

The CarbonNeutral Protocol

The global standard for carbon neutral programmes



CERTIFIED
**CARBON
NEUTRAL**
Global Standard

CarbonNeutral.com

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The CEO Water Mandate



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Table 1: CarbonNeutral Protocol Versions and Amendments

Version	Valid from	Amendment
11	January 2017	New appendices on reporting emissions from carbon neutral services, secondary certifiers and Scope 2 reporting. Minor amendments to visuals, ordering and case studies.
10	January 2016	Visual redesign. Reorganised the Technical annex and Appendices for guidance and clarification. New appendices on evaluating internal reductions and guidance on quality assurance and verification.
9.1	February 2015	Minor revision to align with the GHG Protocol Scope 2 Guidance.
9	September 2014	Revision to certification categories included in Annex A and B. Revision to Annex B Endnotes. Expanded Annex C guidance revision.
8	July 2013	New carbon credit requirements. Expanded Annex C guidance. New Annex H. New Annex I.

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Glossary of Terms

Uchindile-Mapanda Reforestation Project, Tanzania:
The project aims to reforest 10,814 hectares of degraded grassland. Through sustainable harvesting, carbon is sequestered at the two commercial forests

A

Additional (also additionality): Refers to an external emission reduction project from which emissions reductions are verified as carbon credits under an applicable carbon accounting standard. An emission reduction project is said to be additional when it can be demonstrated that in the absence of the availability of carbon finance the project activity would not have occurred (the “baseline” scenario); and, such baseline scenario would have resulted in higher greenhouse gas (GHG) emissions. Each eligible carbon accounting standard under The CarbonNeutral Protocol provides tools for how additionality at a project level is tested and demonstrated. For further discussion of this topic, please see **Annex C**.

AIC: Aircraft (or aviation) induced clouds which have a potential climate warming affect. See **Appendix 2.3** for further discussion of this topic.

Assessment: The process of quantifying the GHG emissions for a given subject, using robust and transparent methods that can be replicated.

Available (referring to data): Applied to primary data, “available” means readily collectable, at reasonable cost. Applied to secondary data, “available” means readily found in reputable, published sources such as those issued by government departments, academic institutions, specialist research bodies and the secretariats of leading GHG standards and protocols.

Aviation Impact Factor (AIF): A term used in The CarbonNeutral Protocol for the multiplier applied to the GHG emissions from aviation in order to take account of the wider impacts of aviation on climate. This includes but is not limited to short or long-term impacts; from GHGs alone and others with global warming influence (for example, soot particles and aviation induced clouds); and, direct and indirect impacts (for example, the interaction of NOx with methane gases and ozone at high altitudes). See **Appendix 2.3** for further discussion of this topic.

B

Baseline: Refers to an external emission reduction project from which emissions reductions are verified as carbon credits under an applicable carbon accounting standard. The baseline for a project activity is the projected GHG emissions that are calculated to occur in the absence of the proposed project activity. For further discussion of this topic, please see **Annex C**.

Boundary: The physical or spatial extent of the subject – the entity, product or activity – i.e. the sites (including mobile sites such as vehicles) involved. By way of example, the boundary might encompass the office and vehicles of an entity, or the sites used for the manufacture, storage and transportation of a product. See **Annex B** for further information of this topic with respect to CarbonNeutral® certifications.

C

Carbon credit: A transactable, non-tangible instrument representing a unit of carbon dioxide-equivalent (CO₂e) – typically one tonne – that is reduced, avoided or sequestered by a project and is certified/verified to an internationally recognised carbon accounting standard. Carbon credits are typically ultimately used to counterbalance or compensate for emissions occurring elsewhere.

Carbon neutral: Condition in which the net GHG emissions associated with an entity, product or activity is zero for a defined duration.

CarbonNeutral®: The registered trademark of Natural Capital Partners.

CarbonNeutral® certification: The process by which a client receives recognition that it has met the provisions of The CarbonNeutral Protocol for a specific subject. CarbonNeutral® certifications can only be awarded by a CarbonNeutral certifier.

CarbonNeutral certifier: An organisation providing CarbonNeutral® certification through the application of The CarbonNeutral Protocol. There are two types of CarbonNeutral certifier:



Uganda Improved Cookstoves Project, Africa: The project employs resident artisans for the manufacturing of this locally-made product which reduces fuel-use by 36% compared to traditional cooking methods

the primary certifier and secondary certifiers. The primary certifier, Natural Capital Partners, is responsible for the development and oversight of The Protocol. Secondary certifiers are entities, which have the relevant expertise and demonstrated experience, and which have been authorised by Natural Capital Partners to provide certifications in accordance with The CarbonNeutral Protocol. See **Annex G** for further information about the selection and management of secondary certifiers.

CarbonNeutral® certification logo: A logo incorporating the CarbonNeutral® trademark that is licensed to a client upon the successful completion of a CarbonNeutral® certification. See **Annex A** for further information on this topic.

CarbonNeutral® certification logo guidelines: Natural Capital Partners' requirements and guidelines governing the application of CarbonNeutral® certification logos.

Certification period: The duration for which a CarbonNeutral® certification is applied to a subject.

Client: The organisation, individual or group of individuals entering into a contract with a CarbonNeutral certifier for the purposes of a CarbonNeutral® certification.

Carbon dioxide equivalent (CO₂e): A unit of measurement that describes for a GHG the amount of CO₂ in tonnes that would have the same global warming potential, when measured over a 100 year timescale.

Cradle-to-customer: A particular boundary for product subjects. The cradle-to-customer boundary includes the extraction and processing of raw materials (including any packaging materials), manufacture, storage and distribution to first customer. See **Appendix 1.2** for further information on this topic.

Cradle-to-grave: A particular boundary for CarbonNeutral® product class subjects. The cradle-to-grave boundary includes extraction and processing of raw materials (including any packaging materials), manufacture, storage, distribution to first customer, further distribution and storage, retail, use and end-of-life disposal.

D

Department for Environment, Food and Rural Affairs (DEFRA): Part of the United Kingdom Government, which has provided GHG measurement guidance which is referenced and applied internationally.

Delivery (referring to carbon credits): Refers to the receipt of legal title and ownership of verified and issued carbon credits by the provider of such reductions. Delivery can occur on a third-party external registry, or through written agreement.

E

Emissions sinks: The specific activities or processes within a boundary which remove GHGs from the atmosphere.

Emissions sources: The specific GHG-emitting activities or processes within a boundary.

EN 15804: Refers to the European standard on “Sustainability of construction works – Environmental Product Declarations – core rules for the product category of construction products.” It provides core product category rules for type III Environmental Product Declarations (EPDs) for any construction product and construction service.

Environmental instruments: The broad category of instruments that includes carbon credits, energy

attribute certificates, and all other instruments designed to track the environmental attributes of project based activities.

Environmental Product Declaration (EPD):

An independently verified document that reports environmental data of products based on life cycle assessment and other relevant information and in accordance with the international standard ISO 14025. See **Appendix 1.4** for further discussion on this topic.

European Union Emissions Trading Scheme

(EU ETS): A regulatory approach to reducing GHG emissions across the European Union using a “cap and trade” approach, which includes carbon offsets from the Clean Development Mechanism of the United Nations Framework Convention on Climate Change’s (UNFCCC) Kyoto Protocol.

G

Geographically relevant: Pertaining to the specific location of the emissions-generating activity in question. In order of preference, emission factors and secondary data should be applied first from local, sub-national datasets; then from national datasets; and then from regional datasets. In the absence of available data from these datasets, available global factors and data may be applied.

Greenhouse gas (GHG): GHGs listed under the Kyoto Protocol and currently targeted for reduction are: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride (SF₆), and nitrogen trifluoride (NF₃).

GHG inventory: An accounting of the amount of GHGs discharged into the atmosphere from sources and removed from the atmosphere by sinks within a specified boundary.

GHG protocol corporate standard: The World Business Council for Sustainable Development (WBCSD) and World Resources Institute’s (WRI) Corporate Accounting and Reporting Standards (Corporate Standard). The GHG Protocol Corporate Standard is the most commonly used organisational GHG accounting methodology. It defines emissions reporting under three key scopes, ensuring comprehensive reporting.

GHG Protocol Product Standard: The WBCSD and WRI’s Product Life Cycle Accounting and Reporting Standard (Product Standard). This document allows an entity to measure the GHG associated with the full life cycle of products including raw materials, manufacturing, transportation, storage, use and disposal.

Guarantee of Origin (GO): An instrument defined in European legislation, issued per MWh, that labels and tracks electricity from renewable sources to provide information to electricity customers on the source of their energy.

Global Warming Potential (GWP): Gives an index of the activity of atmospheric constituents, referenced to carbon dioxide (which therefore has a GWP of 1) over a given time horizon. As an illustration of this, over a 100 year horizon, methane has a GWP of 34 (Ref: IPCC Fifth Assessment Report (AR5), 2013, p714).



Independent qualified third-party (referring to GHG assessment providers): An individual or organisation experienced in GHG accounting that has no conflict of interest or financial gain in the outcome of the assessment and is approved by the primary CarbonNeutral certifier.

Internal emission reduction: A reduction of GHG emissions made within the boundary of a subject (through for example, undertaking energy efficiency projects, on-site renewable energy or fuel substitution) which is accounted for in the subject's GHG inventory.

International Renewable Energy Certificate (I-REC): An instrument defined by the International REC Standard that labels electricity from renewable sources to provide information to electricity customers on the source of their energy.

ISO 14025: Refers to the international standard on "Environmental labels and declarations – type III environmental declarations – principles and procedures." It establishes the principles and specifies the procedures for developing type III environmental declaration programmes and type III environmental declarations. It specifically establishes the use of the ISO 14040 series of standards in the development of type III environmental declaration programmes and type III environmental declarations.

ISO 14040: Refers to the international standard on "Environmental management – life cycle assessment – principles and framework." It describes the principles and framework for life cycle assessment (LCA) including: definition of the goal and scope of the LCA, the life cycle inventory analysis (LCI) phase, the life cycle impact assessment phase (LCIA), the life cycle interpretation phase, reporting and critical review of the LCA, limitations of the LCA, the relationship between the LCA phases, and conditions for use of value choices and optional elements.

ISO 14044: Refers to the international standard on "Environmental management – life cycle assessment – requirements and guidelines." It specifies requirements and provides guidelines for LCA including: definition of the goal and scope of the LCA, the life cycle inventory analysis (LCI) phase, the life cycle impact assessment (LCIA) phase, the life cycle interpretation phase, reporting and critical review of the LCA, limitations of the LCA, relationship between the LCA phases, and conditions for use of value choices and optional elements.

ISO 14064-1: International Organisation for Standardisation's specification for quantification and reporting of GHG emissions and removals at the organisation level. Its approach is similar to the GHG Protocol Corporate Standard.

ISO 14065: International Organisation for Standardisation's requirements for the accreditation of entities that validate or verify resulting GHG emission assertions or claims. The aim of ISO 14065 is to give confidence to parties that rely upon a GHG assertion or claim, for example customers or investors, that the entities providing the declarations are competent to do so, and have systems in place to manage impartiality and to provide the required level of assurance on a consistent basis.

ISO/TS 14067: Refers to the technical specification on "Greenhouse gases – carbon footprint of products – requirements and guidelines for quantification and communication." It specifies principles, requirements and guidelines for the quantification and communication of the carbon footprint of a product, based on international standards on LCA (ISO 14040 and ISO 14044) for quantification and on environmental labels and declarations (including ISO 14025) for communication.

ISO 21930: Refers to the international standard on "Sustainability in building construction – environmental declaration of building products." It provides a framework and the basic requirements for product category rules as defined in ISO 14025 for type III environmental declarations of building products. Where this international standard contains more specific requirements, it complements ISO 14025 for the EPD of building products.

Issuance: The delivery of a specified quantity of carbon credits into a specified account on a registry. Issuance allows carbon credits to be transferred and retired on a registry.



Lower Zambezi Community Forest Conservation, Zambia: As part of its programme, the project has initiated an environmental curriculum to raise awareness on ecosystems and deforestation

O

Offsetting: The practice of compensating for GHG emissions by retiring (cancelling) carbon credits.

P

PAS 2050: BSI's Publicly Available Specification for the assessment of the life cycle GHG emissions of goods and services. The general principles of PAS 2050 are similar to the GHG Protocol Product Standard, both of which are appropriate for use within The CarbonNeutral Protocol.

PAS 2060: Publicly Available Specification for the demonstration of carbon neutrality. It continues to provide a clear definition of carbon neutral and a credible means of determining and demonstrating carbon neutrality. The specification encourages entities to work towards reduced GHG emissions and to achieve genuine reductions in those emissions. Its use encourages real change in behaviour to help drive society towards a low carbon economy. This PAS specifies requirements to be met by any entity seeking to demonstrate carbon neutrality through the quantification, reduction and offsetting of GHG emissions from a uniquely identified subject.

Product Category Rule (PCR): Documents that define the rules and requirements for EPDs from a certain product category. They are vital for the concept of environmental declarations as they enable transparency and comparability between different EPDs based on the same PCR.

Primary data: Data collected or directly measured which have not been subjected to processing or any other manipulation. Examples of primary data sources include direct measurement of the quantity of natural gas burnt in a heating system (Scope 1) or metered electricity (Scope 2) before the application of conversion factors used to determine CO₂e emissions.

Madagascar Makira REDD+ Project, Africa: A key focus of the project is to protect the area's exceptional biodiversity, including the lemur which plays an important role in seed dispersal and natural forest regeneration

Q

Quality assurance: Independent review conducted by an expert third-party to check that the input data for GHG inventories, or use of a CarbonNeutral® certification logo meets the requirements of a CarbonNeutral® certification and is in line with the approach and principles of The CarbonNeutral Protocol. See **Appendix 2.7** for further guidance on quality assurance and verification.

Quality assurance statement: A written statement by an expert third party with demonstrated experience declaring the results of a quality assurance exercise.

R

Renewable Energy Certificate (REC):

An instrument defined in North American regulations that labels electricity from renewable sources to provide information to electricity customers on the source of their energy.

Registry: A database of carbon credits and their transactions, where each credit has a unique identifier and where credits are retired (cancelled) upon being sold to offset an equivalent amount of GHG emissions.

Retire: Refers to the permanent cancellation of carbon credits from future use in a third-party registry.

Radiative Forcing Index (RFI): A factor used to quantify non-CO₂ warming effects of air travel. RFI is the ratio of total radiative forcing (RF) of all GHGs to RF from CO₂ emissions alone for aircraft emissions (IPCC, 1999). RFI does not account for the different residence times of different warming factors. See **Appendix 2.2** for further discussion of this topic.

S

Scopes: The three “classes” of emissions sources identified in the GHG Protocol Corporate Standard, relevant to assessing and reporting the GHG emissions of entities.

Scope 1 emissions: Those direct GHG emissions directly attributable to the subject that occur from sources that are owned, leased or controlled by the entity seeking CarbonNeutral® certification, principally from the following types of activities: the combustion of fuels for the generation of electricity, heat, or steam; processing and/or manufacturing of materials or chemicals; transportation in company owned/controlled mobile combustion sources; and fugitive emissions from intentional or unintentional releases (e.g. equipment leaks and hydrofluorocarbon (HFC) emissions from refrigeration and air conditioning equipment).

Scope 2 emissions: Those emissions indirectly attributable to the subject from the generation of electricity, heat, steam or cooling that is acquired and consumed in owned, leased or controlled equipment or operations.

Scope 3 emissions: All non-Scope 2 indirect emissions from upstream and downstream sources. The most common examples are emissions from: transport-related activities; transportation of purchased materials, goods or fuels; employee business travel; employee commuting to and from work; transportation of sold products in third-party owned vehicles; and the transportation and disposal of waste and sold products at the end of their life.

Secondary data: Data collected or measured which has been subjected to processing or additional calculations to arrive at a usable output. Examples include applying emission factors to flight distances or fuel consumption to produce a value for GHG emissions.

Simplified Estimation Method (SEM):

Rough, upper bound estimation developed and implemented as necessary and appropriate to a subject's GHG assessment. SEMs are intended to be used for GHG emissions sources that represent less than 2% of the subject's total GHG emissions. Collectively SEMs should total no more than 5% of the subject's GHG emissions.

Short Lived Climate Forcers (SLCF):

Emissions with a short atmospheric residence time which have the potential to affect climate.

