

The Journey to Carbon Verification:

Stephen Burt, July 2024



Webinar Series Overview: The Journey to Carbon Verification

- Part 1, 19/07/2024, Carbon Quantification, Mitigation and Reporting:
 - Introduction, overview and context
 - Drivers
 - Options for standards and methodologies to use
- Part 2, 22/08/2024, Getting Started on your GHG Reporting:
 - Defining your organisational and reporting boundaries
 - Selecting and using appropriate standards and methodologies
 - Using Conversion Factors
 - Establishing baselines
 - Calculating your Scope 1, 2 and 3 GHG Emissions
 - Preparing a GHG Inventory
 - Determining Materiality
- Part 3, 13/09/2024, GHG Mitigation, Reporting, Removals and Offsets:
 - Planning for reductions
 - Options for removals and offset pros and cons
 - Preparing your GHG Report and other documentation requirements
 - Verification options and case studies





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NQA specialises in Certification and Verification in construction, high technology and engineering sectors

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Certification body in **Aerospace** sector

UK'S NO.2

Certification body in **Aerospace** sector



NQA UK – CARBON & SUSTAINABILITY TEAM

Amber Dixon
Sustainability Assurance Manager



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Carbon & Sustainability Services Director





OVERVIEW OF NQA'S ESG SERVICES

Our ESG Solutions:



ENVIRONMENTAL

13. Climate Action

- ISO 14064-1 Verification (GHG Quantification and Reporting)
- PAS 2080 Certification (Carbon Management in Buildings and Infrastructure)
- PAS 2060 / ISO14068-1 Verification (Carbon Neutrality)
- ISO 20121 Sustainable Events
- ISO 14001 Environmental
- ISO 50001 Energy
- EcoCampus





SOCIAL

3. Good Health and Wellbeing

- ISO 45001 H&S
- ISO 45003 Mental Health
- ISO 44001 Collaborative Working
- ISO 37001 Anti-bribery
- ISO 26000 Social Responsibility



GOVERNANCE

9. Industry, Innovation and Infrastructure

- ISO 9001 Quality
- ISO 22301 BCMS
- ISO 27001 / 27701 / 27017 / 27018 Info Sec
- ISO 55001 Asset Management
- ISO 44001 Collaborative Working
- ISO 41001 Facilities Management
- Industry specifics
 - Aerospace
 - Medical
 - Food
- SSIP



PART 1: LEARNING OBJECTIVES

- 1. Gain an overview of the context for carbon quantification, mitigation and reporting
- 2. Gain an overview of the drivers for carbon quantification, mitigation and reporting
- 3. Understand the options you have for using standards and other methodologies for carbon quantification, mitigation and reporting





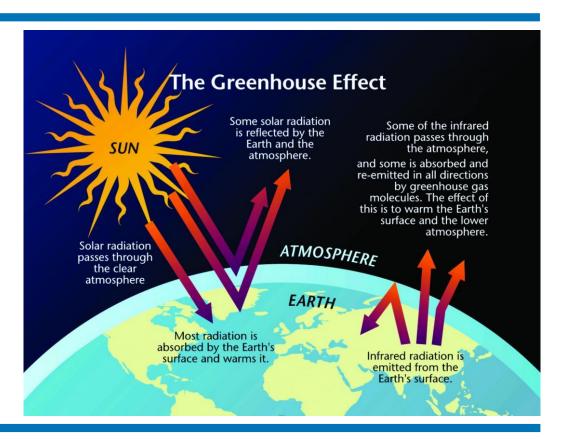
CONTEXT AND INTRODUCTION



WHAT DO WE MEAN BY GREENHOUSE GASES?

Greenhouse gases (also known as GHGs) are gases in the earth's atmosphere that trap heat. During the day, the sun shines through the atmosphere, warming the earth's surface. At night the earth's surface cools, releasing heat back into the air. But some of the heat is trapped by the GHGs in the atmosphere.

GHGs are both naturally occurring and occurring as a result of human activities.





WHAT DO WE MEAN BY GREENHOUSE GASES?

