

REQUIREMENTS

Organisational carbon footprints

Requirements for assurance

Part 1: Technical

Scope 1, 2 and 3 emissions

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1 Scope

1.1 General

- This document 'Organisational carbon footprints: Requirements for assurance, part 1' (**Org-RfA-1**) defines the conformance requirements for organisations that wish to calculate and verify their organisational carbon footprint.
- It outlines the minimum requirements for verification of an organisational carbon footprint against the relevant standard without the use of the Carbon Trust organisational verification logo ('the Logo' hereafter).
- If the organisation wishes to have a specific claim e.g., 'reduced' or 'reduced and climate projects funded (CPF)' with use of the Logo, they shall also conform to the specific requirements for the relevant claim found in 'Organisational carbon footprints: Requirements for assurance, part 2' (**Org-RfA-2**).
- This document is intended to be used by both the Carbon Trust and external parties.
- Organisational carbon footprints relate to Scope 1, 2 and 3 emissions.
- The organisation shall choose the operational verification boundary (including Scope 1 and 2 emissions at a minimum), or shall have already a verified Scope 1 and 2 footprint where the organisation wishes for a Scope 3 footprint to be verified.
- The Carbon Trust provides verification of an organisational carbon footprint, including calculated carbon footprint results, and conformity to the relevant standard.
- The organisation shall demonstrate conformity to the requirements of this document in addition to the relevant standards for the defined operational verification boundary and sector:
 - The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard
 - The Greenhouse Gas Protocol Scope 2 Guidance (amendment to the 'GHG Protocol Corporate Standard')
 - The Greenhouse Gas Protocol Land Sector and Removals Guidance (LRSB)
Note: When the final published version of the 'GHG Protocol Land Sector and Removals Guidance' is released, this will be reviewed, and a requirements section will be written in version 2 of this document.
 - The Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard
 - The Global GHG Accounting and Reporting Standard: Financed Emissions (PCAF)
- The organisation may apply for a site level verification with or without use of the Logo. For site level verification without the use of the Logo, see 3.3. For site level verification with the use of the Logo, see Org-RfA-2, Section 5.
- Where the requirements in Org-RfA-2 differ from Org-RfA-1 and the organisation wishes to use the Logo, the requirements in Org-RfA-2 shall be conformed to.

1.2 Requirements updates and transition

- The Carbon Trust reserves the right to amend and update this document as deemed necessary.
- Organisations using this document for purposes of obtaining verification shall ensure that they are using the latest version available except where:
 - The project commences within six months of signing the contract and the requirements version has been released or updated within that period. In this case the previous version may be used.
- See Org-RfA-2 for the transition requirement applicable to the Logo claims.

2 Terms and definitions

For the purposes of this document the following terms and definitions apply:

Accuracy	Ensuring that the quantification of greenhouse gas emissions (hereafter 'emissions') is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with limited/reasonable assurance as to the integrity of the reported information.
Activity data	A quantitative measure of a level of activity that results in emissions.
Approved emission factor	An emission factor where the database has been approved, however, the value and appropriateness of the emission factor shall still be checked.
Approved footprinting tool	A footprinting tool, which provides built-in compliance with requirements in this document.
Assessment	Activity conducted as part of an assurance project, which involved the conduct of a review, evaluation or audit.
Attributable	Directly related to the organisation.
Attributable managed lands	In the context of the sourcing region spatial boundary, attributable managed lands are lands that contributed to producing crops, animal products or forest products relevant to the organisation.
Biogenic carbon	Carbon derived from living organisms or biological processes, but not fossilised materials or from fossil sources.
Biogenic CH₄ emissions	CH ₄ emissions commonly resulting from anaerobic decomposition of biogenic material (e.g., paper) in landfill.
Biogenic CO₂ emissions	CO ₂ emissions resulting from combustion, biodegradation or other losses from biogenic carbon pools to the atmosphere.
Biogenic CO₂ removals	CO ₂ removals resulting from atmospheric CO ₂ transferred via biological sinks to storage in biogenic carbon pools.
Biogenic N₂O emissions	N ₂ O emissions commonly resulting from manure management – decomposition of animal manure under both aerobic and anaerobic conditions can result in N ₂ O emissions.
Carbon dioxide equivalent (CO₂e)	CO ₂ e shows the combined greenhouse gas (GHG) impact of all applicable greenhouse gases if all the emissions derived from CO ₂ , by using global warming potentials (GWPs) for conversion.
Carbon opportunity cost	Emissions from total historical carbon loss from plants and soils on lands productively used. This quantity also represents the amount of carbon that could be stored if land in production were allowed to return to native vegetation.
Claim period	The time period in which the claim of verification is valid.
Consistency	Using consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any relevant factors in the time series.
Consolidation approach	The equity share, financial or operational control approach.
Completeness	Accounting for and reporting on all emission sources and activities within the chosen inventory boundary, disclosing and justifying any specific exclusions.

Data period	The time period activity data relates to in an organisational carbon footprint. This can be a period outside the footprint period if it is representative of the footprint period.
Data quality indicator (DQI)	An assigned indicator of the inherent data quality of each activity data and each emission factor.
Direct land use change (dLUC) emissions	Emissions (primarily from carbon stock losses) due to recent (previous 20 years or more) land conversion directly on the area of land that a company owns/controls, or on specific lands in the company's value chain.
Error	An accidental mistake e.g., an incorrect emission factor used.
Exclusion	An emission source intentionally not included in the calculated footprint where it is required to be included. Justification shall be provided.
Footprint period	The time period for which the organisational footprint is representative. Can be used when making reference to a previous footprint period.
Fossil carbon	Carbon (including CO ₂), which is derived from fossilised material, in particular fossil fuels such as coal, oil, natural gas and peat (with regards to combustion). If not biogenic carbon, the matter will be fossil carbon.
Global warming potential (GWP)	Factor used to describe the radiative forcing of a greenhouse gas relative to that of carbon dioxide (CO ₂).
Greenhouse gases (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.
Greenhouse gas statement	Factual and objective declaration that provides the subject matter for the verification.
Gross biogenic product CO₂ emissions	Gross CO ₂ emissions from combustion, biodegradation or other losses from biogenic product carbon pools
Gross fossil emissions	A measure of the total organisational fossil carbon emissions excluding biogenic emissions and biogenic removals.
Harvested area	Spatially explicit area of agricultural or managed forest land that was harvested at a given time to produce the relevant raw material purchased by the organisation.
Indirect land use change (iLUC) emissions	Emissions (primarily from carbon stock losses) due to land conversion on lands not owned or controlled by the company, or in its value chain, induced by change in demand for (or supply of) products produced or sourced by the company.
Input allocation	Many inputs, e.g., utilities, are not sub-metered and hence require allocation. This requires an 'input allocation key' to allocate data from the level of granularity at which values are available down to the required level.
Input allocation key	A mechanism for allocation. This should be clearly defined and justified. Examples of the most common allocation keys are: production number, mass, volume, or floor area. Allocation keys may differ between inputs.
Jurisdiction	Spatially explicit area based on known subnational jurisdiction, country or political region of origin
Land carbon stock change	The annual change (occurring in the reporting year) in the total land carbon stock.
Land management net CO₂ stock change	Net change in the carbon stock of land-based pools as a result of land management practices, excluding land use change emissions. Land management CO ₂ emissions result from a decrease in the land carbon stocks, while removals result from an increase in land carbon stocks.

Land management non-CO₂ emissions	Emissions from land management not related to a biogenic source, including methane, nitrous-oxide and non-biogenic CO ₂ .
Land management unit	Predefined, spatially explicit area of a given land use, managed according to a clear set of objectives according to a single land management plan. Land management units can include conservation or set aside areas that are part of the land management unit, owned by the same entity and managed according to a consistent land management plan.
Land occupation	The amount of land occupied for a certain time to produce a product. <i>Note: Annual crop, yield tonne/ha approach, taking crop rotations into account.</i> Perennial/woodland: overall land taken to produce harvest over time, take into account forest management system.
Land tracking	A category of metrics to account for and report land use and land use change impacts beyond a company's GHG inventory boundary, helping to ensure that a company's land use and sourcing decisions lead to meaningful system-wide reductions. These metrics include indirect land use change emissions, carbon opportunity costs, and land occupation.
Land use category	The type of land, e.g. forestland, cropland, grassland.
Land use change (LUC)	A transition from one land use category to another, such as from forest to grassland or cropland.
Land use change emissions	Emissions (primarily from carbon stock losses) due to land conversion.
Managed land	Land where human interventions and practices have been applied to perform production, ecological or social functions.
Materially incorrect	The concept of individual misstatements or the aggregation of misstatements that could influence the decision.
Materiality	The percentage of the total footprint or category that any individual element or error gives contribution to.
May	Used to indicate an option that is allowable or permissible.
Misstatement	Errors, omissions, misreporting or misrepresentations in a GHG statement.
NC	Nonconformity. An element of the footprint inventory or supporting documentation, which does not meet the requirements set out in this document.
Net footprint	A measure of the total organisational carbon footprint including fossil GHG emissions, land use change, biogenic emissions and biogenic removals.
OFI	Opportunity for improvement. An area in which any element of the footprint inventory or supporting documentation could be improved.
Omission	An emission source unintentionally not included in the calculated footprint where it is required to be included. No justification is provided.
Operational verification boundary	The scopes and categories to be verified by the Carbon Trust.
Organisation (The)	Any entity, public or private, such as a business, corporation, government agency non-profit organisations, institution, local authority, etc. that wishes to use this document.
Organisational boundary	The boundaries that determine the operations owned or controlled by the reporting company depending on the consolidation approach taken (equity or control approach). The organisational boundary determines which owned or controlled