Subject: The entity, product or activity to which CarbonNeutral® certification is applied.



Kanungu Run-of-River Hydro Power Project, Uganda:

The project generates ~29GWh electricity each year, displacing diesel-powered generators that supply the Ugandan grid



T

Tradable Instrument for Global Renewables

(TIGR): A global instrument defined by APX that labels electricity from renewable sources to provide information to electricity customers on the source of their energy.

V

Verification: Independent evaluation conducted by an expert third party with demonstrated experience to the requirements of an independent verification standard (such as ISO 14064:3 or ISAE 3410) to check that the quality of input data, a GHG assessment, or that the use of a CarbonNeutral® certification logo meets the requirements of a CarbonNeutral® certification and is in line with the approach and principles of The CarbonNeutral Protocol. See **Appendix 2.7** for further guidance on quality assurance and verification.

Verification statement: A written statement by an expert third party with demonstrated experience declaring the results of a verification exercise.

Preface

**Lower Zambezi Community
Forest Conservation, Zambia:**
One project aim is to improve small
livestock production and reduce
hunting pressures through initiatives
such as the village chicken project

Acre Amazonian Rainforest

Conservation Portfolio, Brazil: As part of its programme, the three projects plan to build local health centres and dental clinics, providing improved local community access to medical facilities and services

The CarbonNeutral Protocol, one of the most widely used carbon neutrality certifications, was first developed and published in 2002 and is revised and updated annually to reflect the changing requirements of international standards, science and business.

As we prepare the 2017 version of The Protocol for publication, it is exciting to note that the Paris Climate Agreement has been signed into force, enabling the UN Framework Convention on Climate Change's (UNFCCC) annual climate summit, held in Marrakesh in November, to discuss both the phase-out of the Kyoto Protocol by 2020, and phasing of the Paris Agreement from 2021. This means that 2017 will be a very special year: one in which the nations of the world will start to plan how to implement their Nationally Determined Contributions (NDCs) to reduce global greenhouse gas concentrations in the atmosphere.

Carbon financing for low carbon development will have an ever more critical role to play in complementing and supporting national reduction plans. New approaches to offsetting in the post-Kyoto era will be required to protect additionality and avoid double counting. Fortunately, Article 6 of the Paris Agreement makes provision for market-based approaches and during 2017 further details on that will emerge.

As things stand now, the NDCs are not expected to deliver a stable climate and with that evident gap in mind, the Paris Agreement recognises the role of the private sector. There is clearly a role for corporations to lead by example, through voluntary carbon reductions above the levels required under national commitments.

And companies are taking action, with many continuing to deploy the concept of carbon neutrality as a pragmatic way to put a price on carbon and demonstrate climate leadership.

Climate leadership is looking different this year: shifting climate action from a compliance or corporate responsibility response to core business functions that are concerned about managing risk and opportunity, and that realise the critical reputational benefits of delivering action.

The past year has seen an increase in the combined use of renewable energy instruments to address Scope 2 emissions, and carbon offsets to address Scope 1 and 3 emissions, in line with the Greenhouse Gas Protocol guidance. Where offsets are used, companies are showing a marked interest in projects which achieve benefits beyond carbon mitigation, specifically those that address the UN's Sustainable Development Goals (SDGs) within their supply chains and the communities in which they operate.

Exemplar strategies focus on:

- Reducing emissions from all sources through investments in internal efficiency measures that reduce cost
- Decarbonising consumed electricity (Scope 2 emissions) by targeting 100% renewable sources
- Supporting projects that compensate for Scope 1 and 3 emissions and also make a positive impact on the social, economic and environmental areas that support the growth and sustainability of the company

This approach, which has at its core market-based carbon pricing, gives a high degree of flexibility in finding cost-effective solutions. It ensures that the price of carbon paid by a company goes to projects that make a direct contribution to reducing emissions.

The CarbonNeutral Protocol continues efforts to provide an internationally recognised framework through which carbon reduction and environmental

action can be measured and reported. The Protocol includes requirements for GHG assessments, emission reduction planning, eligibility of carbon credits and other environmental instruments including renewable energy certificates, management of other environmental instruments through registration and retirement, and communication of CarbonNeutral® programmes. The expansion and diversification of carbon neutral programmes throughout the world makes it even more crucial that The Protocol ensures claims made about environmental impact are reliable and standardised.

Target audience

The CarbonNeutral Protocol is designed for:

Businesses and organisations – To understand what is required to develop a credible carbon neutral programme and to achieve CarbonNeutral® certification.

Technical partners – To ensure Natural Capital Partners' technical partners (e.g. GHG assessors) understand what is required of them to ensure their services are consistent with the requirements of each CarbonNeutral® certification.

CarbonNeutral certifiers – To ensure the same high levels of quality and integrity are applied by organisations which have been approved as licensed resellers of Natural Capital Partners' services.

GHG community – To promote the highest standards for carbon accounting and reductions among NGOs, governments, regulators and other stakeholders.

About Natural Capital Partners

Natural Capital Partners, formerly The CarbonNeutral Company, works with clients to combine business success with positive impact on the environment and society. Through collaboration with global project partners, the development of innovative solutions, and understanding the specific goals of its clients, the company delivers a broad range of products and services for carbon, energy, water, biodiversity and communities in direct operations, consumer markets and supply chains – the world's natural capital. The company was founded in 1997 and has more than 300 clients in 34 countries.

Natural Capital Partners has contracted more than 20 million tonnes of carbon credits from 344 projects in 47 countries on behalf of its clients and has received the Environmental Finance Best Offset Retailer award for the past six years.

CarbonNeutral® certification is one of the services provided by Natural Capital Partners, enabling its clients to make clear, credible and transparent claims of achieving net zero carbon emissions.

Acknowledgements

Natural Capital Partners is solely responsible for the development and deployment of The CarbonNeutral Protocol as a proprietary, open standard. However, we wish to acknowledge and thank our clients, members of our Advisory Forum, and the many organisations and individuals that have encouraged, supported and shared their expertise with us during the development of the Protocol since it was first launched in 2002. We could not have done our work without their invaluable help.

Use, legal disclaimer and copyright

The CarbonNeutral Protocol should be applied in conjunction with relevant terms and conditions on the use of logos, marks and trademarks owned by Natural Capital Partners, as specified in contracts with Natural Capital Partners.

CarbonNeutral® certifications made in accordance with previous versions of The CarbonNeutral Protocol are not retroactively affected by subsequent changes to The CarbonNeutral Protocol.

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Awards



Introduction

Danjiang River Solar Cooker Project, China:
The project aims to provide solar cookers to 100,000 households, reducing fuel consumption and indoor air pollution associated with traditional cooking methods

India Solar Water Heating Project, Asia:

The project provides solar water heaters to households, businesses and institutions, offering a renewable, in-house hot water supply and reducing the dependency on unreliable grid electricity

Purpose

The CarbonNeutral Protocol describes the requirements for achieving CarbonNeutral® certification. By following The CarbonNeutral Protocol, organisations have a credible, transparent and practical framework for achieving CarbonNeutral® certification that can be consistently applied across a broad range of entities, products and activities.

The CarbonNeutral Protocol has been developed as a proprietary set of requirements, providing clients with a single guide for making credible, transparent claims anywhere in the world. As third-party standards are developed, The CarbonNeutral Protocol aims to provide a framework which builds upon the best guidance in the market and offers a unifying process for making carbon neutral claims which is recognised internationally.

Approach and principles

The requirements of The CarbonNeutral Protocol are underpinned by the following principles:

1. **Transparency:** Disclose the data, methodologies and assumptions used in GHG calculations and reduction efforts within the bounds of commercial confidentiality
2. **Accuracy:** Ensure that the data, methodologies and assumptions used for GHG calculations and reduction efforts are accurate and time-relevant, and that the claims made in connection with such efforts are factual and credible
3. **Conservative estimation:** Be conservative when making estimations to ensure that they do not understate GHG impacts nor overstate emission reductions
4. **Continual improvement:** Strive to make continual improvements in GHG accounting and reductions
5. **Wider context:** Ensure that CarbonNeutral® programmes and claims are an appropriate response to the wider environmental, social and economic impacts of the subject or organisation, based upon a high-level understanding of all major impacts

The primary function of the principles above is to guide the implementation of The Protocol, particularly when the application of The Protocol to specific issues or situations is ambiguous.

Relationship to other standards, protocols and broader context

The Protocol incorporates best practices in the areas of measurement and monitoring of GHG emissions and the design and certification of emission reduction projects. Concerning GHG measurement, the Protocol is aligned with the GHG Protocol Corporate Standard (including the Scope 2 Guidance), GHG Protocol Product Standard, Environmental Product Declarations and the principles of the PAS 2050 for products and services.

The Protocol is also suitable as a platform for compliance with a number of related standards for carbon neutrality, such as the British Standards Institute's specification for the demonstration of carbon neutrality, and Australia's National Carbon Offset Standard Carbon Neutral Program. Guidance is provided in the form of a cross-compliance table for those who seek to comply with these standards (see **Annex E**).

The Protocol recognises the importance of taking action that is appropriate and proportionate. Clients should have a high-level understanding of all their major environmental, social, and economic impacts. Clients may use internationally recognised management standards, including but not limited to ISO 14000 and ISO 9000, to identify and manage their key impacts.

Structure of The CarbonNeutral Protocol

To provide consistency across a wide range of possible situations, The Protocol provides for a number of different CarbonNeutral® certifications corresponding to different possible entities, products and activities. These certifications are grouped into three classes (a complete list of certifications is provided in **Annex A**):

Entities: Defined by legal status and spatial boundaries, covering all types of organisations, including companies and public sector bodies, households, individuals and sub-divisions of these.

Products: Physical goods produced for sale. Products include standard consumer goods such as milk, paper or computers, or single use or custom built products such as buildings or urban developments.

Activities: Defined by the delivery of utility through a combination of mobile and stationary activities, including traditional transportation services (flights, car journeys, logistics etc), information provision such as hosting of data, or professional services, and one-off events that involve a combination of mobile and stationary activities.

The remainder of this document sets out the requirements for achieving CarbonNeutral® certification in each of the classes mentioned above. These requirements are set forth in the body of this document as well as in the accompanying Technical Annexes. Detailed guidance and clarification on selected topics can be found in the Appendices.

The term “must” is used in this document to indicate a requirement of The Protocol. The term “must not” indicates prohibited actions. The term “should” is used to indicate a recommendation, but not a requirement.

Development of The CarbonNeutral Protocol

The CarbonNeutral Protocol undergoes an annual development cycle which involves input from multiple stakeholders.

After each release of a new version, the Advisory Forum is invited to submit comments and feedback to guide development priorities over the following 12 months. The development of the subsequent version takes place over the following year, including rounds of consultation with stakeholders. While all opinions and ideas cannot be included within the Protocol, they will be considered. Suggestions for improvement raised too late to be included within the next version of the Protocol will be put on the list for consideration in subsequent versions.

Natural Capital Partners also accepts input from clients and members of the public. Suggestions for development priorities for subsequent versions of The CarbonNeutral Protocol should be sent to Natural Capital Partners using the contact details at: www.naturalcapitalpartners.com/contact-us

Sub-Saharan Africa Improved Water Infrastructure Project, Africa: Providing clean drinking water to small rural communities through repairing and drilling new boreholes

CarbonNeutral[®] Certification





Quark Expeditions Reinforce Brand Ethos with First CarbonNeutral[®] Voyage to Antarctica

Certification: CarbonNeutral[®] voyages

First certified: 2013

Driver: Reinforce brand ethos of environmentally responsible tourism

Measure: Total GHG emissions associated with Antarctic voyage and set net zero target

Reduce: Verified carbon projects used to offset remaining emissions following internal reduction efforts including use of low emission oil

Offset project type: Renewable energy, wind - West India. Rainforest conservation and reforestation - Uganda

Standards: VCS, CCB, CDM

Communicate: First CarbonNeutral[®] voyage to Antarctica

The Five Steps to Achieving CarbonNeutral® Certification

As illustrated in Figure 1, there are five steps to achieving CarbonNeutral® certification. These five steps are mandatory for all classes of certification. While these steps are set out sequentially, they may be carried out in parallel.

Figure 1: Five Steps to Achieving CarbonNeutral® Certification





Sopra Steria Enhances Customer Value Proposition with CarbonNeutral® Data Centres

Certification: CarbonNeutral® data centres

First certified: 2013

Driver: Enhance customer value proposition

Measure: Total GHG emissions from 43 customer data centres and set net zero target

Reduce: Verified carbon projects selected from strategic operational area (India) to offset remaining emissions following internal reduction efforts including server virtualisation

Offset project type: Renewable energy, wind and solar - India

Standards: VCS, CDM, Gold Standard, I-REC

Communicate: First CarbonNeutral® data centre

Step 1: Define the Subject

The first step is to clearly define the subject that will be certified CarbonNeutral®. The subject is the entity, product or activity being certified CarbonNeutral® and may be distinct from the client.

Requirements/recommendations

The subject to which The CarbonNeutral Protocol is being applied must be clearly defined, by name and by description of the relevant legal and/or physical boundaries. The duration of a CarbonNeutral® certification must also be defined. Where applicable, a start date should be defined. The CarbonNeutral® certification to be applied must also be defined and must be compatible with the subject. The definition of the subject and the certification must be recorded by the CarbonNeutral certifier and the information retained for the purpose of auditing.

See **Annexes B and F**, and **Appendix 1** for further guidance and clarification.

Step 2: Measure the Subject's GHG Emissions

The second step is to measure the subject's GHG emissions and provide a complete and accurate GHG inventory over a relevant timescale.

Requirements/recommendations

The subject's GHG emissions must be assessed in accordance with the requirements set out for entities, products and activities in Table 2 on page 25.

Appendix 2 provides additional information regarding the measurement of GHG emissions. CarbonNeutral certifiers and technical partners should also pay particular attention to the contents of **Appendix 1** which provides further guidance and clarification on defining the subject for certifications. The Appendices may include new guidance and clarifications as new versions of The CarbonNeutral Protocol are released.



Tata Steel Demonstrates Industry Leadership with First CarbonNeutral® Building Envelope

Certification: CarbonNeutral® product

First certified: 2007

Driver: Demonstrate industry leadership

Measure: Total GHG emissions produced over the lifecycle of the Confidex Sustain® building envelope and set net zero target

Reduce: Verified carbon projects used to offset remaining emissions following internal manufacturing improvements including transition to 100% recyclable materials

Offset project type: Renewable energy, wind - India

Standards: VCS

Communicate: First CarbonNeutral® building envelope

Table 2: GHG Emission Quantification Requirements for Different Classes of Certifications

Step	Entities	Products ¹	Activities
1. Select GHG accounting protocol	The GHG Protocol Corporate Standard, or ISO 14064-1, or the Climate Registry's General Reporting Protocol or similar consistent protocols <u>must</u> be used.	The GHG Protocol Product Standard, PAS 2050, ISO/TS 14067 or methods set out in steps 2-7 below <u>must</u> be applied unless the CarbonNeutral certifier identifies valid reasons for using other methods.	The GHG Protocol Product Standard, PAS 2050 or methods set out in steps 2-7 <u>must</u> be applied unless the CarbonNeutral certifier identifies valid reasons for using other methods.
2. Define boundary	The boundary <u>must</u> include all sites, plants and vehicles owned by or under the direct management control of the subject.	The boundary <u>must</u> be consistent with the definition of the subject. For cradle-to-customer subjects, the boundary <u>must</u> extend to the point of customer delivery. For cradle-to-grave subjects, the boundary <u>must</u> extend to end-of-life disposal.	The boundary <u>must</u> be consistent with the definition of the subject and <u>must</u> include the sites and/or vehicles involved in the delivery of the activity.
3. Identify emissions sources	Assessments <u>must</u> include emissions sources as specified in Annex B – CarbonNeutral® certifications and their specific required assessment emissions sources.		
4. Identify GHGs to be measured	All Kyoto Protocol GHGs, carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), hydrofluorocarbons, perfluorocarbons and, sulphur-hexafluoride (SF ₆) and nitrogen trifluoride (NF ₃) <u>must</u> be measured in the assessment, insofar as they apply to the subject.		
5. Establish time period	Assessments <u>must</u> at a minimum be conducted annually and should relate to a 12 month data period. The final date of an assessment data period <u>must</u> not be earlier than nine months prior to start of CarbonNeutral® certification period (i.e. data more than 21 months old is not permitted).	For standard consumer products, assessments <u>must</u> at a minimum be every three years, unless a significant change to the product supply chain has occurred in which case another assessment <u>must</u> be undertaken. For one-off or custom produced products the timescale <u>must</u> relate to the production and delivery period.	For standard consumer activities, assessments <u>must</u> at a minimum be annual. For one-off or custom activities the timescale <u>must</u> relate to the production and delivery period.
6. Determine data validity	Primary data <u>must</u> be used in preference to secondary data, where it is readily available, up to date and geographically relevant. Estimates, extrapolations, models and industry averages may be used where primary data is unavailable. When this is done, these assumptions <u>must</u> be recorded by the party carrying out the assessment. A qualitative and/or quantitative description of the uncertainty associated with the client-supplied data should be made. In cases where the quality of client supplied data is not known (e.g. in online calculators), the dependency of results on the quality of input data should be made clear.		
7. Measure GHG emissions	<p>The subject's GHG emissions <u>must</u> either be directly measured or quantified using national, regional, international, or other relevant emission factors, with preference given to emission factors most closely associated with the emissions source (e.g. DEFRA emission factors for UK-based assessments).</p> <p>The assessment <u>must</u> be reported in units of CO₂e according to the 100 year potential of each gas. Preference should be given to the GWP factors included within the latest assessment report of the Intergovernmental Panel on Climate Change (IPCC) (currently 5th). In instances where most relevant emission factors available use previous GWP factors, it is still acceptable to use these emission factors. GWP factors applied <u>must</u> be clearly stated in the assessment.</p> <p>Emission sources that are required to be assessed (see Annex B) but are estimated to represent less than 2% of the subject's total GHG emissions, but collectively no more than 5% of the subject's GHG emissions, may be calculated and reported using simplified estimation methods.</p>		
8. Quality assurance	All GHG assessments <u>must</u> either be conducted or checked, and in the case of GHG tools and calculators, be approved, by an independent, expert third-party approved by Natural Capital Partners to ensure they have met the above requirements in this table. Annex F details requirements and recommendations for the presentation of GHG assessments; and, Appendix 2.7 provides further guidance on quality assurance and verification.		