The Seven Kyoto Protocol GHGs.

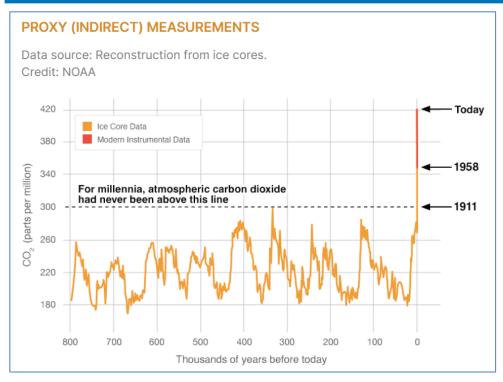
Greenhouse gas	Formula	Main origin	GWP100	Global
Carbon dioxide	CO2	Fossil fuels	1	73%
Methane	CH4	Farming	25	20%
Nitrous oxide	N20	Agriculture	298	4%
Hydrofluorocarbons	HFCs	Cooling systems	14800	0.75%
Perfluorocarbons	PFCs	Cooling systems	7390	0.75%
Sulphur hexafluoride	SF6	Electrical systems	22800	0.75%
Nitrogen trifluoride	NF3	Displays production	17200	0.75%

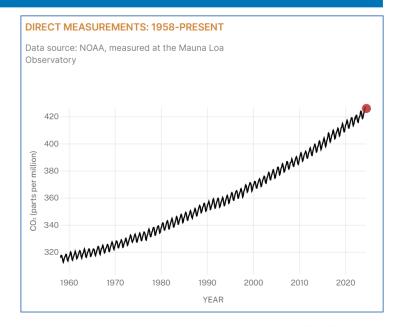
Showing:

- Main source / origin
- Their Global Warming Potential:
 - ➤ GWP allows comparisons of the global warming 'potency' of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO₂). The larger the GWP, the more that a given gas warms the Earth compared to CO₂ over that time period
 - ➤ This enables all GHG reporting to be produced in tCO₂e
- The global % of each: CO₂ is the most prevalent



GREENHOUSE GASES – HUMAN IMPACT





Carbon Dioxide

LATEST MEASUREMENT: June 2024

427 ppm

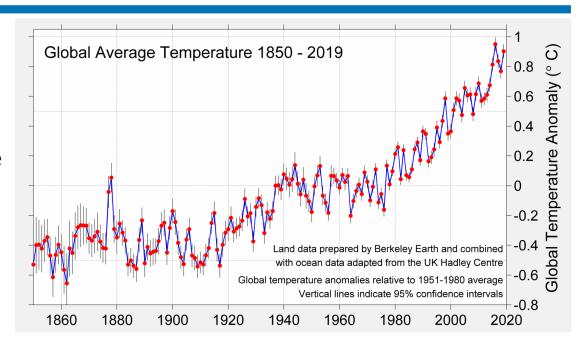
Source: https://climate.nasa.gov/vital-signs/carbon-dioxide



GREENHOUSE GASES – HUMAN IMPACT

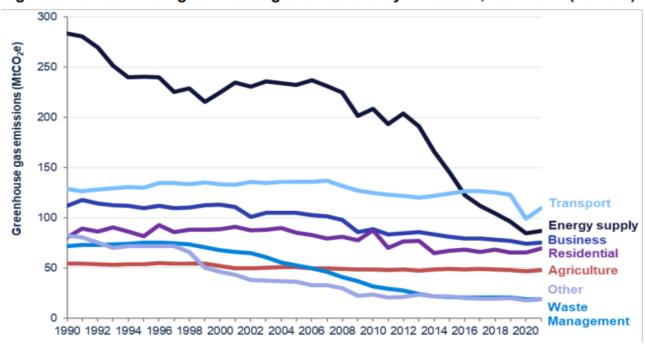
The 'Paris Agreement': United Nations Framework Convention on Climate Change.

The overarching goal is to hold 'the increase in the global average temperature to well below 2degC above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5degC above pre-industrial levels.'



