Carbon management

A practical guide for suppliers

Supplier Support and Information Initiative, 2009

UNIVERSITY OF CAMBRIDGE
PROGRAMME FOR SUSTAINABILITY LEADERSHIP

Business in the Community

About the Supplier Support and Information Initiative

Based on their own practical experience, a taskforce of business leaders and managers from eight leading companies has developed this practical carbon management guide for suppliers, in collaboration with the University of Cambridge Programme for Sustainability Leadership and Business in the Community.

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CLARENCE HOUSE

The financial storm which is breaking around us is, in many ways, unprecedented, but it must not be used as an excuse for ignoring the terrifying threat of climate change.

In these difficult times companies might feel they can safely turn their back on commitments to reduce CO_2 emissions, preferring to concentrate on immediate problems instead. However, this approach, if taken, would be myopic. It would leave businesses unprepared to deal with the even greater challenges of averting catastrophic global warming.

The latest science warns that we now have fewer than 100 months in which to turn the tide on CO_2 emissions globally. In the UK and Europe, that will need to happen much sooner. Governments and customers are increasingly aware of this and, in their different ways, are already seeking change. Customers want ever more efficient suppliers, while legislators are likely to impose ever more regulatory and fiscal burdens on environmentally irresponsible behaviour.

Fortunately, many companies are benefitting from the new opportunities arising from the demand for low carbon solutions and it heartens me that some (but not enough!) are widening their focus beyond their organizations' own direct carbon impact to look at overall emissions across their entire supply chain. Carbon management is a complex subject, which is further confused by the intricacies of supply chains. Without good guidance, I fear many companies will miss out on the benefits.

I am, therefore, delighted that the Cambridge Programme for Sustainability Leadership, of which I am the Patron, together with Business in the Community, of which I am President, have joined forces with a number of leading companies to produce this Guide, which tries to make sense of carbon management in the supply chain.

They have produced step-by-step information for suppliers to explain the main issues and I congratulate them on presenting this in such a clear, non-technical, practical and systematic manner. The few hours it will take suppliers to read this Guide will save them money as well as time later on.

The challenge of reducing our CO_2 emissions by up to 80% is such that every company will need to adapt. Those that start this journey early will surely be the ones which benefit from a low-carbon economy.

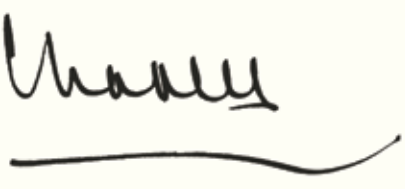

Table of contents

Executive summary

What is the Guide?

Carbon management: a practical guide for suppliers is a step-by-step carbon management guide for companies who supply retailers and other major corporations. It helps them respond to increasing requests from their customers for information about carbon management. It also shows how effective carbon management can cut costs and bring other business benefits.

Who is the Guide for?

The Guide will also be useful for:

- **All suppliers** being asked by their customers to meet carbon management requirements, including larger suppliers and suppliers based in other countries;
- **Procuring organisations** (companies and public sector procurement bodies) wanting to engage their suppliers on carbon management;
- **Any other company** that:
  - Wants **non-technical, practical step-by-step guidance** on measuring, managing and reducing their carbon emissions;
  - Wants to **understand the business implications** of the growing interest in carbon management in global supply chains, and who wants to **exploit the business opportunities** this presents.

Why bother reading the Guide?

The need to manage your carbon emissions is not going to go away. In the UK, new climate change legislation passed in late 2008 means that pressure from customers and government to address carbon *is going to increase*, not decrease[1]. Effective carbon management can also cut costs and bring other business benefits. So taking the time to understand carbon management makes good business sense.

Reading this Guide will help you understand the main issues and work out what your business needs to do. The hour or two it will take you to read the main part of the Guide should save you money as well as time later on. It will help you to prioritise your actions and maximise the business benefits from carbon management.

This Guide is broken down into short, easily digestible sections that make sense on their own. So, if you already have a broad understanding of carbon management and only want guidance on a specific issue, you can use the various navigation tools to take you straight to the particular sections you need. You will find a Glossary of useful terms on page 46.

What's in the Guide?

