCS, CDM, etc.)

## **Alignment:**

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- ISO 14068-1 mandates that offset projects must be **real, additional, and independently verified**.
- Organizations must use **credible offset schemes** such as **Gold Standard, Verified Carbon Standard (VCS), or Clean Development Mechanism (CDM)**.
- ◆ **Example:** A company using **Gold Standard-certified reforestation projects** can submit these offsets for ISO 14068-1 verification.



# Summary: Alignment of ISO 14068-1 with Other Standards

Standard	Purpose	How It Aligns with ISO 14068-1
ISO 14064-1	Organizational GHG accounting	Basis for emissions quantification before neutrality claims
GHG Protocol	Corporate & product GHG reporting	Provides emissions data for neutrality verification
ISO 14067	Product Carbon Footprint (PCF)	Required for product-level carbon neutrality
Science-Based Targets (SBTi)	Net-zero target setting	Supports reduction-first approach before neutrality
Offset Standards (Gold Standard, VCS, CDM, etc.)	Carbon credits validation	Ensures high-quality offsets for neutrality claims



# ***Conclusions***





# Conclusions

- **Understanding ISO 14068-1** – Key principles of carbon neutrality, reduction vs. offsetting, and verification steps.
- **Alignment with Other Standards** – How ISO 14068-1 connects with ISO 14064-1 and the GHG Protocol for credible carbon management.
- **Key Reduction Strategies** – Energy efficiency, renewable energy, sustainable transportation, and other decarbonization actions.
- **The Verification Process** – What auditors look for, common challenges, and best practices for a successful audit.
- **Preparing for Implementation** – Steps for organizations to align with ISO 14068-1 and achieve verified carbon neutrality.





# "Q&A

## ทบทวนและถามคำถาม



สแกน QR code เป็นเพื่อนกับเราใน Line official ของ BSI  
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