¹If the subject is covered by an EPD which meets the requirements specified in **Appendix 1.4**, it shall fulfil the GHG emission quantification requirements for CarbonNeutral® product certification. Please refer to **Appendix 1.4** for further guidance on EPDs



Tresmontes Lucchetti Strengthens Environmental Commitment with CarbonNeutral® Instant Drink

Certification: CarbonNeutral® product

First certified: 2013

Driver: Strengthen environmental commitment

Measure: Total GHG emissions produced over the lifecycle of the Livean instant drink including the final disposal of its packaging, and set net zero target. From 2014, this commitment encompassed a second drink product, Zuko. Livean and Zuko are leading brands in the Chilean market

Reduce: Verified carbon projects used to offset remaining emissions following improvements to the production process including packaging reduction. This measure is aligned with the sustainable development strategy of the company and its interest in improving the environmental performance of its operations and products

Offset project type: Renewable energy, wind – India, China and Chile. Rainforest conservation – Brazil and Chile. Improved cookstoves and water filtration – Guatemala

Standards: VCS, The Gold Standard, CCB

Communicate: First Chilean CarbonNeutral® instant drink

Step 3: Set Target

The third step is to commit to a target of net zero GHG emissions. The aim is to ensure clients get business value from a strong statement on carbon emission reductions, and effective and efficient emission reductions are stimulated by the presence of a carbon neutral target.

Requirements/recommendations

As illustrated by Figure 2, the client must commit to an overall target of net zero GHG emissions for the subject during the certification period.

For all subjects, the client should set an internal reduction target to ensure the subject's gross or actual emissions decrease over time. The target may be expressed as an absolute GHG emissions reduction or as a decrease in GHG intensity.

Absolute GHG reduction targets compare total GHG emissions in the target year to those in a base year (e.g. reduce CO₂e by 25 percent below 2005 levels by 2020). GHG intensity targets are expressed as a ratio of emissions relative to a business metric (e.g. reduce CO₂e by 25 percent per full-time employee by 2020). Absolute GHG reduction targets should be given preference over GHG intensity targets whenever possible.

Figure 2: Emissions Profile for Subject of CarbonNeutral® Certification

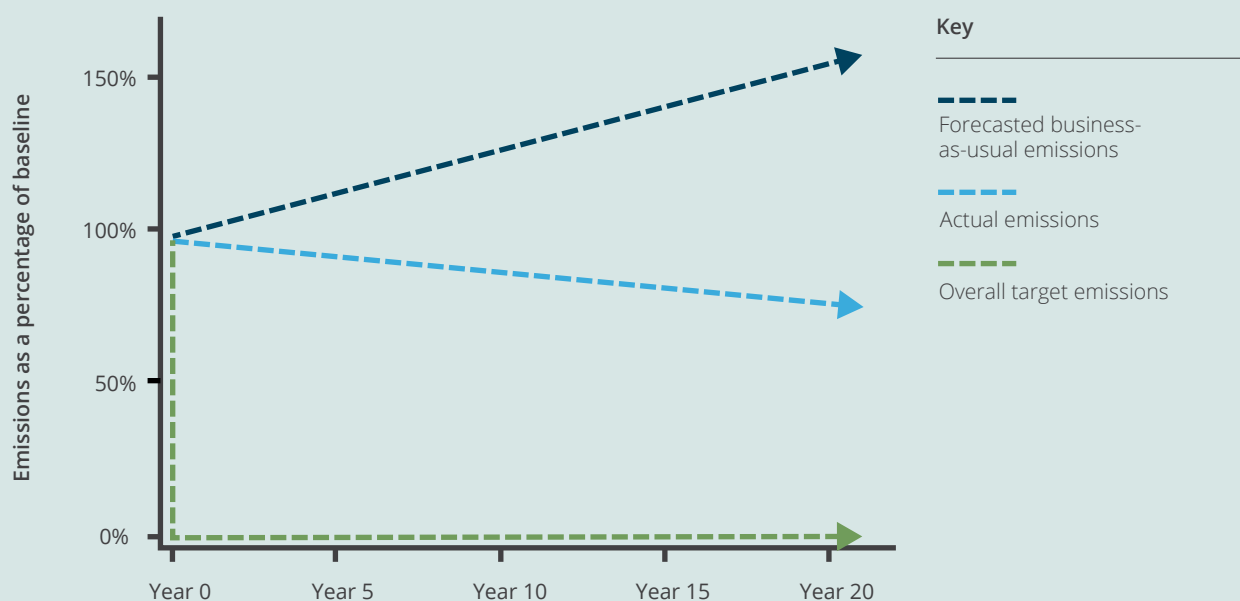
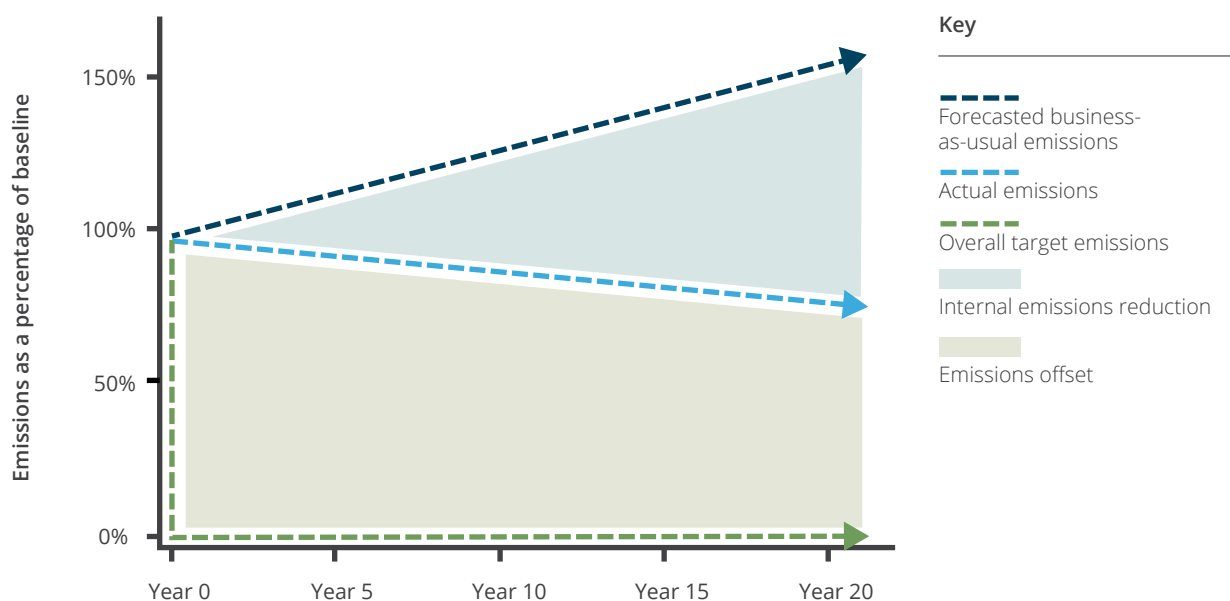


Figure 3: Reduction Measures to Achieve Net Zero Emissions



Step 4: Reduce Emissions

The fourth step is to take actions to reduce GHG emissions to net zero through a cost-effective combination of internal emission reductions and the use of external environmental instruments.

Requirements/recommendations

The subject's GHG emissions must be reduced to net zero for the duration defined within the CarbonNeutral® certification. As illustrated by Figure 3, this may be achieved through a combination of internal emission reductions and external environmental instruments.

Requirements/recommendations covering internal emission reductions

For all subjects, the client should develop a GHG reduction plan to deliver internal emission reductions, taking into consideration the main sources of GHGs from the subject and the likely cost-effectiveness of alternative emission reduction actions. In the case of one-off subjects, such as events, this should entail consideration of emission minimising measures during the planning phase.

In all cases, the methodology used to quantify internal GHG reductions should be the same as that used to quantify the subject's original GHG emissions.

GHG reduction plans should be reviewed periodically to assess progress against planned actions and to assess the feasibility for further reductions, taking into account the availability of new technologies, enabling policies and incentives provided by government, and the overall business context. Where applicable, a director or senior manager should be given responsibility for overseeing the development and ensuring the implementation of the plan for reducing emissions.

Requirements/recommendations covering carbon credits

Any carbon credit used towards the achievement of CarbonNeutral® certification must meet the following criteria:

Additional: Refers to an external emission reduction project from which emissions reductions are verified as carbon credits under an applicable carbon accounting standard. An emissions reduction project is said to be additional when it can be demonstrated that in the absence of the availability of carbon finance the project activity would not have occurred (the “baseline” scenario); and, such baseline scenario would have resulted in higher GHG emissions. Each eligible carbon accounting standard under The CarbonNeutral Protocol provides tools for how additionality at a project level is tested and demonstrated. For further discussion of this topic, please see **Annex C**.

Legally attributable: Carbon credits must have a clear record of ownership from project owner and thereafter.

Measureable: Emissions reductions are quantified relative to a transparent and robust baseline scenario using recognised, peer reviewed, published methods and project specific data.

Permanent: Emissions reductions are permanent. Where reductions are generated by projects that carry risk of reversal, adequate safeguards must be in place to ensure that the risk of reversal is minimised and that, if any reversal occurs, a mechanism is in place that guarantees the reductions will be replaced.

Unique: Emissions reductions are held and retired on a registry to ensure that no more than one carbon credit can be associated with a single emission reduction.

Independently verified: Emission reductions are verified by an expert third-party qualified to verify carbon credits to ensure the criteria above have been met.

Carbon credits certified under the standards set out in **Annex C** have been determined to meet the requirements above and therefore are qualified for use as an external environmental instrument to reduce a subject’s GHG emissions. **Annex C** will be updated from time to time to reflect developments in best practice and the performance of carbon credit standards.

When carbon credits are used towards the achievement of CarbonNeutral® certification in advance of their verification and issuance (this is commonly referred to as forward crediting), the client must be provided with a contractual guarantee of delivery or replacement.

Carbon credits must be retired within 12 months from the delivery or purchase of the carbon credits, whichever is the latter event. CarbonNeutral certifiers must retire external emissions reductions on behalf of organisations achieving CarbonNeutral® certification. Alternatively certifiers must receive full assurances from the party implementing retirement that retired credits are not being applied to multiple subjects/time periods and could not in any way be deemed to have been double counted.

Additional considerations

Emission reduction projects have effects additional to GHG emission reductions. Carbon credit standards accepted by The CarbonNeutral Protocol (**Annex C**) have requirements that material negative impacts should not arise from emission reduction projects.

For reasons laid out in **Appendix 1.1**, the following project types must not be used towards the achievement of CarbonNeutral® certification, although they are recognised under some carbon credit standards in **Annex C**:

- Conventional (i.e. dammed/non run-of-river) hydro-electric power projects with an installed capacity greater than 20MW, unless a qualified independent third-party assures compliance with the World Commission on Dams (WCD) sustainability criteria
- HFC-23 destruction projects and N₂O destruction projects where N₂O is the by-product of the industrial processes to produce adipic acid or nitric acid

The non-carbon accounting standards listed in **Annex F** are those designed to complement carbon credit standards to provide measurable and independently verified assessment of the positive environmental, social, and economic benefits of carbon reduction projects (also known as “co-benefits”). These standards should be used to evaluate and communicate the co-benefits of emission reduction projects.



Sky PLC Builds Business Reputation with CarbonNeutral® Company Certification

Certification: CarbonNeutral® company

First certified: 2006

Driver: Build business reputation

Measure: Total company GHG emissions and set net zero target

Reduce: Verified carbon projects used to offset remaining emissions following internal reduction efforts including investment in on-site renewables

Offset project type: Renewable energy, wind - India. Rainforest conservation - Brazil

Standards: VCS, CCB

Communicate: CarbonNeutral® company

Figure 4: Example CarbonNeutral® Certification Logos



Step 5: Communicate

The fifth step is to provide accurate and transparent information on how CarbonNeutral® certification is achieved.

Requirements/recommendations

Clients should have a high-level understanding of all their major environmental, social, and economic impacts, and ensure that their CarbonNeutral® claims are an appropriate response and priority in relation to these major impacts. Clients may use internationally recognised management standards such as ISO 14001 to identify and manage their key impacts.

Once certified CarbonNeutral®, clients should communicate their action through use of the CarbonNeutral® certification logo.

The use of the CarbonNeutral® certification logo must conform to Natural Capital Partners' CarbonNeutral® certification logo guidelines, which are provided to clients upon achievement of their CarbonNeutral® certification. All communications relating to a client's CarbonNeutral® certification must be factually based and should be clear and transparent so as to avoid confusion or misunderstanding. Communications must be consistent with the specific CarbonNeutral® certification achieved.

All clients should publicly disclose GHG inventory metrics relating to their CarbonNeutral® certification, including but not limited to their total gross emissions, emission intensity metrics and emission reduction activities. Reporting options include a client's own communications and third-party reporting initiatives such as CDP, The Climate Registry or the Global Reporting Initiative's (GRI) Sustainability Reporting Standard.

Clients should also ensure that all claims are consistent with any national or regional guidance or legislations on green claims, such as the UK Department for Environmental, Food and Rural Affairs (DEFRA) Green Claims Guidance or the US Federal Trade Commission's Green Guides. Refer to **Annex A** for the full list of CarbonNeutral® certifications.