The Guide takes you through:

- What carbon management involves, and why it's worth doing;
- How to measure your carbon emissions;
- How to reduce your emissions;
- What management systems are needed to support carbon management; and
- How to extend carbon management down your supply chain.

Each of these five aspects of carbon management are summarised below.

1 The Government will be issuing guidance on how organisations should measure and report their emissions by 1 October 2009 as required by the Climate Change Act 2008.

The Guide: in a nutshell

What is carbon management, and why bother? (Chapter 2)

Carbon management means the measurement and management of the six greenhouse gases covered by the Kyoto Protocol, including carbon dioxide (CO_2).

Why bother? As well as meeting customer demands, good carbon management can cut costs for your business and prepare you for future government regulation on carbon emissions.

Measuring your emissions (Chapter 3)

Most customer questionnaires focus on measuring emissions. It's important to measure your emissions properly as customers are increasingly concerned about the accuracy of the emissions data that they receive.

Before you start measuring your emissions:

- Choose the methodology for measuring your emissions (there are several options);
- Decide which business units to include; and
- Decide the scope of emissions to be covered (i.e. whether you include indirect as well as direct emissions).

To measure your emissions:

- Identify your emissions sources;
- Select which calculation tools or conversion factors you will use to convert your activity data (e.g. electricity usage) into emissions data;
- Collect the activity data (e.g. litres of petrol consumed, kWh of electricity consumed);
- Convert the activity data into emissions data; and
- Combine the data from each business unit to calculate your overall company emissions.

Reducing your emissions (Chapter 4)

Many customers want to see evidence of emissions reductions in their supply chains. Reducing your emissions can also help you cut costs and prepare for future legislation. When planning how to cut emissions, you need to:

- Identify the key emissions sources or 'hotspots' for your industry, and the priorities of your key customers;
- Set an appropriate baseline year or period against which to measure emissions reductions;
- Consider whether you want to set emissions reductions targets and, if so, what targets to set;
- Develop an action plan to meet targets and achieve the desired reductions;
- Put in place the specific actions you have identified;
- Consult your employees – they are often best able to identify ways to reduce energy consumption or emissions;
- For the emissions that you cannot reduce, consider buying carbon offsets as part of your overall approach to carbon management.

Developing management systems (Chapter 5)

Customers are increasingly concerned about the **credibility** of emissions data and reduction plans being reported by their suppliers, and good management systems are essential to maintain credibility. Effective management systems also improve the efficiency of your carbon management activities. To develop good management systems, you need to:

- Build a solid business case for carbon management;
- Allocate responsibility and resources for carbon management;
- Consider developing a carbon management policy;
- Engage and incentivise your employees;
- Develop systems and procedures to ensure the quality of your emissions data;
- Regularly review progress on reducing emissions;
- Consider getting your emissions data verified; and
- Consider public disclosure of your emissions data and reduction plans.

Extending carbon management down the supply chain (Chapter 6)

Many customers are increasingly interested in extending carbon management beyond first-tier suppliers. They are particularly interested if they are making low carbon claims about specific products or they see significant carbon-related risks further down the supply chain. What is more, they are likely to enlist the help of first-tier suppliers. To extend carbon management down your supply chain, you need to:

- Choose which of your suppliers to work with;
- Communicate your carbon management aims and expectations to these suppliers; and
- Provide feedback, ongoing support and incentives for your suppliers to help them improve.

‘Quick reference’ chart: key steps in carbon management

The flow chart below gives a quick overview of the key steps in carbon management and what’s in the Guide. You can use it to pinpoint which particular chapter or section you need.

‘Measure’ (Chapter 3)

- Decide measurement boundaries, scope and methodology *(Section 3.2, page 16)*
- Identify carbon emissions sources *(Section 3.3.2, page 19)*
- Select calculation tools or conversion factors to use (*Section 3.3.3, page 20*)
- Collect activity data (*Section 3.3.4, page 20*)
- Calculate emissions, using conversion factors/calculation tools (*Section 3.3.5, page 21*)
- Roll up (aggregate) emissions data to corporate level (*Section 3.3.6, page 21*)

‘Reduce’ (Chapter 4)