	operations are included within the boundary. The operational verification boundary determines which scope/categories are calculated.
Organisational carbon verification logo ('the Logo')	Verification mark to be used by the organisation, identifying its organisational carbon footprint and/or the achievement of one or more of the sets of labelling requirements and claims within Org-RfA-2.
Physical allocation	Allocation of emissions by a physical nature, e.g., square footage leased to the organisation in comparison to a whole building/floor.
Pool	A physical reservoir or medium where a greenhouse gas or its constituent elements are stored. Land-based carbon pools derive from a biogenic sink and include biomass (above and below-ground), soil, dead organic matter.
Primary data	Data collected from specific processes. Primary data can be process activity data (physical measures of a process that results in emissions or removals), direct emissions data from a specific site, or data that is averaged across all sites that contain the specific process. Primary data can be measured or modelled as long as the result is specific to the organisation.
Process emissions	Emissions generated from manufacturing processes, such as the CO ₂ that arises from the breakdown of calcium carbonate (CaCO ₃) during cement manufacture.
Product carbon pool	Carbon in products/materials.
Relevance	Ensure the GHG inventory appropriately reflects the emissions of the company and serves the decision-making needs of users – both internal and external to the company.
Removal	The transfer of a greenhouse gas from the atmosphere to storage within a non-atmospheric pool. This transfer is done through a biogenic process, activity or mechanism, also called 'sink'.
Reversal accounting	Accounting for decreased land-based carbon stock as emissions (if the organisation is still procuring from that sourcing region), including during natural disturbances such as fire, or as reversals (if that sourcing region is not anymore in the inventory boundary). Reversals accounting is applicable to organisations having previously reported removals at the sourcing region level.
Secondary data	Quantified value of a process or an activity obtained from sources other than a direct measurement, or a calculation based on direct measurements at its original source. For example: activity data (from some source such as industry average kWh/m ²), emission factors such as Ecoinvent (kgCO ₂ e/kWh).
Sensitivity	The extent the footprint changes with different data/methodological choices.
Shall	Used to indicate what is required for an organisational carbon footprint to be in conformance with the provisions outlined in this document.
Should	Used to indicate a recommendation, but not a requirement of this document.
Sink	A process, activity or mechanism through which the GHG is removed from the atmosphere. A sink can either be biogenic or technological.
Sourcing region	Predefined, spatially explicit land area that supplies harvested biogenic materials to the first collection point or processing facility in a value chain or to multiple collection points in close proximity
Spatial boundary	Relevant spatial scale of the origin of the purchased product, by product type, based on the level of traceability. There are four possible spatial boundaries, from most to least specific: harvested area, land management unit, sourcing region, jurisdiction. Spatial boundary is a different concept from inventory boundary.

Statistical land use change (sLUC) emissions	Emissions (primarily from carbon stock losses) due to recent (previous 20 years or more) land conversion within a landscape or jurisdiction. sLUC can serve as a proxy for dLUC where specific sourcing lands are unknown or when there is no information on the previous states of the sourcing lands.
Stock change approach	The net fluxes of carbon to and from the atmosphere based on the overall change in carbon stocks in a carbon cycle pathway. This accounting approach focuses on carbon storage in pools and accounts for net emissions and net removals from carbon pools.
Transparency	Addressing all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclosing sources of data, if and how it is manipulated, documenting key decisions made, disclosing any relevant assumptions and make appropriate references to the accounting and calculation methodologies.
Verification	Process for evaluating a statement of historical data and information to determine if the statement is materially correct and conforms to criteria outlined in 4 and 5.
Waste carbon pool	Carbon contained in landfills or waste materials during their end-of-life phase.

3 Pre-engagement requirements

3.1 Confirmation of assessment parameters

- Before the formal verification, the following shall have been determined and confirmed with the Carbon Trust:
 - Objective of engagement.
 - The communication the organisation wishes to use [see Org-RfA-2 for the full list of claims] and a summary of marketing claims expectations.
 - Site level or organisational verification.
 - The consolidation approach – operational control, financial control or equity share approach.
 - The organisational boundary – the organisation(s) included based upon the chosen consolidation approach.
 - The operational verification boundary – Scope 1 and 2, and/or Scope 3 categories to be included in the verification.
 - Excluded greenhouse gas emissions (hereafter ‘emissions’) if applicable.
 - The accounting criteria (in addition to the GHG Protocol) for, e.g., green gas claims [see Appendix 2].
 - Materiality (of scope and category where applicable) – where calculated, actual value. However, this may be estimated if it has not been calculated already.
 - The number of sites and site types, e.g., X factories and Y warehouses (where applicable).
 - The geographical coverage of sites (where applicable).
 - Key parameters relating to material emission sources or categories. For example:
 - What is the portfolio of products? (Categories 10-12)
 - How many different franchising arrangements does the company have? With how many companies? Covering how many countries or sites? (Category 14)
 - How many direct investee companies does the company have partial emissions to calculate for? And/or how many share funds/holdings does the company have that need a more simplified approximation of emissions? (Category 15)
 - Time period of footprint and data collected.
 - The footprinting tool used/to be used (where known).
 - Sources of data – providing where all data has been collected and sourced from.
 - Number of data sources, e.g., data is stored centrally in one system or data comes from ten different systems and compiled together.
 - Traceability and transformation of data, e.g., has data been exported straight from the system and is clearly traceable, or has data been manipulated and is this visible?
 - Exclusions – any exclusions must be disclosed upfront alongside their justification for exclusion.
- Note 1: Any footprinting tool may be used. The achievement of verification is dependent on demonstration of conformity to this document.*
- Note 2: The choice of footprinting tool may have implications on time/costs for all parties involved during the footprinting and verification. When selecting the footprinting tool, please consider the following:*
1. The Carbon Trust’s Organisational Footprinting Tool and Value Chain Model are ‘approved footprinting tools’ that support compliance with relevant requirements (including those in this document) through their structure and calculators.
 2. In some cases, it may be preferable to take elements such as the calculators and data from the Carbon Trust’s Organisational Footprinting Tool and Value Chain Model but to implement a different modelling approach.
 3. In some cases, other third-party footprinting tools may be preferable.
- Note 3: See 3.2 for additional requirements on use of third-party tools.*
- The organisation should be satisfied that their resulting organisational carbon footprint inventory does or will be able to demonstrate conformity with the requirements in this document.

3.2 Client use of third-party tools

- Where the organisation uses carbon footprint tools designed and maintained by third-party providers (i.e., not the Carbon Trust), whether used internally or externally, the tool shall meet the following criteria to be eligible for verification:
 - The tool methodology and results shall demonstrably conform to the accounting criteria the 'GHG Protocol Corporate Accounting and Reporting Standard' including 'Scope 2 Guidance' (amendment to the 'GHG Protocol Corporate Standard'), Org-RfA-1 and/or where applicable the 'GHG Protocol Corporate Value Chain (Scope 3) Standard', including supplementary 'Scope 3 Calculation Guidance'; and where a Logo claim is being pursued, the relevant sections of Org-RfA-2.
 - If the use of a suitable alternative standard was approved by the Carbon Trust, the tool and methodology shall conform to this standard.
 - The tool shall have achieved third-party assurance of its conformity to the above standards. If this is not the case, then the tool and its methodology shall be sufficiently accessible for the Carbon Trust.
 - The client should prioritise providing access to the tool. If this is not possible (e.g., due to legal concerns), screensharing sessions along with screenshots shall be provided by the organisation to demonstrate the usability of the tool along with its inputs, processes and outputs. A methodology document shall be provided relating to the tool.
 - The tool shall correctly calculate and report each source of biogenic emissions and removals in line with the relevant standard (where applicable).
 - The tool shall allow for traceability of data sources and calculations used in order to adequately verify the outputs.

3.3 Site level verification

- The organisation may submit for a site level verification, with or without the use of the Logo.
- For site level verification, without the use of the Logo, the organisation shall meet the following requirements:
 - The operational verification boundary for the claim shall cover all operational emissions of the chosen site. Operational emissions are defined as: stationary combustion, mobile combustion, fugitive emissions, process emissions, consumption of purchased electricity, consumption of heat, steam or cooling, and relevant upstream fuel-and energy-related emissions.

Note 1: This is aligned with the boundary required to allocate emissions down to a product level to be used in a product carbon footprint (PCF).