GREENHOUSE GASES – HUMAN IMPACT

Figure 6: Territorial UK greenhouse gas emissions by NC sector, 1990-2021 (MtCO2e)





WHY IS GHG REPORTING IMPORTANT?

- Scientists agree that the most critical issue facing our planet is climate change
- The UK Government has committed to reach 'Net Zero' within national boundaries (not using international offsets) by 2050 :
 - To limit global temperature increase, in keeping with Science Based Targets
 - As laid out in the UK Government Net Zero Strategy, 2021
 - As revised to the Carbon Budget Delivery Plan, 2023
- For most UK companies and organisations, decarbonisation is currently being driven via:
 - > To a lesser extent, various regulatory and policy changes, as laid out in the CBDP
 - To a greater extent, supply chain pressures and stakeholder expectations
- This is leading many companies to make public commitments to be Net Zero

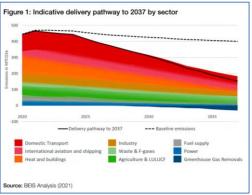


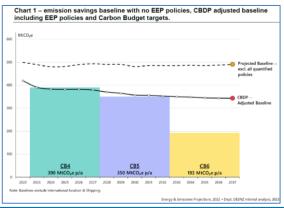


WHY IS GHG REPORTING IMPORTANT?

Progress in the UK:

- So far, so good: Carbon Budgets 1, 2 and 3 (2008 to 2022) have all been reported as achieved / exceeded
- From the projected baselines the UK Government's Energy and Emissions Projections (EEP) indicate that:
 - Current EEP Policies alone are projected to deliver the GHG emission savings needed as follows:
 - Carbon Budget 4, 2023 2027, expected to be achieved with 7 MtCO₂e headroom (>100%)
 - Carbon Budget 5, 2028 2032, current projections indicate a 9 MtCO₂e shortfall (~3%)
 - Carbon Budget 6, 2033 2037, current projections indicate a 199 MtCO₂e shortfall (~60%), and relies significantly for the first time on GHG *removals*, as well as mitigations







WHY IS GHG REPORTING IMPORTANT?

- If you can't measure any of this as accurately as possible, then you probably can't manage it......
- There are various issues with the methodologies used to quantity GHG emissions, including:
 - In the UK, we have one of the best set of carbon conversion factors in the world. This is not always the case in other countries
 - The GHG Protocol Corporate Accounting and Reporting Standards do not yet provide for accounting for GHG removals – remains at pilot stage
 - Offsetting: carbon neutrality delivered via the Voluntary Carbon Market, including additionality
 - Double counting of indirect supply chain GHG emissions (Scope 3s)
 - Carbon leakage
 - 'Inventive / creative' carbon accounting

This necessitates the need for the adoption of standardised, international (ISO) approaches to GHG quantification and reporting





DRIVERS



DRIVERS

The drivers for companies and organisations to quantify, report and manage their GHG Emissions can be summarised as follows:

- Improved competitive advantage
- Regulatory compliance
- Reduced risks, including through supply chains
- Environmental improvement and long-term business sustainability





Improved Competitive Advantage:

Many large organisations are actively encouraging / requiring their supply chains to quantify and report on GHG emissions, often through tenders and questionnaires. This could be due to their internal commitments and the need for supply chain information for their own GHG data



GHG reporting is becoming and will continue to be a major factor in contract awards, for example PPN 06/21 and PAS 2080



Example:

- PPN 06/21: Taking Account of Carbon Reduction Plans in the Procurement of Major Government Contracts
 - When procuring goods and/or services and/or works with an anticipated contract value above £5 million per annum
 - This is a first step, we can except the £5M threshold to reduce over time
 - Will require a Carbon Management Plan which commits to, describes, quantifies and evaluates how the supplier will achieve Net Zero by 2050
 - Requires quantification and reporting of Scope 1, 2 and applicable 3 GHG emissions
 - Requires a date at which Net Zero will be achieved
 - Requires details of Carbon Reduction Targets and Initiatives, including staged targets towards Net Zero
 - Applies to, for example, NHS and MOD contracts