- Identify industry ‘hotspots’ and customer priorities (*Section 4.2, page 23*)
- Set a baseline (against which to measure reductions) (*Section 4.3, page 24*)
- Consider setting reduction targets (*Section 4.4, page 25)*
- Develop an action plan and set up specific reduction initiatives (*Section 4.5, page 27*)
- Consider buying carbon offsets (as a last resort) (*Section 4.6, page 29*)

‘Manage’ (Chapter 5)

- Build a solid business case for carbon management (*Section 5.2, page 32*)
- Consider developing a carbon management policy (*Section 5.3, page 32*)
- Allocate responsibility and resources (*Section 5.4, page 32*)
- Engage and incentivise your employees (*Section 5.5, page 33*)
- Develop systems and procedures to ensure the quality of emissions data (*Section 5.6, page 35*)
- Regularly review progress on reducing emissions (*Section 5.7, page 36*)
- Consider getting your emissions data verified (*Section 5.8, page 37*)
- Consider public disclosure of your emissions data and reduction plans (*Section 5.9, page 38*)

‘Extend’ (Chapter 6)

- Choose which suppliers to work with initially (*Section 6.2, page 42*)
- Communicate with these suppliers (tell them why carbon management is important, what standards you expect, and how to meet them) (*Section 6.3, page 42*)
- Follow up with suppliers (give feedback on questionnaires, agree what improvements need to be made, and provide ongoing support) (*Section 6.4, page 43*)

'Look-up table': typical carbon questions in supplier questionnaires

The look-up table below helps you interpret typical carbon management questions found in customer and other corporate social responsibility (CSR) questionnaires. It maps each question to the relevant chapter or section(s) within the Guide.

'Measure': Questions about measuring your emissions

"Have you put in place a method of assessing the emission of greenhouse gases at your site?" (*SEDEX questionnaire*)	→ Chapter 3, 'Measure': guidance on measuring carbon emissions Specifically, see Section 3.2.2, *Choose your methodology.*
"Identify direct emissions of greenhouse gases from all sources owned or controlled by the reporting organisation." (*Global Reporting Initiative, GRI*)	→ Chapter 3, 'Measure': guidance on measuring carbon emissions For definition of 'direct emissions', see *Glossary.* For guidance on identifying direct emissions sources, see Section 3.3.2, *Identify emissions sources.*

'Reduce': Questions about reducing your emissions

"Does your organisation manage the environmental impacts of CO_2 emissions? What percentage of your operations and markets do these policies cover? Do you have targets on the impact? Please attach." (*Lloyds TSB* and *Financial Services Purchasing Forum CR questionnaire*)	→ See Section 4.4, *Setting reduction targets.*
"Report existing initiatives to reduce the energy requirements of major products/product groups or services." (*Global Reporting Initiative, GRI*)	→ See Section 4.5.2, *Implementing specific reduction initiatives.*
"Do you use any carbon offsetting schemes? If yes, please describe." (*One Planet Products – Supplier Questionnaires*)	→ See Section 4.6, *Carbon offsets.*

'Manage': Questions about management systems (e.g. employee engagement, monitoring systems)	
"Are your data and targets verified by an external party? Please provide copy or link." (*Lloyds TSB* and *Financial Services Purchasing Forum CR questionnaire*)	→ See Section 5.8, *Getting external verification of your emissions data.*
"Do you assess or provide incentive mechanisms for individual management of climate change issues including attainment of GHG targets? If so, please provide details." (*Carbon Disclosure Project questionnaire*)	→ See Section 5.5, *Engaging and incentivising employees.*
"Please indicate the quality of the information used to derive your KPIs in this impact area: (a) impact not measured or mostly based on estimates; (b) based on a combination of estimated and verifiable data; (c) mostly based on verifiable data; (d) independently verified." (*Business in the Community Corporate Responsibility Index*)	→ See *Section 5.6, Developing systems and procedures to ensure data quality* and *Section 5.8, Getting external verification of your emissions data.*
'Extend': Questions about engaging your suppliers on carbon management	
"Do you have a strategy for engaging your suppliers on their GHG emissions and the impacts of climate change on their business? If so, please provide details of this strategy, including the number of suppliers with whom you are engaging." (*Carbon Disclosure Project questionnaire*)	→ Chapter 6, 'Extend': Guidance on extending carbon management down the supply chain