Note 2: The organisation shall clearly define whether an emissions source is considered within the boundary e.g., whether fleet is included within the site-level boundary.
 - Definition of the site shall be clear, including assets within the site level boundary.
 - Communication around the site level verification and the operational verification boundary shall be clear.
 - The organisation shall request technical committee approval through their Client Manager.
 - The site level footprint and verification shall meet the requirements of this document.
- For site level verification, with use of the Logo, see Org-RfA-2, Section 4.

4 Footprint and data requirements

4.1 First stage and second stage

- The verification process will be undertaken in two stages:
 - **The calculation data input stage** [see 4]. This input data is the aggregated transaction data that feeds into the footprint, i.e., total purchased tonnes of materials X and Y. In this stage, all input data needs to be submitted ahead of the verification process.
 - **The transaction-level data and compliance stage** [see 5]. Two levels of data may be requested. First are the transaction listings (i.e., a list of invoices for the purchase of material X). Second, is the transaction-level evidence (i.e., specific invoices for sampled transactions). In addition, the methodological requirements [see 4] will be checked. This second stage describes other areas of the verification process that the organisation needs to comply to (i.e., site visit and interview). The second stage will take place during the verification process and the organisation should prepare for this request during the first stage.
 - Ahead of verification submission, the organisation shall prepare to comply with the requirements from 4 and 5.

4.2 First stage: Calculation data input stage

- This section explains the submission requirements for verification, i.e., the data and files that need to be submitted for the verification process. This will take place before the verification process starts.

4.3 Verification submission and compliance

- For verification submissions, the organisation shall submit the following:
 - Organisational carbon footprint.
 - Data that makes up the organisational carbon footprint.
Note: If pre-processing of data has been required in a separate spreadsheet prior to entry into the template/footprinting tool, then this proof/traceability to show how data has been transformed, shall also be submitted to the assessment team.
 - Footprint methodology, including key methodological decisions taken.
 - Any other third-party audits conducted on site or of core data systems used in creating the organisational carbon footprint.
 - Sufficient information and evidence to the satisfaction of the Carbon Trust.
- The organisation shall calculate the carbon footprint of the organisation in compliance with the relevant sections (to the operational verification boundary selected) of the required standards [see 1] and the additional scheme requirements contained in this document, and where a claim is being pursued, the relevant sections of Org-RfA-2.
- The organisational carbon footprint shall include all greenhouse gases, converted to CO₂ equivalent emissions (CO₂e), using a 100-year global warming potential (GWP).
- The latest Intergovernmental Panel on Climate Change (IPCC) GWP values should be used.
- The organisational carbon footprint shall correctly calculate and report biogenic emissions and removals in line with 4.17.

4.4 Greenhouse gases

- The organisation shall include all seven Kyoto Protocol gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃), when they are released directly as fugitive emissions, as well as when they are released directly/indirectly by other emission sources, and should be included within CO₂e emission factors, when data is available.
- Non-Kyoto Protocol gases (e.g., R22/HCFC-22), shall not be included in the scopes, but shall be reported separately from the organisational carbon footprint.

4.5 Accounting and reporting principles

- The organisation shall demonstrate that their footprinting inventory is based on the following principles: relevance, completeness, consistency, transparency and accuracy.

4.6 Consolidation approach

- The organisation shall choose either operational control, financial control or equity share as their consolidation approach.
- Once this has been chosen, this shall be applied to all levels of the organisation.
- These rules shall also be applied to account for emissions from joint industry operations that involve state ownership or a mix of private/state ownership.
- Where there is an overlap of emissions within the value chain, the organisation should include all emissions within Scope 3, Categories 1-13 first, then calculate Category 14 and remove any double counting within Categories 1-13. Finally, calculate Category 15, and remove any double counting within Categories 1-14 (without including negative values).

4.7 Organisational boundary

- The organisation shall account for and report their emissions according to the selected consolidation approach (equity share or control approach).
- The organisation shall identify all organisations (subsidiaries, joint ventures etc.) to be included (how much and which scope and category), in compliance with the selected consolidation approach.
- Any acquisitions or divestments that occurred during the footprint period should follow the 'all year'/'same year' approach (recommended by the GHG Protocol), whereby the 'all year' emissions for the entity in question are included in/excluded from the footprint.
 - Where this is not possible (e.g., due to a lack of data), the 'all year'/'year after' approach should be followed (where the 'all year' emissions are included in/excluded from the subsequent year's reporting). Any such deferred reporting that is material shall be noted in public reporting.
 - 'Pro rata' reporting may be followed. Here, post-event emissions (when the event, e.g., acquisition, occurs part-way through the reporting period) are included in/excluded from the footprint. This is allowed but not recommended by the GHG Protocol.

4.7.1 Equity share approach

- Under this approach, the organisation accounts for emissions from operations according to their share of equity in the operation.
- Where the equity share consolidation approach has been selected, the equity share (%) of emissions shall be included in each respective scope/category.
- For example, organisation X is a parent company that has full ownership and financial control of operations A and B, but only a 30% non-operated interest and no financial control in operation C. If organisation X chooses the equity share approach, it would include A and B as well as 30% of C's emissions.

4.7.2 Control approach

- Under the control approach, the organisation shall account for 100% of emissions for operations over which they have control. Emissions from operations that the organisation has an interest in but no control over, will not be accounted for.
- Control can either be financial or operational.

4.7.2.1 Financial control approach

- The organisation will have financial control over operations if they have the ability to direct financial and operating policies of operations to gain economic benefits.
- An organisation will have financial control over operations if the operation is considered as a group company or subsidiary for the purpose of financial consolidation, i.e., being fully considered in financial accounts.
- If a parent company can introduce and implement financial and operating policies of an operation (and gains economic benefits), based on the financial control approach, 100% of emissions of the operation shall be included.

4.7.2.2 Operational control approach

- The organisation will have operational control over operations if they or their subsidiaries have the full authority to introduce and implement operating policies for operations.
- Where more than one party might have the ability to apply their operating policies over an operation, the organisation shall try and achieve consensus with all parties as to which organisation has operational control.
 - It should be emphasised that having operational control does not mean an organisation necessarily has authority to make all decisions concerning an operation. For example, big capital investments will likely require the approval of all the partners that have joint financial control. Operational control does mean a company has the authority to introduce and implement its operating policies.
 - If a parent company can introduce and implement operating policies of an operation (and gains economic benefits), based on the operational control approach, 100% of emissions of the operation shall be included.
 - If it can be clearly demonstrated that different parties have operational control over different elements of an operation and it is material and adherent to the principles of the GHG Protocol to do so, the activities of an operation may be suitably and logically be disaggregated into separate elements where one party can apply their policy and the other cannot. The emissions shall be allocated accordingly (with 100% to those with operational control), and the approach clearly documented and justified.
 - If the activities cannot suitably and logically be disaggregated into separate elements, then:
 - The organisation shall try and achieve consensus with all parties as to how emissions are to be allocated.
 - If this is not possible, the organisation shall make a decision with justification as to who is responsible. A conservative approach should be taken.

4.8 Operational verification boundary

- The organisation shall include Scope 1 and 2 at a minimum, or already have a verified Scope 1 and 2 footprint where the organisation wishes for a Scope 3 footprint to be verified.
- The organisation shall choose which Scope 3 categories to include in the operational verification boundary.
- All identified emission sources within the chosen operational verification boundary shall be included.

4.9 Time period of data collected

- All footprint inventories shall use historical data to represent a stated historical verification period.
- Time periods shall be clearly documented for all primary data.
- Data shall cover the 12-month reporting period.

4.10 Emission factors

- Scope 1 and 2 approved emission factor sources include, but are not limited to:
 - UK Government GHG Conversion Factors for Company Reporting
 - IEA Emission Factors
 - EPA GHG Emission Factors
 - Australian National Greenhouse Accounts Factors
 - UK Government Fuel Mix Disclosure
 - AIB European Residual Mix
 - Green-e® Residual Mix GHG emissions Rates
- Scope 3 and PCF approved emission factor sources include, but are not limited to the Scope 1 and 2 sources above and:
 - Ecoinvent
 - Agri-footprint

Note: The list of approved emission factors and what they are approved for is continually expanding.

4.11 Scope 2

- In line with the 'GHG Protocol Scope 2 Guidance' (amendment to the 'GHG Protocol Corporate Standard'):
 - All contractual instruments shall meet the Scope 2 quality criteria to be used in market-based calculations. If they do not meet the Scope 2 quality criteria, then other data shall be used as an alternative in the market-based method total.
 - Any type of energy or energy attribute purchase via a contractual instrument shall be treated in Scope 2 like all other product information – an emission rate in tonnes GHG/unit of output (here, kWh) rather than an avoided emissions estimation and deduction.
 - If companies have any operations in markets providing product or supplier-specific data in the form of contractual instruments, then companies shall account and report Scope 2 emissions in two ways and label each result according to the method: one based on the location-based method, and one based on the market-based method, meeting Scope 2 quality criteria.
 - If companies only have operations in markets without product or supplier-specific data, then only one Scope 2 result shall be reported, based on the location-based method.
 - Companies shall specify which method is used for goal setting, tracking, and goal-achievement claims, and for Scope 3 or product-level communication.
 - The organisation should include trade adjustment in the Scope 2 emission factor.
 - For electricity, heat, steam, or cooling produced within a multi-tenant leased building (by a central boiler, or on-site solar) and sold to individual tenants who do not own or operate the building or the equipment. Tenants may pay for this energy as part of a lump rental cost and the tenant may not receive a separate bill. The company with operational or financial control of the energy generation facility would report these emissions in Scope 1, following the operational control approach, while the consumer of the energy reports the emissions in Scope 2.
 - If a tenant can demonstrate that they do not exercise operational control in their lease, they shall document and justify the exclusion of these emissions (from their Scope 1 and 2 boundary and include in any Scope 3 reporting).