UKCloud Ltd Enhances Credibility Among Clients with CarbonNeutral® Cloud Services

Certification: CarbonNeutral® company and cloud services

First certified: 2011

Driver: To align with the UK Government's Greening ICT strategy and help its public sector customers reduce the emissions associated with their ICT services

Measure: Total GHG emissions associated with all owned or leased stationary sources and emissions from the generation of purchased electricity and steam to power servers; refrigerant losses from coolant used to cool the data centre

Reduce: Verified carbon projects used to offset remaining emissions following internal reduction

efforts including continued investment in energy-efficient infrastructure and technology, use of low-energy-consumption office equipment and IT, installation of motion-activated lighting systems, and reducing commuting and business travel related emissions by introducing flexible working, car sharing and public transport initiatives

Offset project type: Renewable energy, wind and hydro – China, India and Turkey. Landfill and methane – China. Coastal conservation – Chile

Standards: VCS, CCB

Communicate: First and only company to offer CarbonNeutral® cloud services

Technical Annexes

Kitambar Renewable Biomass Fuel Switch Project, Brazil: Working with a local ceramics factory, the project has switched the fuel source from unmanaged forest wood to renewable biomass sources, delivering emission reductions by reducing unsustainable harvesting of native vegetation

Annex A

List of CarbonNeutral® Certifications

Table 3: CarbonNeutral® Certification Types

Entity certifications	Product certifications	Activity certifications
Building	Development	Business travel
Company	Electricity	Cloud services
Couriers	Fit-out	Delivery
Data centres	Packaging	Driving
Department	Paper	Electricity supply
Hotel	Product	Electricity use
Manufacturer	Publication	Energy use
Office	Usage	Event
Office space		Exhibitor
Operations		Fleet
Organisation		Flights
Venue		Gas supply
		Gas use
		Hosting
		Hotel stay
		Print production
		Service
		Shipment
		Voyages

Please note that each certification mark can be translated to meet local language communication requirements. However CarbonNeutral® cannot be translated and is only trademark protected in this format and language.

Annex B

CarbonNeutral® Certifications and their Emission Sources

To provide consistency across a wide range of possible situations, The Protocol provides for a number of different CarbonNeutral® certifications corresponding to different possible entities, products and activities.

These certifications are grouped into three classes:

Entities: Defined by legal status and spatial boundaries, covering all types of organisations, including companies and public sector bodies, households, individuals and sub-divisions of these.

Products: Physical goods produced for sale. Products include standard consumer goods such as milk, paper or computers, or single use or custom built products such as buildings or urban developments.

Activities: Defined by the delivery of utility through a combination of mobile and stationary activities, including traditional transportation services (flights, car journeys, logistics etc), information provision such as hosting of data, or professional services, and one-off events that involve a combination of mobile and stationary activities.

The following tables, organised by certification class, specify required and recommended emission sources to be included in a subject's GHG assessment and CarbonNeutral® certification.

B1. Table 4: CarbonNeutral® Entity Certifications – Required GHG Emissions Sources

GHG assessment emission sources					CarbonNeutral® entity certification													
Category		Emission source category (Aligned to the GHG Protocol: Corporate Standard and Value Chain Standard – numbers refer to the emission source numbering within the Value Change Standard in Appendix 1.2)			Company	Organisation	Manufacturer	Couriers	Hotel	Division	Department	Office	Operations	Data centres	Venue	Building	Office space	
GHG Protocol : Corporate Standard Scope 1 and 2 , Value Chain Standard Scope 3	Scope 1	Direct emissions arising from owned, leased or directly controlled stationary sources that use fossil fuels and/or emit fugitive emissions (e.g. refrigerant gases)			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
		Direct emissions from owned, leased or directly controlled mobile sources			✓	✓	✓	✓	✓	✓	✓	✓	✓					
	Scope 2	Emissions from the generation of purchased electricity, heat, steam or cooling			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Scope 3 upstream	1	Purchased goods and services	1a	Water supplied to subject	●	●	●	●	●	●	●	●	●	●	●	●	●
		3	Fuel- and energy-related activities (not included in Scope 1 or Scope 2)	3a	Upstream emissions of purchased electricity and fuels	●	●	●	●	●	●	●	●	●	●	●	●	●
				3b	Transmission and distribution losses ¹	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
				3c	All other fuel- and energy-related activities													
		4	Upstream transportation and distribution	4a	Outbound courier deliveries of packages ²	●	●	●	✓	●	●	●	●	●	●	●	●	●
				4b	Third-party transportation and storage of production-related goods ³	✓	✓	✓	✓	✓	✓	✓	✓	✓				
				4c	Third-party transportation and storage of sold products ⁴	✓	✓	✓	✓	✓	✓	✓	✓					
				4d	All other upstream transportation and distribution													
		5	Waste generated in operations	5a	Wastewater	●	●	●	●	●	●	●	●	●	●	●	●	●
				5b	Other waste	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		6	Business travel	6a	All transportation by air, public transport, rented/ leased vehicle and taxi	✓	✓	✓	✓	✓	✓	✓	✓	●	●			
				6b	Emissions arising from hotel accommodation associated with business travel	●	●	●	●	●	●	●	●	●	●			
		7	Employee commuting			●	●	●	●	●	●	●	●	●	●			
		As defined in the Value Chain Standard, Scope 3 upstream emission source categories 2 and 8 are not currently required or recommended under any of the CarbonNeutral® entity certifications, for further details see Annex 1.1																
	Scope 3 Downstream	As defined in the Value Chain Standard, Scope 3 downstream emission source categories 9 through 15 are not currently required or recommended under any of the CarbonNeutral® entity certifications, for further details see Annex 1.1																
Certification guidance (Annex B4 Endnotes)									▲				▲					

Legend: ✓ Required ● Recommended ▲ Guidance

¹ T&D losses must be included where relevant emissions factors are available (e.g. UK based assessments based upon DEFRA emissions factors). ² Excludes letters sent by general mail service suppliers (for example Royal Mail in the United Kingdom). ³ This relates to product manufacturers only and is intended to capture significant emissions from the transportation and storage of production-related goods (aka inputs into products manufactured and sold by the entity), when the entity takes ownership of the goods at the supplier's gate. This is not intended to capture or include emissions from the day-to-day movement of non-core business consumables. ⁴ This relates to product manufacturers only and must extend to the point at which the manufacturer is no longer the purchaser of the transportation/storage service. This is intended to capture significant emissions from the transportation and storage of products manufactured and sold by the entity. This is not intended to capture or include emissions from the day to day movement of non-core business consumables.

B2. Table 5: CarbonNeutral® Product Certifications - Required GHG Emissions Sources

Required assessment emission sources		CarbonNeutral® product certification						
		Product	Paper	Publication	Packaging	Development	Fit-out	Electricity
Category	Emissions source category							Usage
Extraction and processing of raw materials and packaging	Cradle-to-grave or cradle-to-customer embodied emissions of raw materials and inputs to production ¹	✓	✓	✓	✓	✓	✓	●
	Inbound deliveries of raw materials and inputs to production	✓	✓	✓	✓	✓	✓	●
Manufacturing and storage of product and packaging	Direct emissions from on-site fossil fuel use and fugitive emissions	✓	✓	✓	✓	✓	✓	
	On-site consumption of purchased electricity	✓	✓	✓	✓	✓	✓	✓
	Emissions from waste disposal ¹	✓	✓	✓	✓	✓	✓	
Distribution	Transportation of sold products to first customer	✓	✓	✓	✓			
Onward distribution	Onward storage and transportation	●	●	●	●			
Retail	Direct emissions from on-site fossil fuel use and fugitive emissions	●	●	●				
	On-site consumption of purchased electricity and/or steam	●	●	●				
Use	Use emissions, including maintenance	●						✓
Disposal	Emissions from disposal of sold products at end of life	●	●	●	●	●	●	
Other	Construction worker travel to and from development site					✓	✓	
Certification specific guidance (See Annex B4 Endnotes)						▲	▲	▲

Legend: ✓ Required ● Recommended ▲ Guidance

Please note the boundary for product level certifications must be consistent with the definition of the subject. For cradle-to-customer subjects the boundary must extend from cradle to the point at which the client applying for CarbonNeutral® certification is no longer the owner or purchaser of the transportation/storage service. If using an EPD which meets the requirements specified in Annex C, the emission sources required for the EPD shall prevail over the emissions sources specified above. For further information regarding appropriate boundaries for cradle-to-customer certifications, please see **Appendix 1.3**. For cradle-to-grave subjects, the boundary must extend to end-of-life disposal.

¹ Where data is available, it is recommended that emissions arising from water consumption and also wastewater treatment are included within these categories.

B3. Table 6: CarbonNeutral® Activity Certifications – Required GHG Emissions Sources

Required assessment emission sources	CarbonNeutral® activity certification																
	Service	Delivery	Shipment	Driving	Fleet	Flights	Print production	Hotel stay	Hosting	Cloud services	Event	Exhibitor	Business travel	Energy use	Electricity use	Gas use	Electricity supply
Emissions source category																	
All direct emissions from on-site sources used to deliver the activity	✓	✓	✓				✓	✓	✓	✓	✓	✓		✓		✓	✓
All direct emissions from mobile sources used to deliver the activity	✓	✓	✓	✓	✓	✓		✓					✓				✓
Emissions from the consumption of purchased electricity (including transmission and distribution) and/or steam used in the delivery of the activity	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Travel of employees/ contractors - by air, public transport, rented/ leased vehicle and taxi - involved in the delivery of the activity	●						●	●	●	●	✓	✓					
Travel of individuals to and from the activity - by air, public transport, rented/leased vehicle and taxi											●	●					
Waste disposal ¹	●						✓	✓	✓	✓	✓	✓					✓
Embodied emissions of consumables used in the delivery of the activity																	✓
Transportation of products associated with the activity to the first customer							✓										
Certification specific guidance (See Annex B4 Endnotes)		▲	▲				▲		▲	▲			▲	▲			

Legend: ✓ Required ● Recommended ▲ Guidance

¹ Where data is available, it is recommended that emissions arising from wastewater treatment are included within this category.

B4. Endnotes

CarbonNeutral® entity certification specific requirements

CarbonNeutral® hotel

Emissions from outsourced laundry services must be included.

CarbonNeutral® data centres

Includes refrigerant gas loss at the data centre; office emissions of specific account management staff (if they are not physically located in the data centre); business travel of any staff specifically assigned to manage the account/equipment of the company that is using the data centre.

CarbonNeutral® product certification specific requirements

CarbonNeutral® development

Emissions from the ongoing use of the development post construction are excluded.

CarbonNeutral® usage

All direct and indirect GHG emissions from the end-consumer use, for a period equivalent but not limited to the expected average lifetime of the product.

CarbonNeutral® activity certification specific requirements

CarbonNeutral® delivery/shipment

Includes intermediate emissions from static operations e.g. warehousing and storage.

When the CarbonNeutral® delivery certification logo is carried on a delivered product the scope must include the entire distribution chain for the finished product from point of manufacture or ownership to the end user, or in the case of consumer products, to the point of retail to the end consumer.

When the CarbonNeutral® delivery certification logo is used by a logistics provider to differentiate their logistics service and the logo is not carried on a delivered product, the scope need only include the portion of the distribution chain over which the logistics provider is the provider/purchaser of the service.

CarbonNeutral® print production

Boundaries must include emissions associated with the printing process and transport of printed material from printers to clients (specifically excluding emissions from the paper/other materials used).

CarbonNeutral® hosting/cloud services

Includes refrigerant gas loss at the data centre; office emissions of specific account management staff (if they are not physically located in the data centre); business travel of any staff specifically assigned to manage the account/equipment of the company that is being provided with the hosting service.

Emissions are calculated for the entity as a whole and allocated to the subject using a methodology that accurately apportions emissions to the service provided. Allocation methodologies could include the amount of: memory (RAM), storage space, processing power, bandwidth, and the level of managed service (labour), and need to be agreed on a case by case basis.

CarbonNeutral® business travel

Boundaries must include emissions arising from business travel - by air, public transport, rented/leased/owned vehicles and taxis, and emissions from hotel accommodation due to business travel.

CarbonNeutral® energy use

Boundaries must include emissions arising from the use of electricity and natural gas use, and all fossil fuels used for space heating or on-site electricity generation.

Kenya Improved Cookstoves Project, Africa:
Using carbon finance to subsidise improved cookstove sales, the project replaces traditional cooking methods which create dangerous indoor air pollution



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Annex C

Approved Carbon Credit Standards

Carbon credits under the standards set forth in Table 7 below have been determined to be legally attributable, measureable, permanent, additional, independently verified and unique, and therefore are qualified for use as external environmental instruments to reduce a subject's GHG emissions. This list of standards will be updated from time to time to reflect developments in best practice and the performance of carbon credit standards.

Table 7: Approved Carbon Accounting Standards

Approved standard	Type of carbon credits generated
The Verified Carbon Standard (VCS)	Verified Carbon Units (VCUs)
The Gold Standard	Gold Standard Voluntary Emission Reduction (VER) credits
Climate Action Reserve	Climate Reserve Tonnes (CRTs)
VER+ Standard ¹	VER+ credits
American Carbon Registry	Emission Reduction Tonnes (ERTs)
The Kyoto Protocol's Clean Development Mechanism (CDM)	Certified Emission Reductions (CERs)
The Kyoto Protocol's Joint Implementation (JI)	Emission Reduction Units (ERUs)

¹ VER+ credits are restricted to projects which committed to the VER+ standard prior to the launch of VCS Version 1 [i.e. before March 2007]; which generate fewer than 100,000 tonnes of emission reductions per annum; and which are based on technology types other than large hydropower and industrial gases.

While these standards are accepted, carbon credits used within CarbonNeutral® programmes are bound by the additional requirements stated within the section "Requirements/recommendations covering carbon credits" under Step 4 of the five steps to achieve CarbonNeutral® Certification.

Elaboration on additionality and baselines

It is essential for any carbon neutral programme to be robust and reduce emissions of the defined subject to net zero. This requires that any carbon credits used must have passed a test of additionality during their development process. The carbon accounting standards which are eligible under The CarbonNeutral Protocol require each project to undergo such a test, which is then checked by an independent third-party auditor during the validation process.

The carbon accounting standards referenced in this Annex define best practice in calculating the additionality of emission reduction projects. It is important that the additionality of a project is robustly tested and audited.

Without well-defined baseline scenarios and additionality tests, any claims of net emissions reductions may be inaccurate. Any statement by an organisation based upon these claimed "reductions" could be misleading or false.

When conducting a test for additionality on a proposed project, the first step is to determine the baseline scenario – i.e. the scenario and resulting quantity of GHG emissions that are most likely to occur in the absence of the proposed project activity. Once a suitable baseline has been set it must be validated. Validation requires a third-party audit by a qualified auditor to ensure the baseline meets the requirements of the given carbon accounting standard and methodology.

Once the project activity is in progress, GHG emissions from within the project area can be monitored and verified. Any reduction of emissions as compared to the baseline of the project are therefore additional and can be verified and issued as carbon credits (CERs, VCUs, GS VERs, CRTs, ERTs) in accordance with the rules of the applicable carbon accounting standard.

For a more detailed, technical discussion of the methods for calculating additionality or how best to define additionality, please see the following resources:

cdmrulebook.org/84.html
The UNFCCC definition for additionality

database.v-c-s.org/program-documents/find-a-guidance-document
See section 4.6 of the VCS guidance document: “Guidance for Standardized Methods” (8 October 2013, v3.3) for methods for determining additionality within a CarbonNeutral Protocol eligible carbon accounting standard

ghginstitute.org - search “additionality”
Articles on the challenges of defining and measuring additionality

co2offsetresearch.org/policy/AdditionalityBaselines.html
Further information on methodologies for determining additionality

Annex D

Recognised Non-carbon Accounting Standards

The non-carbon accounting standards in Table 8 below have been recognised for adding measurable and independently verified value to emission reduction projects certified to the carbon accounting standards in Table 7. This list of standards will be updated from time to time to reflect developments in best practice.

Table 8: Recognised Non-Accounting Standards

Recognised non-accounting standards
Climate, Community and Biodiversity Alliance (CCBA)
The SOCIALCARBON® Standard
Forest Stewardship Council certification

Annex E

Cross-compliance Tables

The following cross-compliance tables summarise the major differences between The CarbonNeutral Protocol and other related national standards and guidelines for carbon neutrality, in the form of additional requirements of The Protocol relative to the other standards, and the additional requirements of the other standards relative to The Protocol. The documentation on the respective standards should be referred to for detailed information about the way in which requirements must be fulfilled, documented and verified.

The requirements of the following standards and guidelines are considered from a cross-compliance perspective:

- PAS 2060:2014 Publicly Available Specification for the demonstration of carbon neutrality – Published April 2014
- Australia's National Carbon Offset Standard Carbon Neutral Program – Published May 2012, v5 - Nov 2015
- UK Department of Energy and Climate Change (DECC) Guidance on Carbon Neutrality – Published October 2009

E1. Cross-compliance relative to PAS 2060:2014 specification for the demonstration of carbon neutrality

This Publicly Available Specification 2060 for the demonstration of carbon neutrality was first published in 2010 and revised in 2014, supported by the sponsorship of the Environmental Protection Administration, Executive Yuan, R.O.C. (Taiwan). PAS 2060 specifies requirements to be met by any entity seeking to demonstrate carbon neutrality through the quantification, reduction and offsetting of GHG emissions from a uniquely identified subject.