1. Introduction to the Guide

1.1 Why this Guide has been written

Over the last few years, many UK corporates have started to pay particular attention to carbon management as part of their efforts to improve environmental and social standards in their supply chains. But the absence of a single mandatory or widely accepted approach to carbon management means that each company goes about it in its own way. As a result, suppliers get different requests for information from different customers, leading to growing confusion and duplicated effort. And without good guidance, many suppliers are also missing out on the benefits that effective carbon management can bring. The Government will be addressing this issue later this year when it publishes definitive guidance on how companies should measure and report their greenhouse gas emissions.

This Guide has been produced in response to this situation. We explain the main carbon issues covered by customer questionnaires, and give step-by-step guidance on how to manage these issues in a systematic way – an approach most likely to meet the expectations of your different customers as well as bring you additional benefits.

1.2 Purpose and scope of the Guide

Carbon management: a practical guide for suppliers is a step-by-step carbon management guide for companies that are part of a supply chain. It helps them respond to increasing requests from their customers for information about carbon management.

The Guide brings together information from the body of carbon management guidance that already exists, and packages it as a 'one-stop shop' of direct relevance to suppliers. It is written for the non-expert and avoids technical language as far as possible, in recognition that many suppliers may have little experience or knowledge of carbon management. At the same time, it promotes a 'good practice' rather than 'do the minimum necessary' approach to carbon management, since we believe this is the most effective way both to meet customer requirements and secure business benefits, now and in the future.

The Guide addresses the main carbon management questions covered by:

- Customer questionnaires;
- The major independent carbon management questionnaires; and
- Relevant corporate social responsibility (CSR) corporate reporting frameworks.

1.3 Who is the Guide written for?

This Guide gives non-technical, practical, step-by-step guidance for all companies that are part of a supply chain. It will also help companies needing to understand the business implications of carbon management, and procuring companies wanting to engage their suppliers in this agenda. Although principally written for UK companies, the Guide is relevant to suppliers based in other countries.

The Guide provides enough information for most sizes of company to measure, manage and reduce their carbon emissions. Larger companies will find the Guide a useful starting point but may need to refer to more detailed guidance on specific areas. Links to additional guidance are included where possible. The Small Business Consortium has developed a 'Small Business Journey' that includes summaries of some of the issues in this Guide, and that smaller businesses may find useful:
www.smallbusinessjourney.com/Env_Sustainability.asp

Although targeted at first-tier suppliers, the Guide will also be useful for:

- **Procuring organisations** (i.e. retailers, other corporates and public sector procurement bodies) seeking to engage their suppliers on carbon management. This Guide can be used to provide practical guidance to suppliers as part of a broader toolkit or programme of support.
- **Any company** that:
  - Wants **non-technical, practical, step-by-step guidance** on measuring, managing and reducing their carbon emissions;
  - Wants to **understand the business implications** of the growing interest in carbon management in global supply chains, and/or that wants to **exploit the business opportunities** this presents.

Many of the case studies are from UK companies, and the information on legislation and sources of technical and financial support are UK-specific. However, the rest of the Guide is relevant to suppliers in other parts of the world.

Finally, this is a generic guide and is relevant across all sectors and industries. It does not provide detailed industry-specific guidance for any particular sector, but gives references to such guidance where possible. It will also be helpful to get specialist industry-specific advice on how best to reduce emissions in your particular industry.

1.4 Who has produced the Guide?

This Guide is produced by the Supplier Support and Information Initiative that was launched by HRH The Prince of Wales in May 2008. The Guide aims to help companies including UK SMEs and Midcaps (suppliers with medium market capitalisation) to embed corporate responsibility into their day-to-day business practices and so reduce bureaucracy and improve profitability.

The Initiative is run by the **Cambridge Programme for Sustainability Leadership** (CPSL) and **Business in the Community** (BITC). Financial support, guidance and oversight are provided by a **Taskforce** of eight Corporate Members: BT Group plc, EDF Energy, Kingfisher plc, Lloyds TSB (Chair), Marks & Spencer plc, Royal Mail Group plc, Serco Group plc and United Utilities plc. Advisory Members (Mason Hardy, Tripos Consulting and Global Action Plan) and an Observer Member (the UK Department for Environment, Food and Rural Affairs) also participated.