Note: The 'GHG Protocol Scope 2 Guidance' (amendment to the 'GHG Protocol Corporate Standard') requirements shall be read in detail by the organisation and all requirements of the document shall be met.

4.12 Allocation

- Data collected at the activity, facility, business unit or corporate level may require allocation.
- Companies involved in joint operations should draw up contracts that specify how the ownership of emissions or the responsibility for managing emissions and associated risk is distributed between the parties.
- Allocation is necessary where:
 - A single facility or other entity produces multiple outputs (specifically owned or controlled by different organisations); AND
 - Emissions are only quantified for the entire facility or system as a whole.
- Allocation shall be avoided where possible.
- If avoiding allocation is not possible, the chosen input allocation key should be physical allocation if this best represents the organisation's emissions. If this method does not best represent an organisation's emissions, other methods of allocation may be used.
- The data and method used to allocate between outputs shall be clear and justified.

4.13 Avoided carbon

- Avoided emissions shall not be included in this footprint.

Note: If avoided emissions are calculated, they may be reported separately but shall not be verified.

4.14 Land-based emissions and removals

4.14.1 Applicability, boundary and reporting requirements

- Organisations that wish to report land-based removals or have significant land sector activities in their operations or value chains shall conform to the requirements within 4.14 - 4.17 and the relevant sections of the 'GHG Protocol Land Sector and Removals Guidance'. Otherwise, skip to 4.18.
- For land use change emissions, a risk assessment shall be conducted to determine whether emissions will be material to the footprint.

Table 1. 'Land Sector and Removals Guidance' reporting. Blue: Required. Black: Optional

	Land emissions				Land removals	Additional land sector category: Land tracking metric	Product storage	Biogenic carbon
	LUC emissions (tonnes CO ₂ e)	Land management non-CO ₂ emissions* (split in tonnes N ₂ O, CH ₄)	Land management net CO ₂ emissions* (tonnes CO ₂)	Biogenic CO ₂ e emissions** (tonnes CO ₂ e)	Land management CO ₂ removals (tonnes CO ₂)	Land occupation (ha)	Biogenic product carbon storage (tonnes)	Gross biogenic CO ₂ emissions (tonnes CO ₂)
Scope 1							N/A	N/A
Scope 2								
Scope 3 (By category)								
Separate to scopes	N/A							
Relevant document section	4.14.2	4.14.3	4.14.4	4.14.1	4.14.5	4.15.1	4.16	4.17

- For land management emissions, a materiality assessment shall be conducted to determine whether emissions will be material to the footprint [see 5.5].
- Land emissions and land management CO₂ removals (when reported) shall be reported in scope.
- Gross land CO₂ emissions, gross land CO₂ removals and biogenic product storage [see 4.16] may be reported optionally.
- The organisation shall account for and report land management emissions as either:
 - Disaggregated CO₂, CH₄ and N₂O emissions where the origin is known, reported in land management non-CO₂ emissions and land management net CO₂ emissions columns [* in Table 1].
 - Biogenic CO₂e emissions where the origin is unknown, reported in biogenic CO₂e emissions column below [** in Table 1].
- The organisation may use evidence from regulatory programmes, certification programmes, sustainability programmes, or other mechanisms as a basis for providing information on biogenic product sourcing to determine land carbon stock changes related to this requirement.
- Such mechanisms should include quantitative information on land carbon stock changes, or proof that land carbon stocks and sinks levels are maintained, or have increased over the long term (e.g., biomass sustainability certification, compliance with regulations or jurisdictional programs verified by national authorities or independent third-party assurance, fulling at minimum to ISAE 3000 limited assurance engagement).
- The organisation does not need full traceability or primary data across the full supply chain to estimate net land carbon stock changes related to this requirement.
- The above certification programmes are not sufficient to meet the removals requirements and report removals but are sufficient to estimate Scope 3 land management net CO₂ emissions and to report biogenic CO₂ emissions separately from the scopes; rather than reporting them in Scope 1, 2 or 3.
- Bioenergy consumers shall not report land management removals associated with bioenergy consumption.

4.14.2 Land use change

- Organisations that engage in land-based activities or purchase products or materials with land-based origins shall have their land use change implications evaluated, whilst following normal materiality guidance, e.g., food, drinks, wood-based products, biofuels, mining, natural fibres in clothing etc.
 - When conducting a risk assessment for LUC, the following shall be considered:
 - Commodities from EU Deforestation-free Regulation (EUDR) (soya, beef, palm oil, wood, cocoa, coffee, rubber), have a high risk as default.
 - Assess likely locations of production and the risk levels of these locations in order to do a statistical LUC calculation.
- Environmentally extended input-output (EEIO) factors shall not be used when materiality and risk of LUC for a commodity/activity is high.
- The organisation shall calculate all LUC emissions (CO₂ and non-CO₂) for each event where these occur within the value chain and report these within the total footprint results, as well as report total LUC impacts separately.
 - If the land where the land use change has occurred is within Scope 1, then a direct land use change (dLUC) calculation method shall be used.
 - If not controlled and within Scope 3 categories, then either a direct land use change (dLUC) or statistical land use change (sLUC) calculation method shall be used. This can be calculated using an approved tool or through emission factors.
 - If a sLUC approach is used, then organisations shall use the product expansion approach.
 - The organisation may use the shared responsibility approach if spatially explicit data is used to estimate sLUC and such data does not enable consistent representation over time needed to apply the product expansion method.
- The organisation shall account for any land use change that has occurred in the last 20 years.
- The organisation shall discount their land use change emissions using a linear discounting method, that takes into account at least a 20-year time horizon.
 - If not possible, companies shall disclose and justify if another method is used.
- If the organisation is claiming land-based removals:
 - The spatial boundary that has been defined for any land-based removal accounting shall be used when accounting for land use change.
 - A dLUC approach shall be taken using the defined spatial boundary.
- Electricity and fuel that have a bio-energy feedstock component shall take into account any land use change emissions of bio-energy feedstock and report in their Scope 3, Category 3 emissions.
- All biogenic non-CO₂ emissions that occur due to biomass burning associated with land preparation as part of a land use change activity shall be accounted for and reported as part of the total land use change emissions.
- To claim zero land use change emissions on the land the organisation is currently using or procuring from, zero deforestation or zero land conversion certificates may be used.
 - Zero deforestation certificates will be evaluated on a case-by-case basis. They shall be issued by a third-party verification body and shall correspond to the goods purchased by the organisation during the reporting year. The corresponding zero deforestation standard must state the applicable deforestation-free cut-off year.

4.14.3 Land management non-CO₂ emissions

- Land management non-CO₂ emissions shall be accounted for in scope and itemised within those.

4.14.4 Land management net CO₂ stock change

- Land management net CO₂ stock change shall account for all carbon stock changes, including changes due to land management practices, degradation and carbon stock losses from fires, storms, and other natural disturbances. LUC emissions shall be accounted for and reported separately from land management net CO₂ stock change.
- Scope 1: organisations that own or control land shall account for land carbon stock changes from land management included in their organisational boundary.
- Scope 3: organisations with Scope 3 land management impacts shall:
 - Assume all land carbon stock changes are anthropogenic and classify all land as managed land, or develop and consistently apply an approach to classify lands as 'managed' or 'unmanaged'.
 - Define an appropriate spatial boundary by purchased product type based on one of the following four levels of traceability: jurisdiction, sourcing region, land management unit, harvested area. The organisation shall select the most specific spatial boundary available. This spatial boundary shall be consistent with the one used to account for land use change emissions.
 - Where the origin of the product type is unknown, organisations shall use generic trade data to determine likely jurisdiction-level origins.
 - At jurisdiction or sourcing region level, the only land types that shall be included are managed lands used to produce the product purchased by the organisation.

And EITHER:

- Assume no carbon stock change following the conditions below:
 - For biomass carbon pool: croplands or grasslands with temporary non-woody cover with no LUC in the last 20 years and no management practice changes during the reporting period.
 - For dead organic matter carbon pool: forest lands, croplands, grasslands, settlements or other lands with no LUC in the last 20 years and no management practice changes during the reporting period.
 - For soil carbon pool: forest lands, croplands, grasslands, settlements or other lands on mineral soils with no LUC in the last 20 years and no management practice changes during the reporting period. The no carbon stock change assumption shall not be applied to drained organic soils.