Table 9: Cross-compliance Relative to PAS 2060:2014 Specification for the Demonstration of Carbon Neutrality

Additional requirements of The Protocol relative to PAS 2060	Protocol Step	Additional requirements of PAS 2060 relative to The Protocol
• None	Define the subject	• The client <u>must</u> describe purpose, objectives and functions of subject
• None	Quantify GHG emissions	• Product and service assessment boundaries <u>must</u> be cradle-to-grave • Any Scope 1, 2 or 3 emission source estimated to be greater than 1% of the total carbon footprint shall be taken into account unless not technically feasible or cost effective
• None	Set target	• Set specific targets for internal GHG reductions for the defined subject appropriate to the timescale for carbon neutrality
• Carbon credits limited to those listed in Technical Annex C	Reduce emissions	• <u>Must</u> monitor subject's emissions intensity to a baseline • <u>Must</u> implement an ongoing plan to reduce the subject's emissions • Emissions reductions <u>must</u> be achieved and identified as overall, activity-based or intensity-based • Carbon credits must be retired within 12 months of declaration of neutrality, apart from events which can be retired within 36 months • Eligible offset schemes include: EU allowances and domestic schemes including the UK Woodland Carbon Code
• Self-validation not permitted	Communicate	• Public declarations <u>must</u> conform to BS EN ISO/IEC 17050-1 • Public declarations <u>must</u> be in accordance with the BS EN ISO/IEC 17000 conformity assessments

PAS 2060 may be considered for further development as a British Standard, or constitute part of the UK input to the development of a European or International Standard. To read PAS 2060 visit: www.bsigroup.com/en-GB/PAS-2060-Carbon-Neutrality/

E2. Cross-compliance relative to Australia's National Carbon Offset Standard Carbon Neutral Program

The Carbon Neutral Program is a voluntary scheme which certifies products, business operations or events as carbon neutral against the Australian Government's National Carbon Offset Standard (NCOS). This standard builds upon existing standards through its guidance on voluntary offsets and its minimum requirements for calculating, auditing and offsetting a carbon footprint to achieve carbon neutrality. To achieve carbon neutral certification under the NCOS Carbon Neutral Program, you must measure, reduce and then offset any remaining GHG emissions. Once certified, you are able to use the NCOS Carbon Neutral Certified logo under license for promotional and marketing purposes.

Table 10: Cross-Compliance Relative to Australia's National Carbon Offset Standard Carbon Neutral Program

Additional requirements of The Protocol relative to the National Carbon Offset Standard Carbon Neutral Program	Protocol step	Additional requirements of the National Carbon Offset Standard Carbon Neutral Program relative to The Protocol
<ul style="list-style-type: none"> • Subject must be defined 	Define the subject	<ul style="list-style-type: none"> • None
<ul style="list-style-type: none"> • Third-party deliveries of company goods must be included for organisations • For entities, assessments must be annual and relate to a 12-month period 	Quantify GHG emissions	<ul style="list-style-type: none"> • Under Scope 3, paper use must be included • The uncertainty of Scope 1 emissions estimates should be assessed • For products, the full life-cycle should be assessed, though elements may be left out as long as this is communicated and a justification provided
<ul style="list-style-type: none"> • None 	Set target	<ul style="list-style-type: none"> • None
<ul style="list-style-type: none"> • Offsets limited to those listed in Technical Annex C 	Reduce emissions	<ul style="list-style-type: none"> • May not use long-term or temporary CERs
<ul style="list-style-type: none"> • None 	Communicate	<ul style="list-style-type: none"> • Publicly available reports should detail progress against an emissions management plan, the quantity and type of offsets purchased and the register where they were retired. Where Australian offsets are used, full information must be publicly available and credits tracked on a public registry • Proponent must complete an agreement to use the National Carbon Offset Standard logo

For further information about the National Carbon Offset Standard Carbon Neutral Program visit: www.environment.gov.au/climate-change/carbon-neutral

E3. Cross-compliance relative to DECC Guidance on Carbon Neutrality

On 1 October 2009 the UK Department of Energy and Climate Change published a guidance document on carbon neutrality. The aim of this document was to provide anyone who wants to achieve carbon neutrality with the information and guidance they need to help them do so effectively. It sets out a three-stage process of calculating, reducing and offsetting emissions that builds on existing standards.

Table 11: Cross-Compliance Relative to DECC Guidance on Carbon Neutrality

Additional requirements of The Protocol relative to DECC Guidance on carbon neutrality	Protocol Step	Additional requirements of the DECC Guidance on carbon neutrality relative to The Protocol
• Subject must be defined	Define the subject	• None
• Scope 3 emissions from specified sources must be included	Quantify GHG emissions	<ul style="list-style-type: none"> • For entities it is recommended that the significance of Scope 3 emissions sources should be assessed and significant sources quantified. The criteria for determining significance are: scale, importance to business/activity, importance to stakeholders, potential for reductions • For products, The GHG Protocol Product Standard, PAS 2050 or ISO 14040 should be followed
• None	Set target	• None
• Offsets limited to those listed in Technical Annex C	Reduce emissions	• May not reduce through the use of carbon credit only – internal reductions are required
• None	Communicate	<ul style="list-style-type: none"> • Communication should include full details of emission reduction project(s) • Claims should follow UK Defra's Green Claims Code

The guidance has now been moved to the National Archives. To read the guidance visit: webarchive.nationalarchives.gov.uk/20121217150421/http://decc.gov.uk/en/content/cms/emissions/neutrality/neutrality.aspx

Annex F

Requirements and Guidance for GHG Emissions Assessments

While The CarbonNeutral Protocol does not require that GHG emissions data be made publicly available, it is vital that CarbonNeutral certifiers are able to easily determine compliance. To this end, this annex provides requirements and guidance for assessments used in support of CarbonNeutral® certification.

Presentation of data

When preparing assessment results for a subject for CarbonNeutral® certification, the following data must be made available to the CarbonNeutral certifier:

- Full and unambiguous definition of the subject
- Time period that data collected pertains to
- Methodology applied
- Full details of GHG emissions sources included within scope of assessment
- Full list of any GHG emissions sources omitted, including reason for omission
- Full details of all calculations undertaken – including source data, emissions factor applied, calculated result, any additional factors applied (e.g. uplift factors)
- Full list of emissions factors applied with dated, referenced source
- Full details of estimates, extrapolations, models and industry models applied
- Full results of calculations (including without limitation, total emissions per unit, organised by subject)
- Volume of carbon credits or other environmental instruments to be offset in order for subject to achieve CarbonNeutral® certification

Presentation of results for subject for CarbonNeutral® certification

Assessment results for a subject for CarbonNeutral® certification should be as clear and unambiguous as possible:

- GHG emissions sources included within the assessment should be categorised by “Emissions source category” as defined within **Annex B**
- Each relevant “Emissions source category” as defined within **Annex B** for the relevant certification should be listed and include either:
 - The calculated result
 - A zero result
 - Clear indication of exclusion from the subjects, CarbonNeutral® certification
- The total volume to be offset should be included

Where multiple subjects are included within a single assessment, any “overlap” or potential double counting between the subjects must be clearly calculated and presented.

For example, a single assessment may cover the GHG footprint of an organisation and the products manufactured by the organisation. The emissions categories for CarbonNeutral® company and CarbonNeutral® product should be listed and presented separately. Emissions sources which relate to both certifications should be listed, with the value of the overlap stated.

Uganda Community Reforestation Project, Africa:

A key focus of the project is to empower women through a rotating leadership structure for community groups which join the programme.



F1. Figure 5: Example GHG Assessment Validation Report Format

CarbonNeutral® certification validation report for:

Company XYZ

Report Overview

Subject of CarbonNeutral® certification:

The entire directly owned and controlled operations globally for Company XYZ

CarbonNeutral® certification:

CarbonNeutral® company

CarbonNeutral® certification period:

Calendar year 2016

CarbonNeutral® certification scope and emissions to be reduced through environmental instruments:

Please see the results table on the following page

Title of report/data or calculations checked:

Company XYZ global carbon footprint 2017.xls

Assessment data period:

Calendar year 2017

Measurement standards:

GHG Protocol Corporate Standard

Quality assurance statement:

On the basis of the review activities undertaken, nothing has come to our attention that causes us to believe that the calculations in the supporting documentation referenced herein are not compliant with The CarbonNeutral Protocol's requirements for CarbonNeutral® company. Please note only the GHG calculations have been quality assured and not the underlying activity data.



Table presenting results follows on the next page. Results are separated by emissions source category, in accordance with The CarbonNeutral Protocol.

F2. Table 12: Illustrative Table of Results for CarbonNeutral® Certification

GHG assessment emissions sources					Required or recommended	Included in assessment	tCO ₂ e			
Category	Emission source category (Aligned to the GHG Protocol: Corporate Value Chain Standard. Numbering aligns to standard)									
GHG Protocol Standards: Corporate Scope - 1 and 2, Value Chain - Scope 3	Scope 1	Direct emissions arising from owned or controlled stationary sources that use fossil fuels and or emit fugitive emissions				Required	✓	100		
		Direct emissions from owned or controlled mobile sources				Required	✓	35		
	Scope 2	Location-based emissions from the generation of purchased electricity, heat, steam or cooling				Required	✓	200		
		Market-based emissions from the generation of purchased electricity, heat, steam or cooling				Required	✓	0		
	Scope 3 – Upstream	1	Purchased goods	1a	Water supplied to subject and paper purchased by subject	Recommended	●	–		
		3	Fuel and energy related activities	3a	Upstream emissions of purchased electricity	Recommended	●	–		
				3b	Transmission and distribution losses	Required	✓	20		
				3c	All other fuel- and energy-related activities	N/A	n/a	–		
		4	Upstream transportation and distribution	4a	Outbound courier deliveries of packages	Recommended	●	–		
				4b	Third-party transportation and storage of production-related goods	Required	✓	100		
				4c	Third-party transportation and storage of sold products	Required	✓	50		
				4d	All other upstream transportation and distribution	N/A	n/a	–		
		5	Waste generated in operations	5a	Wastewater	Recommended	●	–		
				5b	Other waste	Required	✓	10		
		6	Business travel	6a	All transportation by air, public transport, rented/leased vehicle and taxi	Required	✓	80		
				6b	Emissions arising from hotel accommodation associated with business travel	Recommended	✓	–		
		7	Employee commuting				Recommended	✓	20	
		Total for offset (tCO ₂ e) – Location-based Scope 2								615
		Total for offset (tCO ₂ e) – Market-based Scope 2								415

Annex G

Selection and Management of Secondary Certifiers

Natural Capital Partners, at its sole discretion, may appoint entities as secondary certifiers authorised to provide certifications in accordance with the CarbonNeutral Protocol. This Annex explains how Natural Capital Partners selects and manages secondary certifiers to ensure the integrity of CarbonNeutral® certifications.

Establishing the competence of entities applying for secondary certifier status

Natural Capital Partners uses a due diligence process to establish the competence of potential secondary certifiers. The scope of that due diligence covers but is not limited to:

- A review of the status and standing of any relevant third party certifications, for example ISO 14064 or ISO 14065
- An assessment of the entity's track record, experience, expertise, and areas of competence
- An assessment of the entity's independence and the potential for conflicts of interest
- An assessment of the entity's management systems and processes to ensure it operates to the requirements of the CarbonNeutral Protocol – to cover independence, contracting, resourcing, tools and methodologies, quality control and assurance of work-products and outputs

The process is applied when an entity makes a formal request for secondary certifier status. The due diligence exercise is predominantly executed through interviews and a questionnaire, which must be signed by a senior officer to warrant its accuracy.

Ensuring the integrity and quality of certification work by appointed secondary certifiers

Natural Capital Partners is responsible for ensuring the competence, quality of work, and adherence to requirements and principles of the CarbonNeutral Protocol by secondary certifiers.

The aspects covered in the initial due diligence are re-assessed periodically. The primary control mechanisms include review of secondary certifier work products supporting the award of CarbonNeutral certifications and questionnaires to check the ongoing adequacy of management systems that underpin certification work. The secondary certifier is required to warrant that responses are a true and fair representation of the entity's systems, and that they are in compliance with both the principles and requirements of the CarbonNeutral Protocol.

Auditing secondary certifier competence and performance

Natural Capital Partners has the right to appoint an independent, qualified auditor to review the performance of secondary certifiers, and will give fair notice of its intent to do so. Secondary certifier status will be withdrawn if material concerns identified through by the auditor are not remedied within a reasonable period of time.

Selection, appointment and continuance of secondary certifiers

The selection, appointment and continuance of secondary certifiers are at the sole discretion of Natural Capital Partners. Terms and Conditions that apply to the arrangements are mutually agreed by both parties at commencement. Those Terms and Conditions may be amended from time to time to reflect best practice, the evolution of the CarbonNeutral Protocol, and changing market conditions.

Selco Solar Energy Access Project, India:
Enhancing energy access for up to 387,000
rural households by providing solar lighting
and renewable energy

Appendices



Appendix 1

Guidance and Clarification Pertaining to “Defining the Subject”

Appendix 1.1 Emission reduction project types excluded under The CarbonNeutral Protocol

Introduction

The CarbonNeutral Protocol supports carbon credits that meet the highest quality standards available in the market and avoids or excludes carbon credits that may fail to meet these standards.

This annex provides additional background information on excluded project types within The CarbonNeutral Protocol.

Destruction of HFC-23 and N₂O industrial gases

HFC-23

HFC-23 is an unwanted by-product in the manufacture of HCFC-22, a refrigerant and temporary substitute for CFCs. The destruction of HFC-23 in HCFC-22 plants in developing countries is eligible under the Clean Development Mechanism (CDM) and leads to the issuance of a large amount of credits due to the high GWP of such gases. As it is relatively cheap to install a destruction facility, HFC-23 destruction CDM projects have created a perverse incentive structure to increase the production of HCFC-22 to earn money from destroying the resulting HFC-23. This perverse incentive undermines the Montreal Protocol on Substances that Deplete the Ozone Layer, an international treaty designed to protect the ozone layer by phasing out the production of numerous substances believed to be responsible for ozone depletion.

CDM crediting rules for HFC-23 projects were suspended in 2010 and made more stringent in 2011. The revised rules do not apply until projects have to renew their crediting period. This means that from 2012 until the end of the first crediting periods (seven years after a project started), over 240 million credits are estimated to be issued under the old rules. The European Union (EU) banned HFC-23 credits from use in the EU-ETS starting from April 2013.

N₂O

N₂O is also an unwanted by-product in two different industrial processes; the production of:

- Adipic acid, usually turned into nylon
- Nitric acid, usually turned into fertiliser

In 2010, an independent study commissioned by CDM Watch provided evidence that the high profits from CDM N₂O destruction projects at adipic acid facilities had led to carbon leakage. It was found that these projects had such high profit margins that a shift in production from non-CDM plants to CDM plants occurred. This carbon leakage caused an estimated increase in emissions of 13 million tonnes of CO₂e.

CDM Watch research has shown that nitric acid CDM projects do not generally cause carbon leakage. However, this project type is problematic for other reasons: N₂O is normally an unwanted by-product of nitric acid production. Evidence suggests the existing CDM methodologies (AM0028 and AM0034) cause a perverse incentive not to adopt an already widely available technology that would minimise N₂O formation because it is more lucrative for project developers to maximise N₂O production so that it can then be destroyed to earn credits. The EU has banned N₂O credits from use in the EU-ETS starting from April 2013.

The CarbonNeutral Protocol recognises the concerns associated with HFC-23 and N₂O industrial gas destruction projects, and excludes credits from these project types.

Large hydro

Hydropower is the largest source of renewable electricity globally. This has been made possible, in large part, by the cost-competitiveness of large hydro plants, which often represent lucrative well-established investments. Despite their attractive economics, large hydro projects can have severe negative social and environmental impacts such as displacement of local populations, loss of livelihoods and cultural heritage and degraded ecosystem services.

Concerns over the additionality and potential social and environmental impacts of large hydropower projects under the CDM have led to calls for reform, including restrictions on credits from such projects under the EU ETS and the potential elimination of large hydro from the CDM altogether (alongside industrial gas projects).