The first step was to review the main questionnaires received by suppliers and the type of carbon management questions these included. **Appendix 1** lists the questionnaires we reviewed. This Guide is based on the outcomes of this review.

1.5 Key references/sources of information used to prepare this Guide

We used the following reference documents extensively to prepare this Guide:

- ***The Greenhouse Gas Protocol®: a corporate accounting and reporting standard (Revised Edition),* 2004.** This is the most widely used standard for greenhouse gas accounting and reporting, and includes a detailed methodology and guidance for calculating an organisation's carbon footprint. The Protocol was developed by the Greenhouse Gas Protocol Initiative, a multi-stakeholder partnership convened by the World Resources Institute and the World Business Council for Sustainable Development. The Protocol can be downloaded free from www.ghgprotocol.org
- **Various publications published by the Carbon Trust.** The Carbon Trust is a private company set up by the UK Government that works with UK businesses and public sector organisations to reduce carbon emissions and develop low carbon technologies. It is a key source of guidance and advice on carbon management for UK organisations.

- **Business in the Community, May Day Journey and corporate case studies**. Business in the Community (BITC) convenes The Prince's May Day Network, a group of over 1,300 UK businesses that have pledged to take action on climate change. The May Day Journey is a new online tool that provides guidance to May Day Network members and others on how to measure, manage and reduce carbon emissions. BITC also provides an extensive online database of company case studies, highlighting innovative corporate responsibility practice. Many of the examples used in this Guide have been drawn or adapted from this database.

1.6 How to use this Guide

This Guide can either be read from cover to cover, or be dipped into for guidance on specific issues.

To get a quick overview of the Guide, or to find guidance on a specific topic, use one or more of the following navigation tools:

- The 'quick reference' chart (page 4) that shows the key steps involved in carbon management and links you to the relevant sections in the Guide;
- The table of contents (page iii);
- The overview of what's in the Guide in **Section 1.7** below;
- The look-up table (page 5) which matches typical carbon questions found in key supplier questionnaires to the relevant sections in the Guide.

An extensive **Glossary** (page 46) explains all the carbon management terms used in the Guide.

1.7 Overview of what's in the Guide

No single universally accepted management approach or framework for carbon management exists[2]. However, to maximise compatibility with existing good practice, the Guide broadly follows the management frameworks underlying the **Carbon Disclosure Project** questionnaire and the **Carbon Trust Standard** (and therefore also the **May Day Journey**, since this is broadly based on the Carbon Trust Standard).

The main topics covered in each chapter are set out below.

Chapter 2: Introduction to carbon management

This short chapter explains what carbon management means and outlines the business case for taking it seriously. It includes general tips on how suppliers should approach carbon management.

Chapter 3: 'Measure': guidance on measuring carbon emissions

Chapter 3 has step-by-step guidance on how to go about measuring your carbon emissions, summarising the key aspects of the Greenhouse Gas Protocol® corporate accounting standard. Many customers prioritise emissions measurement in their questionnaires, and the chapter walks you through choosing a method of measuring carbon emissions, deciding what emissions to cover, and how to decide which business units or functions should be included. We explain the main steps in measuring emissions, from how to identify your key emissions sources to how to aggregate the emissions data from each business unit.

2 The Greenhouse Gas Protocol® provides a widely accepted approach to carbon measurement, but does not comprehensively cover the 'manage', 'reduce' and 'extend' aspects of carbon management addressed in this Guide.

Chapter 4: 'Reduce': guidance on reducing carbon emissions

Many customers also want to know what you are doing to cut emissions. This chapter explains the importance both of identifying industry 'hotspots' (i.e. key sources of emissions) and your customers' priorities on emissions reductions, and how to use these to prioritise your actions. It gives guidance on selecting a baseline, setting meaningful and attainable reduction targets, and developing an action plan to reach these targets. It finishes with guidance on using carbon offsets as part of your overall carbon management strategy.