OR:

- Account for net land carbon stock changes on all attributable managed lands within the selected spatial boundary in their value chain (except Categories 5, 10 and 12), and lands related to downstream leased assets (Category 13), franchises (Category 14), and investments (Category 15) as applicable, and based on the materiality threshold.
- Quantify net land carbon stock changes across these three land-based carbon pools: biomass, dead organic matter, soil.
- Report net decrease in the land management carbon stock as land management net CO₂ emissions.
 - Net increase in the land management carbon stock may be reported as land management net removals. If reported, their quantification must follow the requirements in 4.14.5 and the relevant sections of the 'GHG Protocol Land Sector and Removals Guidance'.

4.14.5 Land management net CO₂ removals

- Land management removals are optional and may be reported. When reported, the following requirements shall be met:
 - The only scope and categories under which land management removals may be reported are Scope 1, and Scope 3, Categories 1, 8, 13, 15.
 - To report removals under Category 15, the quantification and monitoring shall be done by the invested organisation.
 - There is a net increase in the annual land carbon stock.
 - There is ongoing monitoring of carbon storage in the land carbon pools.
 - There is physical traceability to the land management units or the sourcing region where the purchased or produced product comes from.
 - Removals are quantified, using primary data specific to the land carbon pools where the carbon is stored. This data is representative of the relevant lands and carbon pools in the company's GHG inventory baseline and resampled using consistent methods at least every five years.
 - Removals are allocated based on the quantity purchased of that product as a share of the total production in the selected spatial boundary.
 - Quantitative uncertainty estimates for removals are provided.
 - Reversals are accounted for.
 - Double counting of removals across 'parallel' value chains is avoided (i.e., removals can be double reported vertically across the value chain, but not horizontally).
 - The balancing of removals and emissions shall be shown within the inventory, split by scope and category.
- If the selected spatial boundary is the sourcing region level, the following additional requirements shall be met:
 - The boundary only includes attributable managed lands that contributed to producing crops, animal products or forest products relevant to the organisation.
 - The sampling for the primary data collection is based on a sample size that is representative of the variation in natural and management factors throughout all attributable managed lands included in the sourcing region.
 - Quantification of removals is based on conservative assumptions.
 - Carbon stock changes in the sourcing region are allocated consistently across the sourcing region, using physical or economic allocation, based on the annual share of relevant material outputs sourced.
- Additionally:
 - Land management removals may be third-party verified. If the land management removals are not third-party assured, companies shall disclose and justify why third-party assurance was not obtained.
 - To include land management emissions and removals within the assessment and achieve verification, the land management emissions and removals shall be assessed.

4.15 Additional land sector categories

4.15.1 Land tracking metrics

- The organisation shall account for and report land occupation (in hectares), separately from emissions and removals.
 - Land occupation shall only include land that has land-based emissions and removals, or land use change emissions associated with it.
 - The organisation may account for land occupation by land type.
 - A separate land tracking metric, e.g., carbon opportunity cost or indirect land use change emissions or any other appropriate land tracking metric, may also be calculated and reported separately.
- Land tracking metrics shall not be considered within the data quality assessment.

4.16 Biogenic product storage

- The organisation may report product storage, but only from product carbon pools where the product is created, manufactured and sold by the organisation.
- If reported, this shall be separately to scopes and not aggregated with emissions and land management removals [see Table 1].

Note 1: This does not constitute a net footprint.

- Product storage shall not be included in any targets, although organisations may set a separate target for product storage.

Note 2: As product storage is reported separately to scopes and not included in targets, it does not contribute to meeting science-based, or Net Zero targets.

- If reporting product storage, the biogenic carbon content of the sold products, data regarding product lifetime (half-life value), conversion rates from raw material to products and/or different end cases, shall be used in the calculation. Please see the 'GHG Protocol Land Sector and Removals Guidance' for more details.
- Biogenic product storage shall not be considered within the data quality assessment.

4.17 Treatment of biogenic carbon

- Where biogenic CO₂ arises within the reporting company's value chain, organisations:
 - Shall report biogenic CO₂ emissions (e.g., from the combustion of biomass), split by scope and category.
 - May report biogenic CO₂ removals (e.g., CO₂ temporarily removed due to the growth of biomass).
- Where the organisation is setting a science-based target (SBT), organisations:
 - Shall report biogenic CO₂ emissions (e.g., from the combustion of biomass), split by scope and category.
 - Shall report biogenic CO₂ removals (e.g., CO₂ temporarily removed due to the growth of biomass).
- Where reported, this shall not be included in Scope 1, 2 and 3, but shall be included separately in the public report or submission form.
- Claims of biogenic carbon removed or captured due to waste carbon pools are not allowed.
- Biogenic non-CO₂ emissions shall be included within Scope 1, 2 and/or 3.

4.18 Fugitive and process emissions

- Emissions directly from processes, such as chemical reactions or refrigerant losses, shall be included in the organisational carbon footprint, or estimated using an appropriate methodology.
- CO₂, N₂O and CH₄ emissions arising from livestock, manure and soils shall be included in the footprint. These shall be calculated using the 'IPCC Guidelines for National Greenhouse Gas Inventories'.
- The organisation shall account for the F-gas leaks of all refrigerants at all sites. Where not possible, an estimate of the leaks shall be applied.

Note: The method used shall be reflected in the data quality assessment.

- The organisation shall test F-gas equipment at the required frequency for its charge as required by the government of the country of operation.

4.19 Aircraft emissions

- Radiative forcing for all air transport (passenger and freight) may be included in the footprint.

Note 1: It is recommended that radiative forcing is included in the footprint if materiality is $\geq 5\%$ of total Scope 3 footprint, but not required.

Note 2: Radiative forcing is not mandated by any standards, so the organisation may choose to exclude it. If materiality is, however, $\geq 5\%$ of the total Scope 3 footprint, the organisation should disclose that they have done so alongside an explanation, e.g., 'chosen source emission factors do not include it'; 'science is uncertain'; etc.

4.20 Wastewater

- The organisation shall calculate emissions using methods provided in the '2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 5 Waste'.

4.21 Completeness

- The organisation shall show that all data that feeds into the organisational carbon footprint is complete. This is especially important with complex organisational structures and value chains; all sources of emissions shall be included somewhere, and only once.

Note: Data can be complete but not modelled with high-quality data. Both shall be tested separately. See Appendix 1 for data quality scoring.

4.22 Baseline year and rebaselining policy

- The organisation shall choose and report a baseline year for which emissions data is available and state the reason for choosing the base year.
- This baseline year shall be representative of business as usual (BAU) operations, e.g., not during the COVID-19 pandemic.
- The organisation shall develop a baseline year re-calculation policy, and clearly state the reasoning and context for any recalculations. Where applicable, the organisation shall state a significance threshold for historic emissions recalculation.
- The following cases shall trigger a recalculation of baseline year emissions:
 - Structural changes in the reporting organisation that have a significant impact on the organisation's base year emissions.
 - Changes in calculation methodology, or improvements in accuracy of activity data, or emission factors that create a material impact on base year emissions data.
- This shall be applied in a consistent manner – for both increases and decreases in emissions.
- The organisation should publish two footprint results; the footprint of each specific year and a separate version with adjustments, which better enable cross-year comparisons (with clear explanations).

4.23 Primary versus secondary activity data

- The organisation shall provide adequate documentation that is sufficiently clear and transparent to enable verification decision making.
- The organisation shall disclose units of measurements for all data.
- Where **primary activity data** is used, the organisation shall:
 - Disclose the source of all primary data and the time period it relates to.
 - Provide primary data in both its original form from the source and any transformed data, to ensure the way in which data is transformed (formulae and sources) is clear.

Note 1: This is most effectively done by groups of data from the same source, not for every data point.

- Where **secondary data** is used, the organisation shall:
 - Disclose the type of secondary data, e.g., secondary activity data, secondary EFs.
 - Disclose the source of the data, the type of secondary data, reference where it can be found, version numbers, exact name of the data point(s).

Note 2: Organisations should ensure sufficient attention is given to correct disclosure of units of measurement, as this is one of the most common sources of error (e.g., reporting in kg instead of tonnes or the other way around).

- The organisation shall:
 - Provide methodology and evidence (enabling the estimations, proxies and extrapolations to be tested).
 - Provide access to or demonstration of data calculations or manipulations.
 - Document all assumptions made, include a written justification for these assumptions and, where possible, indicate the sources with sufficient detail and provide enough supporting evidence.

Note 3: The source may be the name of an expert.

Note 4: Hard-coding allocation into calculations is a common source of errors and makes verification difficult or impossible.

- Provide evidence to assess the:
 - Appropriateness of the estimate methodology.
 - Applicability of the assumptions in the estimate.
 - Quality of the data used in estimate.

Note 5: The detail of this assessment depends on the materiality of emissions source(s).

Note 6: A higher quality (to be evaluated and tested in line with the above) estimation would be using the previous year's data of the same site or other similar sites in the same year.

Note 7: A lower quality (to be evaluated and tested in line with the above) proxy would be using data for a manufacturing site in place of an office site.