The CarbonNeutral Protocol defines large hydro projects as those with generating capacities greater than or equal to 20MW. This is consistent with the requirements imposed under the EU ETS.

The CarbonNeutral Protocol recognises the concerns associated with large hydropower, and excludes credits from this project type, unless a qualified independent third-party assures that a specific large hydropower project fulfils the World Commission on Dams (WCD) sustainability criteria.

Appendix 1.2 Corporate value chain (Scope 3) accounting and reporting

The GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (also referred to as the Scope 3 Standard) was developed by the WRI and the WBCSD and provides requirements and guidance for companies preparing and publicly reporting GHG emission inventories that include indirect emissions resulting from value chain activities (i.e. Scope 3 emissions). The Scope 3 Standard complements and builds upon the GHG Protocol Corporate Accounting and Reporting Standard to promote additional completeness and consistency in the way companies account for and report on indirect emissions from value chain activities.

The Scope 3 Standard groups Scope 3 emissions into 15 distinct categories, as shown in Table 13. The categories are intended to provide companies with a systematic framework to organise, understand, and report on the diversity of Scope 3 activities within a corporate value chain.

The CarbonNeutral Protocol has adopted this framework to identify which emission sources are required and recommended for its various CarbonNeutral® entity certifications. This is to ensure consistency of reporting between The CarbonNeutral Protocol and the Scope 3 Standard.

In line with emerging best practice for entity certifications, all applicable Scope 3 emissions sources should, as far as practicable, be included in the assessment of the subject's GHG emissions. However, in many cases it will not be practical to collect data for all Scope 3 sources (e.g. upstream emissions associated with purchased goods and services).

The Protocol requires the inclusion of certain Scope 3 emissions (waste generated in operations, business travel etc) for certain certifications. The inclusion of any other Scope 3 emissions is at the discretion of the client. Clients may find it helpful to consider the following issues when determining which additional Scope 3 emissions sources to include:

1. The influence that the company has over reductions
2. The likely contribution those emissions make to the subject's overall footprint – where an emissions source is judged likely to be material, it could be included
3. The availability of reliable data

For additional information about the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard and its 15 Scope 3 categories please refer to: www.ghgprotocol.org/standards/scope-3-standard

Cambodia Oddar Meanchey REDD+ Project, Asia:

By formalising community land rights, the project protects 13 tropical forest sites across the province. Without this project, it is likely that deforestation of evergreen forests in the region would continue at the current annual rate of 2%



Table 13: The Scope 3 Standard

Upstream or downstream	Scope 3 category	Category description
Upstream Scope 3 emissions	1. Purchased goods and services	Extraction, production, and transportation of goods and services purchased or acquired by the reporting company in the reporting year, not otherwise included in Categories 2 – 8.
	2. Capital goods	Extraction, production, and transportation of capital goods purchased or acquired by the reporting company in the reporting year.
	3. Fuel- and energy-related activities (not included in Scope 1 or 2)	Extraction, production, and transportation of fuels and energy purchased or acquired by the reporting company in the reporting year, not already accounted for in Scope 1 or 2.
	4. Upstream transportation and distribution	Transportation and distribution of products purchased by the reporting company in the reporting year between a company's tier one suppliers and its own operations (in vehicles and facilities not owned or controlled by the reporting company). Transportation and distribution services purchased by the reporting company in the reporting year, including inbound logistics, outbound logistics (e.g. of sold products), and transportation and distribution between a company's own facilities (in vehicles and facilities not owned or controlled by the reporting company).
	5. Waste generated in operations	Disposal and treatment of waste generated in the reporting company's operations in the reporting year (in facilities not owned or controlled by the reporting company).
	6. Business travel	Transportation of employees for business-related activities during the reporting year (in vehicles not owned or operated by the reporting company).
	7. Employee commuting	Transportation of employees between their homes and their worksites during the reporting year (in vehicles not owned or operated by the reporting company).
Upstream Scope 3 emissions	8. Upstream leased assets	Operation of assets leased by the reporting company (lessee) in the reporting year and not included in Scope 1 and Scope 2 – reported by lessee.
Downstream Scope 3 emissions	9. Downstream transportation and distribution	Transportation and distribution of products sold by the reporting company in the reporting year between the reporting company's operations and the end consumer (if not paid for by the reporting company), including retail and storage (in vehicles and facilities not owned or controlled by the reporting company).
	10. Processing of sold products	Processing of intermediate products sold in the reporting year by downstream companies (e.g. manufacturers).
	11. Use of sold products	End use of goods and services sold by the reporting company in the reporting year.
	12. End-of-life treatment of sold products	Waste disposal and treatment of products sold by the reporting company (in the reporting year) at the end of their life. Transportation and distribution services purchased by the reporting company in the reporting year, including inbound logistics, outbound logistics (e.g. of sold products), and transportation and distribution between a company's own facilities (in vehicles and facilities not owned or controlled by the reporting company).
	13. Downstream leased assets	Operation of assets owned by the reporting company (lessor) and leased to other entities in the reporting year, not included in Scope 1 and Scope 2 – reported by lessor.
	14. Franchises	Operation of franchises in the reporting year, not included in Scope 1 and Scope 2 – reported by franchisor.
	15. Investments	Operation of investments (including equity and debt investments and project finance) in the reporting year, not included in Scope 1 or Scope 2.

Appendix 1.3
Selecting boundaries for “cradle to customer” CarbonNeutral® products

The boundary of a cradle-to-customer product certification is dependent on the client/organisation applying for the certification and their position in the supply chain.

It is important that CarbonNeutral® claims are both robust and do not overstate the emissions covered by the certification. With this in mind, the client certifying a product CarbonNeutral® must include:

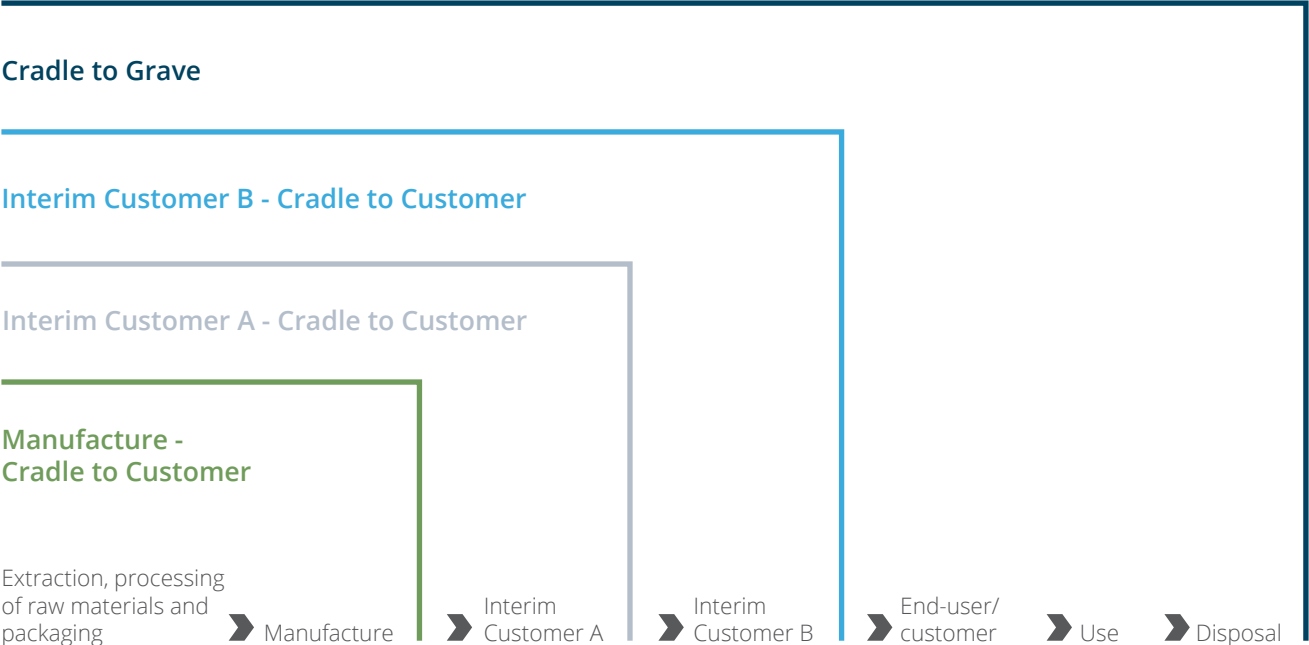
- All emissions upstream
- Emissions within their control, until the point at which their customer takes control of (or purchases) the transportation, storage or use of the product

If the organisation applying for the CarbonNeutral® certification is neither a member of (nor has a stake in) the product supply chain, the minimum boundary applied must extend to the point at which the customer of the manufacturer takes control of (or purchases) the transportation, storage or use of the product.

Where the CarbonNeutral® product certification logo is used on the product itself, it is strongly recommended that the boundary of the certification is extended to the point of purchase by the end-user or as close as is reasonably possible in the following scenarios:

- Where the end-user is a member of the general public
- Where transportation of the product includes air-freight, long-haul journeys or temperature controlled storage

Figure 6: Minimum CarbonNeutral® Product Boundaries for Various Organisations Within a Product Supply Chain

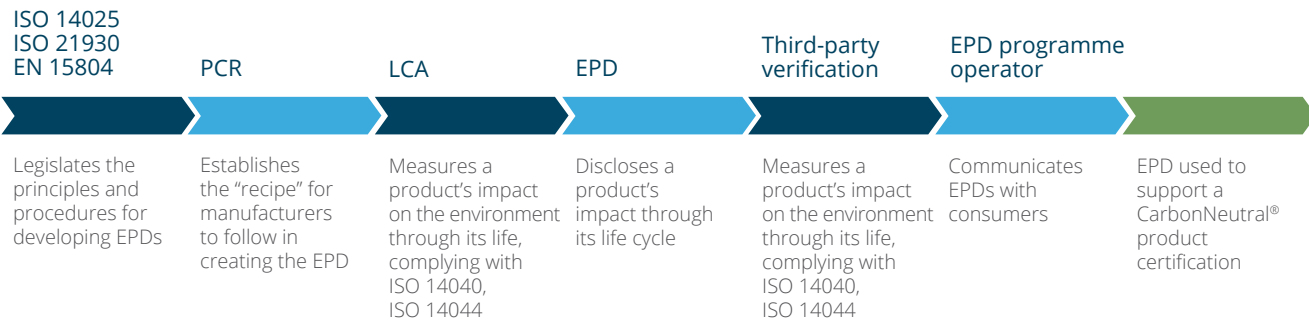


Appendix 1.4
Using environmental product declarations
(EPDs) for CarbonNeutral® products

The 2014 revision of The CarbonNeutral Protocol introduced Environmental Product Declarations (EPDs) as an alternative way to demonstrate achievement of Steps 1 and 2 of the CarbonNeutral® certification process for products. Step 1 covers the definition of the subject and Step 2 covers measurement of the subject's GHG emissions.

An EPD is a type III environmental label declaring the environmental impacts of a product over its expected life. EPDs can be thought of as the environmental equivalent to nutrition labels for food products, stating a product's carbon footprint and other environmental impacts such as resource depletion, acidification, and eutrophication. It is a comprehensive, voluntary, internationally recognised report that compiles and standardises technical LCA information, eliminating the need to contend with numerous individual documents.

Figure 7: Establishing the Integrity of EPDs



The figure above demonstrates how the integrity of EPDs is established by the application of a variety of third-party standards and processes:

- The ISO 14025 standard establishes the principles and specifies the procedures for developing type III environmental declaration programmes and type III environmental declarations, specifically EPDs
- The ISO 21930 standard establishes the principles and requirements for type III EPDs of building products
- The EN 15804 is a European standard that provides core Product Category Rules (PCRs) for type III EPDs for any construction product and construction service
- PCRs describe the harmonised LCA-rules for data collection, methodology, calculations and presentation of the results for a specific product category such as pre-fabricated buildings or leather footwear. PCRs are developed in accordance with ISO 14025, and additionally with ISO 21930 and/or EN 15804 for construction products
- LCAs are based upon the parameters set out in ISO 14025, ISO 21930 and EN 15804, and should also be compliant with the ISO 14040 series of standards. The measurement of the carbon footprint should follow the ISO/TS 14067

- (the Technical specification for GHGs — carbon footprint of products — requirements and guidelines for quantification and communication)
- Transparency is a key component of EPDs, and upon completion, all EPDs should be publically registered with an EPD programme operator, in addition to being independently verified
- Programme operators are responsible for maintaining type III EPD programmes, and establishing procedures for the development of Product Category Rules and EPDs

Given the rigour applied to the development of Product Category Rules, the strict requirements of ISO LCA methodologies and the need for independent third-party verification, The CarbonNeutral Protocol recognises that EPDs provide robust, high quality GHG measurement outputs.

There may be minor differences in requirements of The CarbonNeutral Protocol relative to an EPD. EPD product category rules for any given subject will by definition be more relevant to the subject than the general requirements of The CarbonNeutral product certification. Therefore, where there are differences, the EPD prevails and is deemed to have met the requirements of The CarbonNeutral Protocol. Table 14 explores some of these requirements in more detail.

Table 14: Comparison of Requirements Between The CarbonNeutral Protocol and EPDs for CarbonNeutral® Product Certification

Step 1: Define the subject		
Protocol step	The CarbonNeutral protocol requirements	EPD requirements ¹
Requirements	The subject to which The CarbonNeutral Protocol is being applied <u>must</u> be clearly defined, by name and by description of the relevant legal and/or physical boundaries. The duration of a CarbonNeutral® certification <u>must</u> also be defined. Where applicable, a start date should be defined. The CarbonNeutral® certification to be applied <u>must</u> also be defined and <u>must</u> be compatible with the subject. The definition of the subject and the certification <u>must</u> be recorded by the CarbonNeutral certifier and the information retained for the purpose of auditing.	Covers The CarbonNeutral Protocol requirements, and goes beyond by requiring, for example, an in-depth description of the functions of the product system, and a description of the cut-off criteria for initial inclusion of inputs and outputs.

Step 2: Measure the subject's GHG emissions		
Stage	The CarbonNeutral protocol requirements	EPD requirements ¹
1. Select GHG accounting protocol	The GHG Protocol Product Standard, PAS 2050, ISO/TS 14067 or methods set out in steps 2-7 below <u>must</u> be applied unless the CarbonNeutral certifier identifies valid reasons for using other methods.	The carbon footprint of the product should be based on the ISO 14040 series of standards, and measurement should follow the ISO/TS 14067. EPDs are deemed to match the requirements of the The CarbonNeutral Protocol.
2. Define boundary	The boundary <u>must</u> be consistent with the definition of the subject. For cradle-to-customer subjects the boundary <u>must</u> extend to the point of customer delivery. For cradle-to-grave subjects the boundary <u>must</u> extend to end-of-life disposal.	The boundary covered by PCRs extends from cradle to grave. Any omissions and decisions on which inputs and outputs are included <u>must</u> be clearly stated within the scope of the LCA. EPD requirements are deemed to be equivalent to or exceed The CarbonNeutral Protocol requirements.
3. Identify emissions sources	Assessments <u>must</u> include emissions sources as specified in Annex B – CarbonNeutral® certifications and their specific required assessment emissions sources.	PCRs define the emission sources which are required for the EPD. These emissions sources are determined by industry and LCA experts, and represent best industry practice. The requirements of EPDs go beyond the detail in Annex B of the The CarbonNeutral Protocol, therefore they are deemed to meet and exceed The CarbonNeutral Protocol requirements.
4. Identify GHGs to be measured	All Kyoto Protocol GHGs <u>must</u> be measured in the assessment, insofar as they apply to the subject.	The measurement of all GHG emissions and removals that provide a significant contribution to the carbon footprint of the product system. EPDs deemed to meet the requirements of the The CarbonNeutral Protocol.
5. Establish time periods	For standard consumer products, assessments <u>must</u> at a minimum be every three years, unless a significant change to the product supply chain has occurred in which case another assessment <u>must</u> be undertaken. For one-off or custom produced products the timescale <u>must</u> relate to the production and delivery period.	The validity of the EPD is set at a minimum of three years after which the declaration <u>must</u> necessarily be revised and reissued. EPDs deemed to meet the requirements of the The CarbonNeutral Protocol.

¹ As recommended by ISO/TS 14067.