Chapter 5: 'Manage': guidance on management systems

Chapter 5 explains the governance and management systems and procedures that are needed to ensure effective carbon management. Putting in place good management systems is important to demonstrate the credibility of your carbon management programme, which is an increasing concern for many customers. This chapter provides guidance on building a strong business case for carbon management, allocating appropriate resources, setting up monitoring systems and engaging/incentivising employees to support your programme. It will also help you consider whether to develop a formal carbon management policy, opt for public reporting and/or externally verify your emissions data.

Chapter 6: 'Extend': guidance on extending carbon management down the supply chain

Chapter 6 emphasises the importance of prioritising which of your suppliers to engage on carbon management. What key messages should you include in communications to your suppliers? What communications approaches do other companies use? It also takes you through the follow-up actions necessary to ensure that your suppliers understand what improvements they need to make and how to implement them.

2. Carbon management: an introduction

Chapter 2: Summary

- **Carbon management** means the measurement and management of the six greenhouse gases covered by the Kyoto Protocol, including carbon dioxide (CO_2).
- **Why bother?** As well as meeting customer demands, good carbon management can cut costs for your business and prepare you for future government regulation on carbon emissions.
- **Key tips:** Don't be daunted. For many businesses, carbon management is not that complicated. Identify your key customers' top priorities, and focus your efforts around these.

2.1 Introduction

This chapter gives a brief introduction to carbon management. It explains what we mean by carbon management, and outlines the benefits that good carbon management can bring to your business. It concludes with general tips on how to approach carbon management.

2.2 What is carbon management?

'Carbon management' is used in this Guide to refer to the measurement and management of emissions of carbon dioxide (CO_2) and **of the other five greenhouse gases covered by the Kyoto Protocol**, i.e.:

- Methane (CH_4);
- Nitrous oxide (N_2O);
- Sulphur hexafluoride (SF_6);
- Hydrofluorocarbons (HFCs); and
- Perfluorocarbons (PFCs).

In practice, many suppliers will only need to measure and manage carbon dioxide emissions, since many sectors do not produce significant amounts of the other five greenhouse gases. However, there are important exceptions, including for example the agricultural industry, which produces significant amounts of methane and N_2O emissions. So, don't make assumptions: check what are the main emissions sources for your industry and/or ask for expert advice.

The **Glossary** gives further explanation of carbon management-related terms (page 46).

2.3 Carbon management – why bother?

Meeting your customers' demands can be reason enough. But you can get other business benefits from measuring and managing your carbon emissions. **Section 2.3.1** explains why customers are increasingly interested in carbon management. **Sections 2.3.2 and 2.3.3** look at how good carbon management can cut costs and prepare you for possible increased government regulation on carbon emissions.

2.3.1 Responding to customer demands

Getting up to speed on carbon management is likely to be a worthwhile investment as UK corporates are increasingly asking questions about carbon emissions in their supply chains. Interest from corporates is likely to increase rather than decrease over the next few years as:

- Their **customers (the consumers) are becoming more aware of climate change and carbon emissions**, and increasingly expect retailers and other corporates to be doing more to cut emissions.
- They recognise the need to be pro-active about **complying with new national climate change legislation** (see **Section 2.3.3** below). The specific implications for companies are still being worked out. But many corporates are prudently gaining a clearer understanding of carbon emissions in their supply chain in preparation for new emissions regulations that will come into effect over the next few years.
- Increasingly, they **view suppliers as inefficient** if they produce high levels of carbon emissions compared to other suppliers in the same sector/industry.
- Some corporates are starting to **take account of suppliers' performance** on carbon management in their purchasing decisions.

2.3.2 Cutting costs

Many businesses make significant cost savings by reducing their carbon emissions, mainly through improving energy efficiency. **Box 1** gives examples of savings made by a range of companies through energy efficiency measures.