Note 8: A lower quality (to be evaluated and tested in line with the above) extrapolation would be using six months of data to extrapolate to the full 12 months in a seasonable business with high variation.

- The quality of the data [see Appendix 1], assumptions, extrapolations, proxies used shall be evaluated and reflected in the data quality score. Limitations in using the data and verified GHG statement should be clearly stated when referencing the verified footprint.

4.24 Materiality: Significance or cut-off criteria

- The organisation should understand the materiality of each element (source) of the footprint as a percentage of the total.
- Elements of the footprint with:
 - **High materiality and sensitivity** should be modelled with high quality data, i.e., measured. Most effort and resource should be spent here to improve this data.
 - **Low materiality and sensitivity** may be modelled with lower data quality, i.e., estimates, proxies. Over time, as the quality of high materiality and sensitive data has improved, effort and resource should be spent here to improve this data.
 - **Non-material contributors** may be excluded if the highest reasonable estimate does not exceed 5% of the Scope 1 and 2 footprint, and 5% of the Scope 3 footprint.
 - The organisation shall document a simple justification for these exclusions.
 - It is preferable to include estimates using low quality data (of small contributors to the footprint) rather than excluding an element.

Note 1: The organisation should expect to follow this iterative approach, as the materiality of each element is gradually better understood.

Note 2: Materiality = contribution to the total footprint. Sensitivity = extent the footprint changes with different data/methodological choices.

5 Verification requirements

5.1 Second stage: Transaction-level data and compliance stage

- This section explains the second stage where two levels of data may be requested: **transaction listings** (i.e., a list of invoices for the purchase of material X) and **transaction-level evidence** (i.e., specific invoices for sampled transactions). In addition, the methodological requirements [see 4] will be checked. Finally, this second stage describes other areas of the verification process that the organisation needs to comply to (e.g., site visit and interview).

5.2 Evidence request

- The organisation shall provide evidence for all data points in the evidence request.
- Evidence shall be primary evidence, e.g., invoices or expense reports [see 5.2.1 for examples].
 - Secondary evidence (emails, Excel spreadsheets generated manually by the organisation) shall not be accepted in place of primary evidence.

Note: Excel spreadsheets generated as exports from core IT or financial systems may be accepted to test completeness (at an observation), to sample from and to be used in sampling.
- Where the organisation inputs data into their core IT systems, this shall not classify as primary evidence/data and primary evidence shall be provided.
- Where suppliers input data into a system, access to the system shall be granted or the system shall be accessible via a screensharing call.
- More than one evidence request may be issued, if the evidence provided is not sufficient or it is necessary to request more than once to adequately sample (more common for Scope 3 categories).

5.2.1 Primary evidence

- The organisation shall provide primary evidence for the data points within the sample.
- Primary evidence for data will vary by emission source and how data is collected, see examples below. Whether primary evidence is acceptable for verification is the decision of the Carbon Trust.
 - Scope 1: Stationary combustion – automatic meter readings, invoices
 - Scope 1: Mobile combustion – invoices, fuel cards, mileage reports
 - Scope 1: Fugitive GHG emissions – maintenance records
 - Scope 1: Process GHG emissions – input variables required by IPCC equations
 - Scope 2: Electricity – invoices, meter readings
 - Scope 2: Renewable electricity – REGO's (including information on geographic and temporal coverage) or supplier-specific tariff weblinks, invoices and contracts to confirm the organisation is on the relevant tariff
 - Scope 2: Steam, heat and cooling – contracts specifying fuel source and emission rate associated with received energy
- Where Scope 3 categories are included within the operational verification boundary, the organisation shall show data is complete and all data has been provided. Additional evidence shall be provided, and examples are presented by category below:
 - Scope 3, Category 1: Purchased goods and services (spend or quantity-based) and Category 2: Capital goods – purchase records and invoices from suppliers
 - Scope 3, Category 3: Fuel- and energy-related activities – verified Scope 1 and 2 footprint (or the same evidence as Scope 1 and 2), emission factors
 - Scope 3, Category 4: Upstream transport and distribution – fuel records and receipts (in litres/gallons), reports on distances travelled
 - Scope 3, Category 5: Waste – waste transfer notes (WTNs), waste contractor reports
 - Scope 3, Category 6: Business travel – fuel cards, expense reports, flight/train receipts

- Scope 3, Category 7: Employee commuting – employee surveys, headcount from human resources (HR), employee contracts
- Scope 3, Category 8: Upstream leased assets – see Scope 1 and 2 evidence
- Scope 3, Category 9: Downstream transport and distribution – quantity of products shipped, inputs into calculation
- Scope 3, Category 10: Processing of sold products – proof of sale/contract
- Scope 3, Category 11: Use of sold products – customer surveys, energy models, lifetime field data, number of products sold, sales invoices, sales reports by country
- Scope 3, Category 12: End-of-life treatment of sold products – percentage split of end-of-life fate by product type, country of sales
- Scope 3, Category 13: Downstream leased assets – see Scope 1 and 2 evidence
- Scope 3, Category 14: Franchises – see Scope 1 and 2 evidence (and Scope 3 where relevant)
- Scope 3, Category 15: Investments – percentage equity held in investee, Scope 1, 2 (and Scope 3 where relevant) data of investee, proof of ownership or control and potentially evidence equivalent to Categories 1-13 for investees
- Where the organisation uses estimations, these shall be evidenced and tested in line with 4.23.

5.3 Site visit

- Site visit(s) shall be facilitated by the organisation unless there is reasonable justification, e.g., safety concerns at the site selected. These may be in-person or virtual.

Note: For a Scope 3 verification, an in-person site visit may not be required. However, multiple interviews with different data owners should be conducted with a focus on emission hotspots.

- Where a virtual site visit take place, this shall include a virtual walk around of the site(s). The organisation shall provide sufficient evidence, e.g., floor plans.

5.4 General assessment requirements

- The Carbon Trust shall undertake an assessment of the information and evidence [see 5.2] provided by the organisation and how they have met the verification requirements described in 4 and 5.
- Where the Carbon Trust identifies areas of uncertainty, gaps in the evidence provided, areas where the evidence demonstrates non-conformity with the requirements, or any other need for further information or evidence, these shall be notified to the organisation in the form of a query log or evidence request [see 5.2].
- Upon receipt of the query log or evidence request, the organisation shall provide a response or take the additional action required. The organisation shall provide this within the timeframe in the proposal and give sufficient additional information and/or evidence to address the identified queries, gaps and non-conformities.
- The Carbon Trust commits to one evidence request and one round of query log and response, where necessary, as a minimum. Where the initial responses provided by the organisation are not sufficient, further rounds may be undertaken at the sole discretion of the Carbon Trust.
- Where the organisation is unable to provide suitable information and evidence to demonstrate that they have met the verification requirements described in 4 and 5 within the agreed timescales, the Carbon Trust reserves the right to terminate the service upon written notice.

5.5 Materiality in assessment

- The following materiality thresholds apply to errors, omissions and misstatements (EOMs):

Table 2. Materiality in assessment.

An individual and/or sum of EOM is known/estimated to be % of the <u>total footprint</u> being verified	An individual and/or sum of EOM is known/estimated to be % of the <u>scope/category*</u> of the footprint being verified	Finding type Non-conformity (NC) type	Opinion the project is completed with	Is the footprint verified? And is use of the Logo granted as applicable?	Does the open NC require correcting before next verification as a minimum?
>=5%	N/A	Major NC	Adverse	No	
2.50-4.99%	N/A	Minor NC	Modified opinion**	Needs approval	Yes
1.00-2.49%	>=10%	Minor NC	Modified opinion**	Needs approval	Yes
	<10%	Minor NC	Unmodified opinion	Yes	Yes
0-0.99%	>=1%	Minor NC	Unmodified opinion	Yes	Yes
	<1%	OFI	Unmodified opinion	Yes	No (Optional)***

* Per scope where the footprint being verified is Scope 1 and 2 or Scope 1, 2 and select, standard Scope 3 categories. Per category where the footprint being verified includes complex Scope 3 categories. See Appendix 3 for 'standard' versus 'complex' Scope 3 categories.

** The deliverables shall highlight the weakness relating to the Minor NC.

*** If the EOM is close to the threshold, the organisation should be made aware that if the footprint changes, it might represent a Minor NC next time.

- Where the EOM (in particular an omission) has been estimated to be below, but close to exceeding, a materiality threshold, it may be necessary to complete the project and issue the deliverables as indicated but with a caveat that the organisation needs to obtain further data to confirm the exact extent of the EOM within a suitable timescale, e.g., six months. Should the organisation be unable to do this, or further data confirms that the EOM was in fact above the threshold, then further action in line with Table 2 should be taken. The Carbon Trust may withdraw the previously issued deliverables.
- Each individual EOM shall be treated as an absolute value. EOMs shall not be cancelled out.
- Location- and market-based approaches shall be treated as two different organisational carbon footprints and materiality tested separately.
- Materiality for each biogenic emissions and removals source shall be done on a net biogenic footprint basis.
- Where the usefulness of the GHG statement is at risk, the Carbon Trust reserves the right to issue a modified opinion.
- The materiality thresholds shall be 5% for the total footprint, and the significance threshold is 1% per scope/category.*

Note: The EOM materiality thresholds provided above are the default thresholds. However, the organisation may request to use more stringent thresholds for their project, in which case the more stringent thresholds should be used.