Procurement Policy Note - Taking Account of Carbon Reduction Plans in the procurement of major government contracts

Action Note PPN 06/21

05/06/2021

The UK Government amended the Climate Change Act 20081 in 2019 by introducing a target of at least a 100% reduction in the net UK carbon account (i.e. reduction of greenhouse gas emissions2, compared to 1990 levels) by 2050. This is otherwise known as the 'Net Zero' target. This Procurement Policy Note (PPN) sets out how to take account of suppliers' Net Zero Carbon Reduction Plans in the procurement of major Government contracts

Dissemination and Scope

- 2. This PPN applies to all Central Government Departments, their Executive Agencies and Non Departmental Public Bodies. These organisations are referred to in this PPN as 'In-Scope Organisations'. Please circulate this PPN within your organisation, drawing it to the attention of those with a commercial and procurement role.
- 3. In-Scope Organisations should take action to apply this PPN when procuring goods and/or services and/or works with an anticipated contract value above £5 million per annum3 (excluding VAT) which are subject to the Public Contracts Regulations 2015 save where it would not be related and proportionate to the contract
- This PPN applies to framework agreements and dynamic purchasing systems only where it is anticipated that the individual value of any contract to be awarded under the

Climate Change Act 2008: www.legislation.gov.uk/ukppa/2008/27/pontents
When the reporting of GHG emissions is measured, it is often done so in carbon dioxide equivalent units (CO2e). The use of CO2e allows for more accessible reporting and straightforward tracking and reporting of emissions over time. CO2e includes all of the greenhouse gases defined within the Kyoto protocol: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulphur hexafluoride (SF6) and nitropen trifluoride (NF3). Each of these mhouse gasses have a conversion factor as published by DEFRA:

https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2020 When the phrase 'Net Zero Carbon' is used, it is referring to both CO2 and CO2e emissions and means net zero GHG rather than net zero CO2. Based on advertised contract value, averaged over the life of the contract, e.g. a contract with a 4 year term with a total intract value of £21m would be in scope, even if the value in the first year was under £5m



- Example:

- PAS 2080
 - National Highways:
 - 'We will ask our contractors and their sub-contractors to implement their own PAS 2080 accredited carbon management systems by the end of 2025'.





- Example:

- Supplier questionnaires
- A representative example from a multinational aerospace, defence and transportation company:

Field Label Scope 1&2 emissions A.1 Do you track your company's Scope 1 and Scope 2 greenhouse gas (GHG) emissions? A.2 If yes, is it in accordance with any international GHG Reporting Guidance? A.3 If yes, is it in accordance with the International Aerospace Environmental Group (IAEG) GHG Reporting Guidance for the Aerospace Industry? A.4 Can you provide your company's Scope 1 and 2 GHG emissions in Carbon Dioxide equivalents (CO2e) in metric tonnes for the most recent available data? A.5 Do you know the reporting year for Scope 1&2 GHG emissions? A.6 Does the data provided in A.4 are Scope 1&2 GHG emissions from the most recent available reporting year? Scope 3 emissions A.7 Do you track your company's Scope 3 GHG emissions? A.8 If yes, what are the Scope 3 GHG emissions categories that are tracked by your company? A.9 If yes, is it in accordance with any international GHG Reporting Guidance? A.10 If yes, is it in accordance with the International Aerospace Environmental Group (IAEG) GHG Reporting Guidance for the Aerospace Industry? A.11 Can you provide your company's Scope 3 GHG emissions in Carbon Dioxide equivalents (CO2e) in metric tonnes for the most recent available data? A.12 Do you know the reporting year for Scope 3 emissions? A.13 Does the data provided in A.11 are Scope 3 GHG emissions from the most recent available reporting year? GHG emissions verification A.14 Have these GHG assessments from Scope 1.2&3 emissions been verified? A.15 If yes, please specify the level of verification GHG emissions allocation A.16 Please, allocate your GHG Emissions to ______ according to the goods or services you have sold in Carbon Dioxide equivalents (CO2e) in metric tonnes for the most recent available reporting year. A.17 Describe the methodology used to allocate the emissions of products and services sold to