Step 2: Measure the subject's GHG emissions (continued)		
Stage	The CarbonNeutral protocol requirements	EPD requirements ¹
6. Determine data validity	<p>Primary data <u>must</u> be used in preference to secondary data, where it is available, up to date and geographically relevant. Secondary data in the form of estimates, extrapolations, models and industry averages may be used where primary data is unavailable. When this is done, these assumptions <u>must</u> be recorded by the party carrying out the assessment.</p> <p>A qualitative and/or quantitative description of the uncertainty associated with the client-supplied data should be made. In cases where the quality of client supplied data is not known (e.g. in online calculators), the dependency of results on the quality of input data should be made clear.</p>	<p>Site-specific data shall be collected for individual processes under the financial or operational control of the organisation, and shall be representative of the processes for which they are collected. Site-specific data should also be used where practicable for those unit processes that contribute significantly, but are not under the financial or operational control of the organisation.</p> <p>Data that is not site-specific data, based on global or regional averages, collected by regional or international organisations and which have undergone third-party verification should be used when the collection of site-specific data is not practicable.</p> <p>EPDs deemed to meet the requirements of the The CarbonNeutral Protocol.</p>
7. Measure GHG emissions	<p>The subject's GHG emissions <u>must</u> either be directly measured or quantified using national, regional, international, or other relevant emission factors, with preference given to emission factors most closely associated with the emissions source.</p> <p>The assessment <u>must</u> be reported in units of CO₂e according to the 100 year potential of each gas. GWP factors applied <u>must</u> be clearly stated in the assessment.</p> <p>Emission sources that are required to be assessed (see Annex B) but are estimated to represent less than 2% of the subject's total GHG emissions, but collectively no more than 5% of the subject's GHG emissions, may be calculated and reported using simplified estimation methods.</p>	<p>Secondary data and primary data that are not site-specific data may include literature data, such as default emission factors, calculated data, estimates or other representative data.</p> <p>The potential climate change impact of each GHG emitted and removed by the product system shall be calculated by the 100-year GWP given by the IPCC in units of "kg CO₂e per kg emission."</p> <p>Include all GHG emissions and removals that provide a significant contribution to the carbon footprint of the product system being measured.</p> <p>EPDs are deemed to meet the requirements of the The CarbonNeutral Protocol.</p>
8. Quality assurance	<p>All GHG assessments <u>must</u> either be conducted or checked, and in the case of GHG tools and calculators, be approved, by an independent, qualified third-party approved by Natural Capital Partners to ensure they have met the above requirements in this table. Input data (or activity data) used in assessments should also be checked by an independent, qualified third-party for quality purposes.</p> <p>Annex F details requirements and recommendations for the presentation of GHG assessments.</p>	<p>Requires third-party verification and registration with an ISO 14025 programme operator. A critical review which ensures consistency between an LCA and the principles and requirements of the international standards on LCA can also be conducted.</p> <p>EPDs deemed to meet the requirements of The CarbonNeutral Protocol.</p>

¹ As recommended by ISO/TS 14067.

Requirements for a CarbonNeutral® compliant EPD

1. The EPD must be developed using a suitable PCR which follows ISO 14025 guidelines, and additionally with ISO 21930 and/or EN 15804 if used for construction products
2. The LCA must conform to the ISO 14040 series of standards
3. The EPD must be validated by an independent, qualified third-party approved by Natural Capital Partners to ensure it has met the necessary requirements
4. The EPD is registered with a programme operator approved by Natural Capital Partners

Appendix 1.5 Treatment of assets rented or leased to customers of CarbonNeutral® entities

In line with **Annex E** to the GHG Protocol Corporate Standard, emissions arising from entity assets rented/leased to a third-party can be treated as either Scope 1 or Scope 3 emissions. The correct treatment is dependent on whether the entity is taking an “equity share” or “control” approach to their GHG emissions, as defined by the GHG Protocol Corporate Standard. Most applications of The CarbonNeutral Protocol take a “control” approach to entity emissions, resulting in emissions from rented or leased assets being categorised

as Scope 3 emissions for the entity providing the assets that are being rented/leased. Therefore, for consistency, Natural Capital Partners recommends this approach.

An example of an entity taking an “operational control” approach to their GHG emissions would be that of a car rental or leasing company. When their vehicles are leased to customers, the emissions arising from customer use are counted as Scope 3 by the company. The emissions count as a Scope 1 emission for the customer of the company, as they have operational control of the vehicle for the duration of the lease.

Appendix 2 Guidance and Clarification Pertaining to “Measure the Subject’s GHG Emissions”

Appendix 2.1 Treatment of renewable (“green”) electricity in Scope 2 emissions

This Appendix details how the carbon reduction attributes of renewable (sometimes described as “green”, “clean”, or “low-carbon”) energy are accounted for in Scope 2 of the GHG inventories that underpin CarbonNeutral® certifications.

Approximately 40 percent of global GHG emissions come from energy generation, and about half of that energy is consumed by industrial or commercial users. A number of countries have adopted policies requiring or encouraging electricity suppliers to offer renewable electricity to energy consumers. This may be done through tariff-based programmes and power purchase agreements or through the retirement of renewable energy instruments such as Renewable Energy Certificates (RECs), International Renewable Energy Certificates (I-RECs), Tradable Instruments for Global Renewables (TIGRs) or Guarantees of Origin (GOs).

Rapid developments in renewable energy markets have left corporations uncertain about how to report their Scope 2 emissions and how to measure emissions from their renewable energy purchases. This is because the reporting of renewable energy is complicated by issues of double counting and additionality – both of which can be difficult to interpret consistently across national jurisdictions.

Double counting can occur when more than one party claims a benefit or attribute of the same product or service. To qualify as zero emissions, the carbon benefit of renewable electricity should be counted only once – for example, by being allocated to the end consumer and not to the supplier or the national grid mix. In practice, this means that the renewable electricity must be supplied from a decentralised or off-grid source, or the grid electricity supply must be specifically structured to allow disaggregated carbon accounting. The principle of additionality requires that when environmental attributes of renewable energy are recognised in the GHG inventory of a renewable energy consumer, the generation activities that underpin the renewable energy should be over and above regulatory requirements.

Prior to 2015, guidance on how to apply these principles in Scope 2 accounting was absent from the GHG inventory standards accepted under The CarbonNeutral Protocol. However, on the 21st January 2015, the WRI, author of the widely used GHG Protocol Corporate Standard, published its “Scope 2 Guidance” as an amendment to the GHG Protocol to clarify the accounting treatment of low-carbon grid-delivered energy in Scope 2 GHG inventories. The amendment, published after four years of development and industry consultation, provides guidance for how corporations should measure emissions from electricity and energy purchases, including renewable energy, and covers:

- **Requirements:** Accounting and reporting requirements which entities must meet to be in conformance with the GHG Corporate Standard
- **Quality Criteria:** A list of Scope 2 quality criteria that all electricity purchasing instruments, termed “contractual instruments” need to meet in order to be used in market-based method accounting
- **Recommendations:** Additional features entities should disclose their electricity purchases, as well as other metrics such as total electricity, steam, heating, and cooling consumed and what percentage of corporates’ operations have market-based method data available

From the date of publication of the GHG Protocol Scope 2 amendment, entities using the GHG Corporate Protocol to meet the GHG inventory requirements of The CarbonNeutral Protocol are required to meet its Scope 2 Guidance, as officially amended from time to time by the WRI.

Entities using any other GHG inventory standard recognised under The CarbonNeutral Protocol are subject to The CarbonNeutral Protocol's original requirements that:

1. Zero emissions may only be awarded when double-counting is avoided. Evidence should be available to establish either that the renewable electricity is not supplied to the national grid in the country concerned; or, that the benefit of the renewable energy is not included within national average grid factors or any other reporting factors
2. Emissions can be treated as zero where the electricity consumed has been offset by a third-party (for example, the utility supplier) using carbon credits that meet the requirements of The CarbonNeutral Protocol

Appendix 2.2 Market-based Scope 2 reporting declaration to support CarbonNeutral® certification

This appendix details the disclosure requirements for businesses seeking to make a market-based Scope 2 reporting declaration in support of CarbonNeutral® certification. The disclosure only needs to be made when the party supplying the contractual instrument is not the primary CarbonNeutral certifier. For example, when an entity sources renewable electricity directly from an electric utility to support a Scope 2 reporting claim, it should provide details of the contractual instrument within the disclosure table (Table 15)

overleaf. The disclosure table will be provided by the certifier upon request.

A column should be added to the table to account for each contractual instrument claim made within a corporate GHG inventory. Often this will involve engaging the contractual instrument supplier to determine the appropriate form of evidence that can be supplied to substantiate a market-based claim. The disclosure table should be completed at the time of preparing the GHG inventory and should be signed by a company representative to warrant that the information provided is up to date, accurate and that the CarbonNeutral certifier can rely on the information.

Appendix 2.3 Measuring climate impacts from aviation

From 2014, the requirement of The CarbonNeutral Protocol is that for CarbonNeutral® certification clients must consider the evidence regarding the overall effect of aviation on climate.

Having considered the evidence, clients may elect to calculate their aviation carbon footprints by considering only GHG emissions. Alternatively, clients may elect to address the wider effects of aviation on climate by applying an Aviation Impact Factor (AIF)¹ of two to its GHG emissions from aviation.

Interpreting guidance on impacts on climate from aviation into The CarbonNeutral Protocol

Natural Capital Partners first reviewed the science underpinning the impact on climate from aviation in 2009, when it requested Professor John Murlis to provide guidance on the issue. The 2009 review highlighted that complex atmospheric chemistry associated with high altitude emissions of GHGs, other gases and effects, such as short-lived contrails and cloud formation, supported the view that the impact of aviation on climate may be greater than from recognised GHGs alone. However, the science was not well enough understood to provide clear guidance as to how such additional effects should be calculated. Therefore, The CarbonNeutral Protocol calculated carbon footprints for aviation directly from aviation GHG emissions. Clients were free to apply an AIF of greater than one.

In 2014, Professor Murlis updated the 2009 guidance, and his report is available here: carbonneutral.com/images/uploads/others/Aviation_Guidance_Paper_JohnMurlis.pdf

Table 15: Illustrative - Market-Based Scope 2 Reporting Declaration in Support of CarbonNeutral® Certification

Completing this declaration is a requirement for CarbonNeutral® certifications involving a market-based Scope 2 claim. Add a row to the table for each contractual instrument claim, for example each renewable electricity contract, REC or GO purchase would require a separate row of information disclosure.

Consumption country or countries covered by contractual instrument claim	GHGP Scope 2 Guidance Disclosure Requirement:	CarbonNeutral Protocol Requirement:	United States	France
Consumption covered by contractual instruments (MWh)	Recommended	Required	10,000	500
Contractual instrument emission factor (gCO ₂ /MWh)	N/A	Required	0.000	0.000
Category of contractual instrument	Required	Required	Energy attribute certificates	Electricity contracts
Type of contractual instruments	Required	Required	Renewable Energy Certificates (RECs)	Electricity Contracts that convey attributes without certificates
Supplier	N/A	Required	Renewables Team	EDF
Disclosure of the type of supporting evidence	N/A	Required	Attestation record	Evidence limited to tariff description
Contractual instrument disclosures (e.g. location, technology, commissioning year)	N/A	Required	Texan wind, commissioning year not known	Not known
Meets all the relevant Scope 2 Quality Criteria for the contractual instrument	Required	Required	Yes	Yes
To ensure unique claims, has an adjusted residual mix factor been estimated to reflect the contractual claims disclosed here?	Required	Required	Residual mix is not available which may result in double counting between electricity consumers	Residual mix is not available which may result in double counting between electricity consumers
Did contractual instruments substantively contribute to implementation of new low carbon projects?	Recommended	Required	No	No

I warrant that all the information provided here is up to date and accurate and that the primary CarbonNeutral certifier can rely on this information as a true and fair summary.

Signature:

Name:

Date:

The updated guidance recognises strengthening scientific evidence which indicates that the full impact of aviation on climate may be greater, by a factor of two, than from recognised GHGs alone. However, the scientific understanding of the higher factor is still poor to fair, and the evidence for quantifying the effect of contrails, which are a large part of the added impact, is particularly poor. Therefore, for the purposes of CarbonNeutral® certifications, The CarbonNeutral Protocol requires that clients specify whether or not they elect to apply an AIF of two based upon their review of the evidence.

Specifically, the requirements are that:

- The climate impact from aviation must be based on the direct emissions carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) and any other GHGs recognised by the UNFCCC
- The additional climate impacts that may arise from aviation as laid out in the guidance from Professor John Murlis must be considered
- Clients may elect to consider the additional climate impacts from aviation by applying an AIF of two

¹ Prior versions of The CarbonNeutral Protocol used the term Radiative Forcing Index or RFI. We now replace RFI with Aviation Impact Factor or AIF which is the multiplier applied to the GHG emissions from aviation in order to take account of the wider impacts of aviation on climate, including but not limited to, short or long-term impacts; impacts from GHGs alone and others with global warming influence (for example, soot particles and aviation induced clouds); and, direct and indirect impacts (for example, the interaction of NOx on methane gases and ozone at high altitudes).

The CarbonNeutral Protocol does not yet mandate an AIF of two for three main reasons:

1. The scientific evidence, although strengthening, is still poor to fair in its ability to take accurate account of the wider impacts of aviation on climate to cover short or long-term impacts; impacts from GHGs alone and others with a global warming potential (for example, soot particles and aviation induced clouds); and, direct and indirect impacts (for example, the interaction of NOx on methane gases and ozone at high altitudes)
2. There is no publicly accessible record of climate regulations or compliance regimes applying an AIF greater than one for emissions from aviation, although there are advisory notes from official sources that suggest a factor greater than one²
3. It is known that emissions from sources other than aviation (for example from internal combustion engines in ground transport), also have impacts on climate that are wider than those from their recognised GHG emissions. The CarbonNeutral Protocol favours carbon footprint accounting that is standardised across all sources, and therefore does not mandate a different treatment for aviation

The CarbonNeutral Protocol's provision that clients may elect to apply an AIF of two to aviation GHG emissions respects the voluntary nature of CarbonNeutral® certification, while also encouraging clients to take account of the strengthening case for different accounting for aviation emissions in their carbon management strategies and plans.

Natural Capital Partners continues to keep this issue under review.

² Few regulations exist to cover climate impacts from aviation, with the notable exception of the EU ETS for aviation, which considers only emissions of carbon dioxide, and applies a factor of 1. DEFRA, the UK Government ministry responsible for environment, has provided guidance in support of a multiplier factor of 1.9. This factor is not actively applied within any UK regulatory programme, or to any voluntary action on climate mitigation by the UK Government and its ministries.

Appendix 2.4 Determining aviation emissions from flight distances

Where exact fuel consumption data is not available for GHG emission calculations, passenger kilometres travelled should be used as a basis for calculation instead. Depending on flight distances, different emissions factors are applicable and are often classified as domestic, short haul, medium haul or long haul. Due to the extreme variability in country sizes, the use of "domestic" classification can be counter-productive when applied to flights within a particular country, using emissions factors provided for use within a different country. This applies particularly when using DEFRA emission factors for air passenger transport conversion figures in countries other than the United Kingdom.

Therefore, for the purposes of consistency, the following classifications should apply:

- Short haul: Flight distance of less than 785km (DEFRA emission factors for "domestic" should be applied)
- Medium haul: Flight distance between 785km and 3,699km inclusive (DEFRA emission factors for "short-haul international" should be applied)
- Long haul: Flight distances of 3,700km or greater (DEFRA emissions for "long-haul" should apply)

For clarity, these distance classifications should be applied when calculating emissions arising from passenger flights (passenger km) and/or air freight transportation (tonne km). These distance categories must be applied internationally, in the absence of robust, country specific factors.

Appendix 2.5

Treatment of recycled waste – substitution within GHG assessments

An organisational - or entity level - GHG assessment is typically an inventory of actual emissions and removals from the atmosphere. The leading guidance for organisational footprinting, the GHG Protocol Corporate Standard, advocates such an approach, known as attributional analysis.

The emission factors used for organisational - or entity - GHG assessments should relate to actual physical emissions or actual physical removals. However, some emission factors include a “crediting” effect for avoided emissions, and are therefore inconsistent with the principle of only counting actual physical emissions and actual physical removals.