6 Verification deliverables

6.1 Verification deliverables

- Where the requirements in 4 and 5 have been satisfactorily met, the Carbon Trust shall provide verification in the form of the following:
 - **A verification letter or statement** – stating the organisational and operational verification boundary has been found to have met the relevant requirements criteria (including the requirements of this document and as applicable from Org-RfA-2) and the verified footprint results. This letter may include the data quality scores and any potential limitations to using the verified GHG statement.
 - **A verification report** – a detailed analysis of the verification process; including the sample selected and the hotspots of the organisational carbon footprint; a summary of the site visit(s) and interview(s); data quality analysis; the non-conformities log and recommendations. This report also includes the breakdown of emission sources and the relevant data quality scores, as well as a more detailed description of any limitations of using the verified GHG statement.

7 Verification maintenance requirements

7.1 Misuse of the verification

- The Carbon Trust reserves the right to use the full extent of the law to take all appropriate actions to ensure these requirements are enforced to uphold the integrity of the verification.

7.2 Public reporting

- The organisation may publicly communicate their verified footprint results, these shall be the same as the values in the verification letter/statement and report. Where the organisation publicly discloses an emissions report, the report shall include the information as listed in the reporting chapters of the relevant GHG Protocol Standards (i.e., Chapter 9, 'Corporate Standard'; Chapter 11, 'Value Chain Standard').
- Communications claims can be found in the relevant verification report and statement.

8 Re-verification assessment of subsequent years

8.1 Assessment activities for re-verifications

- Where an organisation wishes to re-verify, i.e., obtain a subsequent verification for the next year, then in addition to the assessment activities described in 5, the following re-verification assessment activities shall take place once a new contract is signed:
 - The organisation shall provide two organisational carbon footprints. The Carbon Trust shall compare current with representative (previous years or baseline) footprints to confirm consistency. The organisation shall provide explanation of any changes between the footprints.
 - The organisation shall provide evidence to address any suspended minor non-conformities as appropriate, for the Carbon Trust to review. Where sufficient action to suitably address and close off a suspended minor non-conformity has not been taken, the Carbon Trust reserves the right to escalate the matter to a major non-conformity if appropriate.
 - Where the footprint has been rebaselined [see requirements in 4.22], this rebaselined year may be verified without the use of the Logo (unless within the verification period). The organisation shall provide the Carbon Trust with the methodological changes made within the footprint, and the updated footprint. This can allow for year-on-year or target baseline comparisons, or like-for-like comparisons with justification and explanations of the changes.

Appendix 1: Data quality scoring

- The organisation should conduct an assessment of the data quality of the activity data and of the emission factor used for each emission source. The level of detail in the assessment may be linked to materiality of the emission source. The appropriateness of the emission factor used, given the activity data context, should also be assessed. For both the activity data and the emission factor, the following scoring criteria for assessment should be followed. An alternative approach should be fully documented and justified.
- Refer to 4.23 and 4.24 when scoring and interpreting data quality.
- The overall data quality indicator (DQI) score is a combination of activity data (activity data quality, ADQ), GHG emission factor (emission factor intrinsic quality, EFIQ) and the appropriateness of the matching. The scores against quality criteria for both the activity data and emission factor can have different weightings. It may be necessary to treat scoring of goods differently from services as the sources and purposes may differ.
- The data and emission factors (EFs) should be scored by each principle (source, location, age, technology and completeness) and averaged together.
- Where the organisation seeks the use of a claim in line with Org-RfA-2, the organisation shall provide data quality scoring in line with this Appendix.
- Tables 3-5 provide example decision-making tools and scoring options.

Table 3. Data quality scoring.

Data quality description	Overall DQI score
Excellent	1.00
Very good	0.85
Good	0.70
Acceptable	0.55
Low quality	0.40
Lower quality	0.25
Lowest quality	0.10

Table 4. Activity data (Activity Data Quality, ADQ).

ADQ score	Source	Location	Age	Technology	Completeness
1 Excellent	Physical material/activity: All high-quality direct consumption data. Scope 1 and 2 examples include quantity data (in kWh), quantity of fuel consumed from suppliers (in litres). Scope 3 examples include purchased quantity of material from supplier (in tonnes). Service activity (Scope 3): Spend for services where spend is the best activity data (from service providers), e.g., legal, professional services etc. Data comes from the supplier and is automated/primary data.	Data for activity/consumption (and if relevant, suppliers/customers) is at sub-facility or facility level, e.g., manufacturing plant or fleet fuel use per vehicle group.	Data is wholly from the inventory year.	Data is broken down by all key factors that drive emissions, e.g., 'steel grade XY, made from blast oxygen furnace' or 'alu extruded and anodised' or 'animated online ad agency' or 'car/van/HGV model X'.	Data complete for reporting period; no missing data/extrapolation.
0.85 Very good	Physical material/activity: Scope 1 and 2 examples include quantity data from automatic meter readings (in kWh), quantity of fuel consumed, not from suppliers (in litres). Scope 3 examples include purchased quantity of material, not from supplier (in tonnes). OR: MIX of excellent and good quality activity data (e.g., spend on commodities, m² leased offices). Limited proxy/extrapolation. Service activity: Mix of excellent and good data. Data is automated/primary data but does not come from suppliers.	DEFAULT: National-level activity/consumption (and if relevant, suppliers/customers) data. OR: If data is for a wider location (regional/global) and there is little benefit in a more precise location, e.g., mostly fossil fuel combustion.	Some activity data from other years (up to three years out), but still a very good representation of reporting year.	Data is broken down by most (but not all) key factors that can determine emissions, e.g., 'steel made by BOF' or 'alu extruded' or 'online ad agency' or 'first class flight' or '17t rigid HGV'.	Mostly complete data. Minimal missing data/extrapolation; very good representation of reporting period.

0.70 Good	Physical material/activity: Good-quality data/proxies, related to actual consumption/activity/materials. Good quality proxy calculations. Scope 1 and 2 examples include offices m². Scope 3 examples include spend on commodities easily linked to vols; t.km exclusive HGV good backhaul calc (by supplier). Service activity: Spend on services (not by supplier) where spend is a good (but not the only or main) driver of emissions, e.g., marketing (may include physical activities/goods). Physical material/activity is from supplier sources (either automated or manual). Service activity data is from internal systems/records.	Activity data is a mix of very good and acceptable.	Some activity data from other years (up to three years out), but still a good representation of reporting year.	Activity data is well described, at a high level, e.g., 'steel' or 'aluminium' or 'ad agency' or 'flight', or 'HGV'.	Some extrapolation/minor missing data, but still a good representation. E.g., only nine months data available for Category 1a, extrapolated from several years' seasonal patterns of procurement vols (driver for Category 1a emissions).
0.55 Acceptable	Physical material/activity: Data/proxies moderately related to actual consumption/activity/materials. Reasonable proxy calculations. Scope 1 and 2 examples include similar sites consumption data as proxies. Scope 3 examples include kms travelled by mode; t.km w/ reasonable loading/backhaul assumption; spend on materials with limited variation. Service activity: Spend on services (not by supplier) where spend is acceptable. Maybe some proxies/assumptions, but still acceptable correlation with emissions.	DEFAULT: Regional activity, e.g., Europe (and if relevant, supplier/customer) data. UPGRADE: If no benefit of more precise location, e.g., F-Fuel combustion. DOWNGRADE: If CO₂e is highly location-dependent, e.g., aluminium; EV use-phase etc.	Some activity data from other years (up to five years out), but still an acceptable representation of reporting year.	Activity has been summarised into a mix, e.g., 'metals' or 'marketing' or 'overland travel' or 'freight'.	Significant extrapolation/some missing data, and an acceptable representation. E.g., only six months data extrapolated based on revenues for a stable category.

	Data not by supplier/automated source. Data is subject to human error.				
0.40 Low quality	Physical material/activity: Activity data: low quality related to actual consumption/activity/materials. Low quality proxy calculations. Scope 1 and 2 examples include different site types as proxies (HQ as a proxy for all other smaller offices). Scope 3 examples include spend-based data on finished goods with high degree of variability/no supplier breakdown. Service activity: Significant use of proxies/assumptions, leading to low quality data. Data not by supplier/automated source. Data is subject to human error.	DEFAULT: Global activity (and if relevant, suppliers/customers) data. UPGRADE: If no benefit of more precise location, e.g., F-Fuel combustion. DOWNGRADE: If CO₂e is highly location-dependent, e.g., aluminium; EV use-phase etc.	Some activity data from other years (up to five years out), and low-quality representation of the reporting year.	Quite generic, unspecific descriptions, e.g., 'parts', or 'components' or 'consulting'.	Significant extrapolation/missing data, and a low-quality representation. E.g., three months data extrapolated based on revenues for a category driven by production; no data but reasonable extrapolation.
0.25 Lower quality	Physical material/activity: Lower quality data, lower quality related to actual consumption/activity/materials. Lower quality proxy calculations. Scope 1 and 2 examples include different site types as proxies (manufacturing electricity consumption for office electricity consumption). Scope 3 examples include spend-based data on mixed physical activities/goods (travel; leases; mixed materials/goods). Data not by supplier/automated source. Data is subject to human error.	Emissions are highly location-dependent, but location of activity/ consumption (and if relevant, suppliers/ customers) has lower quality specificity, e.g., regional aluminium purchasing/suppliers or regional EV use-phase etc.	N/A	Very generic descriptions, e.g., 'goods' or 'services'.	No/minimal data and lower quality extrapolation.