- Example:

- Supplier questionnaires
- A representative example from a multinational aerospace, defence and transportation company:

Field Label
GHG emissions reduction strategy and action plan
B.1 Do you have Scope 1& 2 carbon footprint reduction strategy for your company ?
B.2 If yes, what are the targets of the reduction strategy of your Scope 1 & 2 carbon emissions?
B.3 Do you have Scope 3 carbon footprint reduction strategy for your products ?
B.4 If yes, what are the targets of the reduction strategy of your Scope 3 products carbon emissions?
B.5 Does those carbon emissions reductions initiatives are in line with the Paris Agreement and/or Science Based Targets?
B.6 Do you have any commitments to reduce the carbon emissions related to the products and/or services for that you would like to share with us?
B.7 Do you have any action plan to reduce the carbon emissions related to the products and/or services for that you would like to share with us?



DRIVERS: REGULATORY COMPLIANCE

Regulatory Compliance:

- The UK's drive towards net zero has and will continue to result in a more challenging regulatory environment for companies, for example:
 - Energy Savings and Opportunities Scheme (ESOS) Regs 2014
 - Streamlined Energy and Carbon Reporting (SECR)
 - UK Emissions Trading Scheme (UK ETS)
 - Climate Change Agreements (CCA)
 - EU Corporate Sustainability Reporting Directive (CSRD)
 - EU / UK Carbon Border Adjustment Mechanism (CBAM)





DRIVERS: RISK REDUCTION

Reduced Risks (including through supply chains):

Examples where GHG reporting impacts upon risk management include:

- Financial investments / investors
- Insurers
- Avoidance of negative publicity /reputational risks: 'Greenwashing'



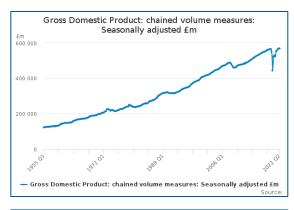


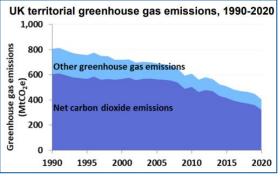


DRIVERS: ENVIRONMENTAL IMPROVEMENT / LONG-TERM BUSINESS SUSTAINABILITY

Environmental Improvement and Long-Term Business Sustainability:

- These drivers will only increase, through supply chain pressures, increased consumer awareness, investor considerations, Government regulations, and of course the increased frequency of climate related emergencies including supply chain disruption
- It is possible to reduce carbon and remain competitive
 - The UK has already reduced its GHG emissions by 42% between 1990 and 2020, whilst growing the economy by two thirds





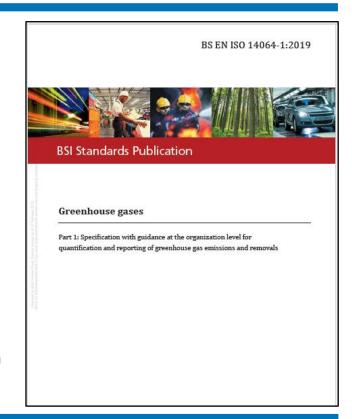


OPTIONS FOR STANDARDS AND METHODOLOGIES TO USE



There are various sources of *standards* & *specifications* for quantifying, mitigating and reporting GHG emissions, depending on your needs:

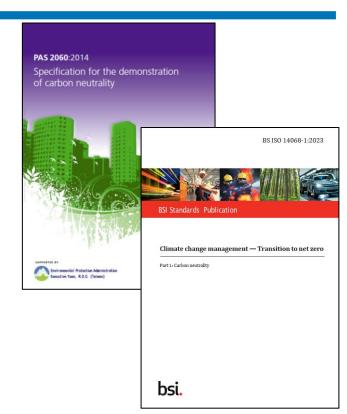
- ISO 14064-1:specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals
 - Internationally recognised, highest tier of standards (ISO)
 - Provides a framework for quantifying (not calculating) and reporting GHG emissions and removals
 - Intended to be used at organisational level
 - Includes optional GHG mitigation framework
 - Allows for external, third party, Verification via Verification Bodies such as NQA, providing for credibility and assurance