Certain national GHG reporting guidelines (e.g., the US Waste Reduction Model), include a substitution effect in the emission factors for recycled waste. The factors include a credit for the avoidance of embodied emissions that would have occurred had the waste not been recycled - i.e. they provide credit for emissions that do not happen. This approach leads to negative emission factors for certain recycled waste streams. The result of including such factors within an entity-level inventory is that the calculated emissions are no longer a true assessment of actual physical emissions and actual physical removals.

GHG emissions associated with recycled waste should be quantified using national, regional, international, or other relevant emission factors, with preference given to national emission factors when they are available. If national emission factors are not available for recycled waste, the next most relevant source of factors must be used.

If the most geographically relevant emission factors take a substitutional approach within their waste stream methodologies, then recycled waste streams can be assumed to produce zero emissions for accounting purposes. “Zero rating” recycled waste is considered appropriate as an organisation is rewarded with a lower footprint for sending less waste to landfill, whilst maintaining the attributional integrity of their GHG assessment.

Appendix 2.6

Water consumption and waste water treatment

The 2013 revision of the Protocol introduced the inclusion of water consumption and waste water treatment as recommended emission sources for entity

level CarbonNeutral® certifications. While the carbon footprint of water consumption and waste water treatment will be a relatively small emission source for most organisations (the water industry typically contributes around 1% of GHG emissions in developed economies), the water industry and its customers have an important part to play in reducing GHG emissions.

For corporates, water should not simply feature within a carbon management plan. Water warrants its own water management plan. A mature plan considers water volume in the context of both water stress and water quality to understand the full impact of corporate water use at the water basin level.

Including water as a recommended emission source in CarbonNeutral® certifications will encourage users of The Protocol to collect volume data and evaluate water use within their carbon management plan. In creating this awareness and disclosure we hope it will encourage corporates to explore more sophisticated water management plans and consider water use in the context of water stress and water quality.

Appendix 2.7

Guidance on quality assurance and verification

The CarbonNeutral Protocol places strong emphasis on quality assurance requirements to support the integrity of CarbonNeutral® certifications.

Quality assurance is conducted by the CarbonNeutral certifiers (i.e. those entities authorised by Natural Capital Partners to provide certifications in accordance with The CarbonNeutral Protocol). It is an independent evaluation to check that the quality of input data, a GHG assessment, or use of a CarbonNeutral® certification logo meets the requirements of a CarbonNeutral® certification and is in line with the approach and principles of The CarbonNeutral Protocol. See **Annex F** for more detailed information about the quality assurance processes required of CarbonNeutral certifiers.

Entities seeking CarbonNeutral® certification are encouraged to maintain their own internal quality assurance and quality control processes covering the measurement of GHG emissions.

Verification of input data, calculations, reductions, and CarbonNeutral communications is at the discretion of the client, or may be requested by the CarbonNeutral certifier should their quality assurance review surface concerns about whether these are correct, complete and accurate. Verification means an independent evaluation conducted by an expert third party to the

F2. Table 12: Illustrative Table of Results for CarbonNeutral® Certification

Protocol step	Quality assurance requirements	Verification requirements
1. Define the subject	The definition of the subject and the certification <u>must</u> be recorded by the CarbonNeutral certifier and the information retained for the purposes of auditing.	Third-party verification is at the discretion of the client.
2. Measure subject's emissions	All GHG assessments <u>must</u> either be conducted or checked, and in the case of GHG tools and calculators, be approved by an independent, expert third-party approved by Natural Capital Partners to ensure they have met the requirements for GHG emission assessments as stipulated in Annex F .	Third-party verification of input data and GHG emission calculations is at the discretion of the client, and can be requested by the CarbonNeutral certifier should their quality assurance review surface concerns about whether the data is correct, complete and accurate.
3. Set target	The client <u>must</u> commit to an overall target of net zero GHG emissions for the subject during the certification period.	Not applicable.
4. Reduce emissions	The subject's GHG emissions <u>must</u> be reduced to net zero for the duration defined within the CarbonNeutral® certification.	<p>The quality of carbon credits accepted by The CarbonNeutral Protocol is always verified against the requirements of the third-party standards under which they are established.</p> <p>CarbonNeutral certifiers are subjected to an annual third-party verification to ensure the net zero status of awarded CarbonNeutral® certifications.</p>
5. Communicate	Use of the CarbonNeutral® certification <u>must</u> conform to Natural Capital Partners' CarbonNeutral® certification guidelines. All communications relating to a client's CarbonNeutral® certification <u>must</u> be factually based, and consistent with the CarbonNeutral® certification achieved.	Third-party verification of the correct application of the CarbonNeutral® certification marks and communications is at the discretion of the client, and may be requested by the CarbonNeutral certifier.

requirements of an independent verification standard (such as ISO 14064:3 or ISAE 3410) to confirm that the quality of input data, a GHG assessment, or that the use of a CarbonNeutral® certification logo meets the requirements of CarbonNeutral® certification and is in line with the approach and principles of The CarbonNeutral Protocol.

Quality assurance and verification requirements for the five steps to achieving CarbonNeutral® certification are summarised in the table above.

Third-party review of the management systems supporting certifications; and, third-party verification of the data, calculations, carbon credit retirements, net zero status and communication of CarbonNeutral® certifications should be considered when:

1. The subject's GHG emissions are material or in excess of 100,000 tCO₂e/yr

2. Certifications are publicly reported or presented to audiences which may use CarbonNeutral® certifications to make commercially material decisions

3. Certifications are used in support of mandatory reporting requirements or submissions to regulatory authorities

The additional costs of verification should be weighed against the value derived from third-party review. The value of third-party review comes from increased rigour and integrity, and from the identification of management system improvements which increase cost-effectiveness and improve management of climate risks.

Routes to increased rigour and integrity of certifications include, but are not limited to:

1. Maintaining on file the data, assumptions, models and supporting calculations to a recognised standard such as ISO 14064-1 or the GHG Protocol

2. Subjecting the accuracy of the input data, assessments, and carbon neutral claims to third-party verification against a recognised verification standard such as ISO 14064 or ISA E3410

3. Ensuring that staff and management involved in the CarbonNeutral® certification have the requisite qualifications, competencies and experience

4. Independent confirmation of the accuracy of the CarbonNeutral® communications and claims

Appendix 2.8 Guidance on how to report GHG emissions from carbon neutral services within a corporate GHG inventory

Businesses are increasingly considering the environmental performance of suppliers as part of their procurement process. If a business has selected a supplier because they provide a carbon neutral service, this guidance sets out best practice with regards to reporting the GHG emissions from the service within the business' annual GHG inventory. Services that are frequently supplied as carbon neutral services include taxis, flights, logistics services, electricity or gas supply. This approach would apply equally to the GHG inventory of a product where components of the product are sourced as carbon neutral products. Given carbon neutral services are more widely available in the market, this guidance focuses on services in the context of an annual corporate GHG inventory.

This guidance aligns with the GHG Protocol's Scope 3 Standard¹ and UK DEFRA's Environmental Reporting Guidelines². This guidance recommends the following steps:

1. Request suppliers provide a breakdown of the GHG emissions associated with the services consumed: the total gross carbon footprint for a specific time period (e.g. financial year) plus an intensity measure relevant to how the service is consumed. For example, if document storage is outsourced to a cloud-based service, request the figure for CO₂e emitted per gigabyte per year. The carbon intensity metric is useful for forecasting how GHG emissions will vary based on the level of consumption

2. Confirm if the service purchased is carbon neutral. To deliver a carbon neutral service the provider will need to offset (retire) a volume of carbon credits equivalent to the emissions created by the provision of the service. For example, if the gross footprint of the service equals 10 tCO₂e, then 10 tCO₂e of carbon credits need to be purchased and retired, and once retired the net footprint equals 0 tCO₂e, i.e. the service is carbon neutral. To ensure the service provider is using high quality carbon credits which guarantee emissions reductions from credible project types, you should request that they work with a carbon credit supplier that complies with the ICROA Code of Best Practice³. If a supplier is not using credits in compliance with the ICROA Code, then those credits cannot be included in support of a CarbonNeutral® certification

3. When preparing a corporate GHG inventory, categorise the carbon neutral service according to requirements of the GHG Protocol standards. To maintain the integrity of the GHG inventory total GHG emissions should be reported, before reporting a lower figure for net emissions that has been reduced by the retirement of carbon credits by the product or service provider

The table below illustrates how this guidance can be applied to a corporate GHG inventory in order to transparently account for the GHG emissions of carbon neutral services consumed within a reporting period. In this example, the reporting company has sourced three services; electricity, logistics and data hosting, that are offset by their respective suppliers. The GHG emissions of all three services are counted in the total annual GHG emissions figure, and the GHG reduction from the purchase and retirement of carbon credits is then subtracted from this figure. The reporting company then purchases and retires a sufficient number of carbon credits to reduce its remaining GHG emissions to net zero to support a carbon neutrality claim.

Table 17: Illustrative Corporate GHG Inventory for 2017 and 2018

Corporate GHG inventory (tCO ₂ e)	2017	2018
Total annual GHG emissions	10,000	9,000
GHG emissions offset by electricity supplier	(3,000)	(2,500)
GHG emissions offset by logistics provider	(600)	(500)
GHG emissions offset by data hosting provider	(200)	(300)
GHG emissions offset by direct carbon credit retirement	(6,200)	(5,700)
Total annual GHG emissions net of carbon offsets	0	0

1 The Corporate Value Chain (Scope 3) Accounting and Reporting Standard

2 Environmental Reporting Guidelines: including mandatory greenhouse gas emissions reporting guidance

3 International Carbon Reduction and Offset Alliance Code of Best Practice

Appendix 3

Guidance and Clarification Pertaining to “Reduce Emissions”

Appendix 3.1

Guidance on evaluating internal GHG reduction projects

CarbonNeutral® certification is an action that represents immediate positive impact on GHG emissions. Clearly over time the goal of each organisation should be to reduce GHG emissions to zero, through the application of energy efficiency, switching to renewable energy and through technological innovation. It is our experience that leading organisations use external environmental instruments in parallel with internal reductions as part of the transformation journey and to bridge the gap towards stretching and impactful reduction targets.

The CarbonNeutral Protocol recommends that for all subjects the client should develop a GHG reduction plan to deliver internal emissions reductions, taking into consideration the main sources of GHGs from the subject and the likely cost-effectiveness of alternative emission reduction projects. With time, technological innovation has the ability to make low carbon projects viable. Understanding this project landscape and how much an organisation can invest in low-carbon transformation without impacting competitive performance are important inputs to an effective carbon reduction plan.

An excellent framework to assist organisations in evaluating a range of internal GHG reduction projects is marginal abatement cost analysis, an economic concept that measures the cost of reducing one more unit of GHG emissions. Marginal abatement costs are presented on a marginal abatement cost curve or MAC curve, a graphical representation of the cost and scale of GHG reduction projects. While there are many more aspects to consider beyond scale and cost, they are useful tools to guide corporate decision making among a variety of GHG reduction projects.

Figure 8 illustrates a MAC curve. Each rectangle on the MAC curve represents a different project to reduce GHG emissions. The width of each box represents the emissions reduction potential a project can deliver compared to business-as-usual, and the height of each box represents the average cost of reducing one tonne of GHGs through that

project. The MAC curve is ordered left to right on a per tonne basis from the lowest cost to the highest cost projects. Projects that appear below the horizontal axis have a negative cost, meaning the low carbon project saves more money than it costs. Projects that appear above the horizontal axis have a positive cost. Corporate MAC curves often rise steeply as more GHGs are reduced.

To plot a project on a MAC curve you need to perform a calculation that considers the lifetime costs and GHG reductions of the project. Table 18 illustrates the calculation for a project to replace desktops with laptops. For this project the marginal abatement cost is £50 per tonne, which would be the height of the box on the MAC curve. The width of the box illustrates the scale of the reduction, which in this case is determined by the number of desktops replaced. Each laptop saves 0.4 tonnes of CO₂, so a business replacing 2,000 desktops would save 800 tonnes of CO₂. This reduction in GHG emissions is measured relative to the business as usual baseline of running desktops for the next four years.

For most subjects, the client will have a number of projects with a negative cost of carbon. The more reduction projects a client has implemented the greater the marginal cost of further reduction becomes. Optimising heating and cooling temperatures is a project with a negative cost of carbon: simply questioning if the heating needs to be so high, or if the air-conditioning needs to be so low, can yield savings and setting temperature policies can then lock in these savings without incurring significant costs.

When it comes to selecting projects to implement, aspects beyond the scale of the reduction and cost per tonne should be considered, and each project will have a unique set of considerations. Keeping with the laptop example, the ability to work remotely and the impact on data security policies, should feature within decision making and may impact the cost if data security resources need to be increased. The administrative burden of implementing a project is another important dimension to consider and such costs can be factored into MAC data. The scale of reductions from introducing laptops is determined by the

number of employees that receive new laptops, which is a function of the number of employees, while the administrative burden of adapting policies to facilitate remote working and data security is relatively constant. On this basis, the project might only make sense for a company with a large number of desktop computers to replace where the aggregate reductions are sufficient to justify the administrative burden of implementing the project.

It stands to reason that projects with a negative cost of carbon should be implemented as they improve the bottom line. As clients implement the low-hanging fruit and progress towards their emission reduction target, it becomes increasingly expensive to achieve incremental reductions and there is a point on the MAC curve where it becomes more cost effective to look externally for emission reductions. The use of environmental instruments, including carbon credits, is the mechanism for

implementing external emission reductions, where an organisation sources and retires credits from verified emission reduction projects.

An impactful carbon reduction plan is a plan that meets a GHG reduction target in the most cost effective way through a combination of internal and external reductions. Marginal abatement cost analysis is a tool to support decision making as part of that planning process. GHG reduction plans should be reviewed periodically to assess progress against planned actions and to assess the feasibility for further reductions, taking into account the availability of new technologies and enabling policies and incentives. GHG reduction plans should be reviewed periodically and where applicable a director or senior manager should be given responsibility for overseeing the development and ensuring the implementation of the plan for reducing emissions.

Figure 8: Illustrative MAC Curve

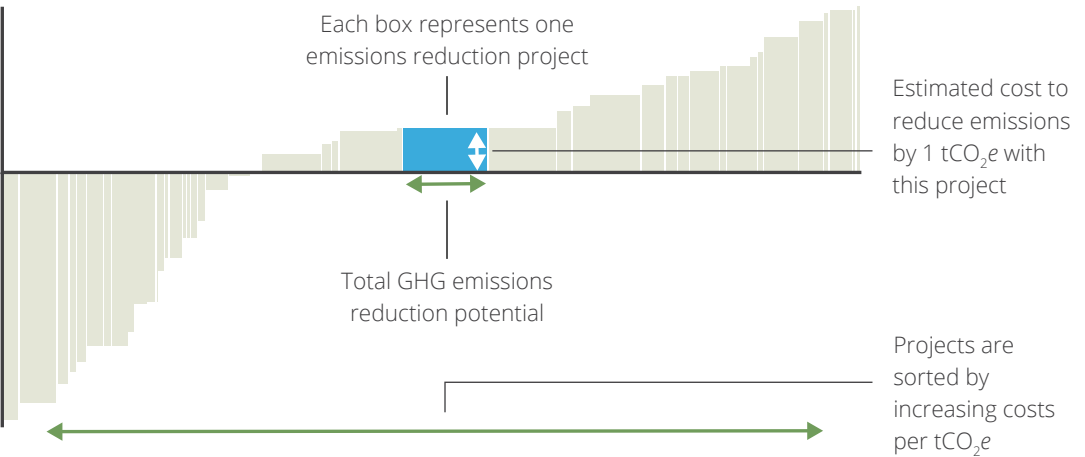


Table 18: Illustrative MAC Calculation

Replacing a desktop PC with a laptop PC has a MAC of ~£50 / tCO₂.

	Value	Unit	Notes
Investment	100	£	(additional cost of a laptop over desktop)
Lifetime of laptop	4	Years	(average lifetime of a laptop)
Annual energy saving	200	kWh	(typical office use)
Annual energy saving	20	£	(£0.10 per kWh x 200kWh)
Lifetime energy saving	80	£	(£20 x 4 years)
Annual carbon saving	100	kg CO ₂	(200kWh x 0.537 UK grid factor)
Lifetime carbon saving	400	kg CO ₂	(100 kg CO ₂ x 4 years)
Cost of carbon saving	20	£	(£100 outlay - £80 energy saving)
MAC	50	£/tCO ₂	(1000/400) x 20