0.10 Lowest quality	N/A	Emissions are highly location-dependent, but location of activity/ consumption (and if relevant, suppliers/ customers) has no specificity, e.g., global/unspecified location for aluminium purchasing; EV use-phase etc.	Some activity data over five years old, and materially unrepresentative.	N/A	N/A
		<i>Note 1: Not relevant – the location of the activity, consumption, supplier, customer etc. has no impact on emissions e.g., combustion of 100% mineral diesel.</i> <i>Note 2: Bio blend of forecourt diesel can vary by country.</i>			

Table 5. Emission factor (Emission Factor Intrinsic Quality, EFIQ).

EFIQ score	Source	Location	Age	Technology	Completeness
1 Excellent	Physical material/activity: Published product life cycle assessment (LCA)/supplier product-specific/user process calc/FPX calculations.	Data used is facility-specific or sub-regional (US state, Scotland vs England).	1) EFs updated and published in inventory year, e.g., BEIS. 2) Older EFs (≤ 1 year) that have rigorous (e.g., verified) adjustments.	Data is specified by all key technologies that drive emissions, e.g., 'steel grade XY, made from blast oxygen furnace' or 'carmaker/OEM's LCA' (CMDB: Class 4++).	EFs represent whole relevant scope.
0.85 Very good	Physical material/activity: EFs used are from a mix of excellent and good sources. Calculated EF is very good. Service activity: Spend-based PCF for a service.	DEFAULT: EF is national. OR: If EF is for a wider location (regional/global), there is little benefit of more granular location EF, e.g., mostly fossil fuel combustion EFs etc.	1) Non-adjusted EFs: ≤ 1 year to inventory year. 2) Adjusted EFs: ≤ 2 years to inventory year with robust adjustments/assumptions, e.g., IEA EFs.	Data used has good specificity of technology, e.g., 'steel grade XY' or 'first class flight' or '17t rigid HGV' (CMDB: Class 4+)	EFs used are a mix of excellent and good.
0.7 Good	Physical material/activity: General database (e.g., Ecoinvent, BEIS, IEA) – based on a pre-defined 'approved' list. Calculated EF is good (equivalent to general databases). Service activity: Spend-based EFs used are mix of PCFs and well-managed EEIO DBs.	EFs are a mix of very good and acceptable.	1) Non-adjusted EFs: ≤ 3 years to inventory year. 2) Adjusted EFs: ≤ 6 years to inventory year with reasonable adjustments/assumptions, e.g., Ecoinvent.	Data used is based on industry average technology, e.g., 'steel' or 'flight' or 'HGV' (CMDB: Class 4).	Mostly complete (some, but not material sampling, proxy, extrapolation etc. applied, e.g., PCF missing some life cycle stages – transport/manufacturing/energy, etc.)
0.55 Acceptable	Physical material/activity: EFs used are from a mix of good and low-quality sources. Calculated EF is acceptable – a reasonable/generic representation. Service activity: EEIO EF for a service (e.g., legal services) from a well-managed EEIO DD, e.g., the Carbon Trust's EEIO EFs	DEFAULT: EF is regional, e.g., Europe. UPGRADE: If no benefit of more precise location, e.g., F-Fuel combustion. DOWNGRADE: If emissions are highly location-dependent, e.g., aluminium; EV use-phase etc.	1) Non-adjusted EF's: ≤ 5 years. 2) Adjusted EF's: ≤ 10 years to inventory year with reasonable adjustments/assumptions.	Proxy has been used, e.g., 'metals' or 'marketing' or 'travel' or 'freight' (CMDB: Class 3).	EFs used are a mix of good and low quality.

0.4 Low quality	Physical material/activity: Low quality EF via approximate assumptions/extrapolation/ expert opinion or supplier average (e.g., average across all products sold). Low quality calculated EF, likely non-representative but non-material differences. Service activity: EEIO EF for a homogenous product/physical activity (e.g., sea freight) from a well-managed EEIO DB, e.g. CT's EEIO EFs.	DEFAULT: EF is global. UPGRADE: If no benefit of more precise location, e.g., F-Fuel combustion DOWNGRADE: If emissions are highly location-dependent, e.g., aluminium; EV use-phase etc.	1) Non-adjusted EFs: ≤10 years. 2) Adjusted EFs: >10 years to inventory year with reasonable adjustments/ assumptions, e.g., the Carbon Trust EEIO EFs.	Proxy has been used, e.g., 'base material' (CMDB: Class 2)	Approximate (significant sampling, proxy, extrapolation etc., e.g., PCF missing some large life cycle stages/key materials etc.)
0.25 Lower quality	Physical material/activity: EFs used are from a mix of low quality and lowest quality sources. Lower quality calculated EF – likely non-representative and material differences. Service activity: Spend-based (EEIO) EF for MIXED physical good/activity where volumetric EFs should be available, e.g., EF/\$ on business travel, transport, physical goods, etc.	Emissions are highly location-dependent, but location for EF has lower quality specificity, e.g., regional EF for aluminium; EV use-phase etc.	More than ten years of difference – unreasonable assumptions.	Proxy has been used, e.g., 'goods' (CMDB: Class 1).	Very approximate non-representative (significant sampling, proxy, extrapolation etc., e.g., PCF missing large life cycle stages/key materials etc.)
0.1 Lowest quality	Physical material/activity: Non-representative assumptions/extrapolation/ calculation – likely material misrepresentation, e.g. unit-based EF for minority product from mixed product manufacturer (total co emissions/total units). Service activity: Misleading spend-based (EEIO) EF for MIXED physical good/activity, e.g. spend-based EF for minority product from mixed product manufacturer.	Emissions are highly location-dependent, but location for EF has no specificity, e.g., global/ unspecified location for aluminium EF; EV use-phase EF etc.	EF is known to be materially misrepresentative of inventory year, and no adjustments made		EF is known to be materially misrepresentative of intended scope, and no adjustments made

		<i>Note 1: Not relevant – the location of the activity, consumption, supplier, customer etc. has no impact on emissions e.g., combustion of 100% mineral diesel etc.</i> <i>Note 2: Bio blend of forecourt diesel can vary by country.</i>			
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Appendix 2: Green gas

- If the organisation wishes to use a methodology that permits a market-based approach to Scope 1 emissions (e.g., use of green gas in the 'UK Environmental Reporting Guidelines'), then the organisation shall:
 - Report Scope 1 market-based and location-based alongside Scope 2.
 - For reduction purposes, follow the same approach for Scope 1 and Scope 2.
 - Meet the quality criteria found in the 'GHG Protocol Scope 2 Guidance'.
 - Notify their Client Manager to include in assessment parameters.

Appendix 3: Standard and complex classification

The Carbon Trust categorises organisational carbon footprint verifications as either 'standard' or 'complex', depending on the categories of Scope 3 emissions included and the relevant industry sector. The split between 'standard' and 'complex' are as follows:

Standard:

- **Scope 1:** All
- **Scope 2:** All
- **Scope 3:**
 - Category 3: Fuel- and energy-related activities not included in Scope 1 or Scope 2
 - Category 6: Business travel
 - Category 7: Employee commuting
 - Category 8: Upstream leased assets
 - Category 13: Downstream leased assets
- **Sectors:** All other sectors (not listed as 'complex')

Complex:

- **Scope 3:**
 - Category 1a: Purchased goods and services – sold product related (if retailer: goods for resale)
 - Category 1b: Purchased goods and services – non-sold product related (if retailer: goods not for resale)
 - Category 2: Capital goods
 - Category 4: Upstream transportation and distribution
 - Category 5: Waste generated in operations
 - Category 9: Downstream transportation and distribution
 - Category 10: Processing of sold products
 - Category 11a: Direct use of sold products
 - Category 11b: Indirect use of sold products
 - Category 12: End-of-life treatment of sold products
 - Category 14: Franchises
 - Category 15: Investments
- **Sectors:** Agriculture, chemicals, waste, water, and other sectors with relevant atypical emission sources (e.g. complex fugitive, process emissions etc).

VERSION HISTORY

Version	Date	Summary of changes	Author	Approved by
1.0	20/09/2024	Initial version	Amrita Matharu, Associate	Martin Barrow, Director Leo Cheung, Associate Director Martin Hockaday, Head of Assurance John Newton, Director

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