There are various sources of *standards* / *specifications* for quantifying, mitigating and reporting GHG emissions, depending on your needs:

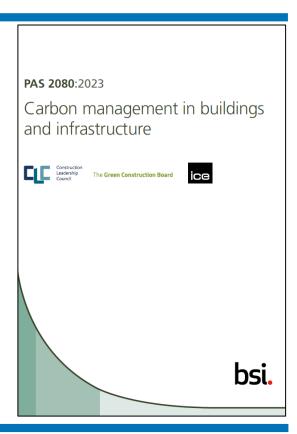
- ISO 14068-1 / PAS 2060: specifications for demonstrating carbon neutrality
 - Internationally recognised, highest tier of standards (ISO)
 - Provides a framework for quantifying (not calculating), reducing, removing, offsetting and reporting GHG emissions
 - ► ISO 14064-1 is a recognised basis as a step towards this
 - Allows for external, third party, Verification via Verification Bodies such as NQA, providing for credibility and assurance





There are various sources of *standards* / *specifications* for quantifying, mitigating and reporting GHG emissions, depending on your needs:

- PAS 2080: carbon management in buildings and infrastructure
 - Developed in the UK, but internationally recognised
 - Provides a framework for managing (not calculating), carbon in buildings and infrastructure
 - Intended for application in the construction industry
 - Allows for external, third party, Verification via Verification Bodies such as NQA, providing for credibility and assurance

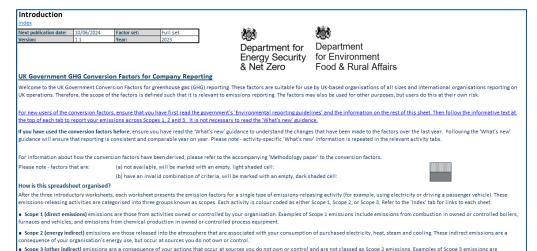




NEVER STOP IMPROVING

There are various sources of methodologies for calculating and quantifying GHG emissions, depending on your needs:

- UK Government (DESNZ) Carbon Conversion Factors and UK Environmental Reporting Guidelines
 - Provides comprehensive carbon conversion factors for each year, updated annually, and covering Scope 1, 2 and 3 activities
 - https://www.gov.uk/government/p ublications/greenhouse-gasreporting-conversion-factors-2023



business travel by means not owned or controlled by your organisation, waste disposal, materials or fuels your organisation purchases. Deciding if emissions from a vehicle, office or factory that you use

are Scope 1 or Scope 3 may depend on how you define your operational boundaries. Scope 3 emissions can be from activities that are upstream or downstream of your organisation.

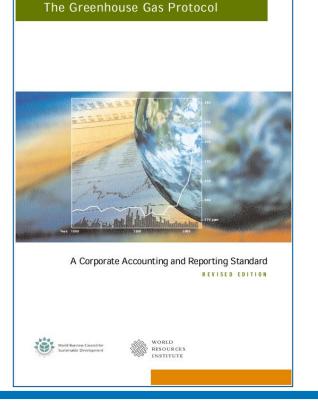
fore information on Scope 3 and other aspects of reporting can be found in the Greenhouse Gas Protocol Corporate Standard



NEVER STOP IMPROVING

There are various sources of methodologies for calculating and quantifying GHG emissions, depending on your needs:

- GHG Protocol: Corporate Accounting and Reporting Standard
 - Provides comprehensive guidance on calculating Scope 1, 2 and 3 activities
 - Does not provide conversion factors
 - https://ghgprotocol.org/





NEVER STOP IMPROVING

There are various sources of methodologies for calculating and quantifying GHG emissions, depending on your needs:

- Other sources, for example:
 - Environmental Product Declarations (EPDs) are verified and registered documents of a product's life cycle analysis
 - The Inventory of Carbon and Energy (the ICE database): an embodied carbon database for construction materials: https://www.ice.org.uk/
 - Often when faced with difficult to covert activities, there may be peer reviewed scientific papers available which can help

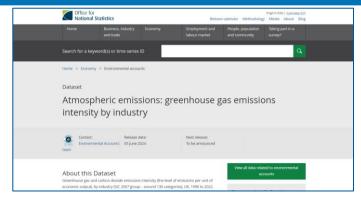




NEVER STOP IMPROVING

There are various sources of methodologies for calculating and quantifying GHG emissions, depending on your needs:

- Other sources, for example:
 - DEFRA Conversion factors by SIC code: GHG emission intensity by SIC CO2e/£ enabling a spend based approach https://assets.publishing.service.gov.uk/governme https://assets.publishing.service.gov.uk/governm
 - Office for National Statistics: GHG emission intensity by economic sector CO2e/£ - enabling a spend based approach https://www.ons.gov.uk/economy/environmentalac counts/datasets/ukenvironmentalaccountsatmosph ericemissionsgreenhousegasemissionsintensityby economicsectorunitedkingdom



		GHG (kgCO2e per £)	CO2 (kgCO2 per £)
01	Products of agriculture, hunting and related services	1.974	0.45
02	Products of forestry, logging and related services	0.279	0.13
03	Fish and other fishing products; aquaculture products; support services to fishing	0.523	0.39
05	Coal and lignite	1.117	0.34
06	Crude petroleum and natural gas	0.660	0.5
08	Other mining and quarrying products	0.534	0.4
09	Mining support services	0.345	0.2
10.1	Preserved meat and meat products	0.772	0.3
10.2 -3	Processed and preserved fish, crustaceans, molluscs, fruit and vegetables	0.721	0.3
10.4	Vegetable and animal oils and fats	0.976	0.4
10.5	Dairy products	0.962	0.3
10.6	Grain mill products, starches and starch products	0.755	0.4
10.7	Bakery and farinaceous products	0.451	0.2
10.8	Other food products	0.661	0.2
10.9	Prepared animal feeds	0.912	0.3
11.01-6	Alcoholic beverages	0.707	0.3
11.07	Soft drinks	0.332	0.1
12	Tobacco products	0.203	0.0
13	Textiles	0.771	0.5
14	Wearing apparel	0.791	0.5
15	Leather and related products	0.734	0.4
16	Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials	0.475	0.3
17	Paper and paper products	0.707	0.5
18	Printing and recording services	0.382	0.2
19	Coke and refined petroleum products	1.930	1.1
20.3	Paints, varnishes and similar coatings, printing ink and mastics	1.331	0.8
20.4	Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	0.719	0.4
	Other chemical products	1.381	0.9



NEXT TIME



PART 2, 22/08/2024, GETTING STARTED ON YOUR CARBON REPORTING

- Part 2, 22/08/2024, Getting Started on your GHG Reporting:
 - Defining your organisational and reporting boundaries
 - Selecting and using appropriate standards and methodologies
 - Using Conversion Factors
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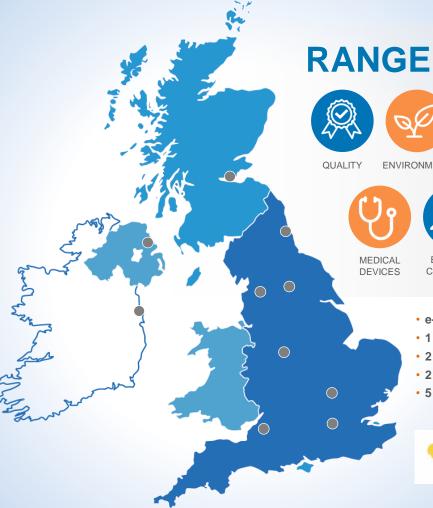
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ENVIRONMENT

ENERGY

HEALTH AND SAFETY

SECURITY









INTEGRATED MANAGEMENT

- · e-Learning Introduction
- 1 day Introduction Courses
- 2 day Implementation Courses
- 2 day Internal Auditor NQA or IRCA
- 5 day Lead Auditor NQA or IRCA





THANK YOU!

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