Box 1: Cutting costs through effective carbon management

Many companies have saved money by taking effective measures to manage their carbon emissions:

- **Sainsbury**, the UK's longest-standing major food retailing chain, has had practices in place since 2006 to measure and reduce its energy consumption. To date, the retailer has saved 81,000 tonnes of carbon, with an annual energy saving of £9million. (*Carbon Trust*)
- **Salmor Industries Limited** manufactures manhole covers and other products for the utilities market. They predict that energy-saving changes to their manufacturing process, which required £9,000 initial outlay, will reduce their annual energy bills by 50% (from £7,000 to £3,500 per year). Their initial investment will be paid back in less than 3 years. (*Carbon Trust*)
- **Hilton UK and Ireland** completed a comprehensive analysis of its energy consumption in 2006 as part of its long-term commitment to sustainability. Since then the group has seen a £3.8million saving in energy costs – and reduced its carbon footprint by 45,000 tonnes of CO_2. (*Carbon Trust*)
- **Glamorgan Paint Stovers Limited,** a metal finishing company whose work includes spraying products such as supermarket shelves, is predicted to reduce their £33,000 annual energy bill by 20–30% through investment in improving the insulation of their ovens. With an initial outlay of £15,000 for insulation, they will pay back the investment within 3–5 years. (*Carbon Trust*)
- **Lloyds TSB** a leading UK-based financial services company, is committed to a 30% reduction in CO_2 emissions by 2012 (compared to 2002 levels). Planned measures to help reach this target were predicted to result in £15million financial savings for the company over 5 years. (*Business in the Community*)
- **United Utilities,** a leading UK utilities supplier, estimates it will save £7 million a year through energy efficiency investments across 17 sites in north-west England. It will be able to pay back their initial investment of £22 million within 3 years. (*Carbon Trust*)

Sources: Business in the Community website: www.bitc.org.uk/resources/case_studies and the Carbon Trust website: www.carbontrust.co.uk/energy/whysavecarbon/case_studies.htm

2.3.3 Be prepared for new legislation

Compliance with new or impending legislation is another good reason for you to take carbon management seriously. Increasing global regulation on climate change and greenhouse gas emissions means that more and more countries – including the UK – are adopting national legislation to control carbon emissions. So even if you are not currently required by law to measure, report and/or reduce your emissions, it makes sense to future-proof your business by (at least) looking into the issues.

For UK Suppliers: In the UK, legislation on carbon emissions that came into effect in 2008 means that many UK companies are likely to be required to measure, reduce and report their carbon emissions over the next few years. The **Climate Change Act** and the **Carbon Reduction Commitment** are particularly relevant, and their main implications are explained below.

The **Climate Change Act** became law in November 2008. It sets legally binding targets on the UK to reduce greenhouse gas emissions by at least 80% by 2050, and by at least 26% by 2020, against a 1990 baseline. To meet these targets, the Government will set **carbon budgets** that 'cap' emissions over five-year periods. The first three budgets will be set in 2009 (covering the periods 2008–2012, 2013–2017 and 2018–2022). At the time of writing, the specific implications of these carbon budgets for UK companies remain uncertain.

The Climate Change Act also introduced the powers for the Government to make regulations for mandatory reporting of emissions by companies. A decision whether to introduce mandatory reporting will be made by April 2012. Moreover, as also required by the Act, the government is currently preparing *voluntary* guidelines on how organisations should measure and report their emissions. These guidelines are being developed by the Department for Environment and Rural Affairs (Defra) and are due to be published by 1 October 2009.

Further information on the Climate Change Act can be found at:
www.defra.gov.uk/environment/climatechange/uk/legislation

The **Carbon Reduction Commitment**, which is scheduled to take effect in 2010, is a new 'cap-and-trade' scheme introduced by the UK Government in 2008. The scheme will:

- **Mainly affect medium- and large-scale, non-energy-intensive companies.** These are companies with an electricity consumption of more than 6,000 MWh per annum (typically equivalent to a total annual electricity bill of £1,000,000 or more), and who produce carbon emissions that are not already covered by Climate Change Agreements or the EU Emissions Trading Scheme.
- **Make it mandatory for these companies to calculate and report emissions** on an annual basis (initially limited to UK-based CO_2 emissions from all fixed-point energy sources).
- **Place a financial cost on producing emissions** (and provide a positive financial incentive to reduce emissions), as all affected companies will have to purchase carbon emissions allowances to cover their total emissions every year.

The Government plans to a release a user's guide to the Carbon Reduction Commitment (CRC) in early 2009. Further information on the CRC is found at: www.defra.gov.uk/environment/climatechange/uk/business/crc

2.4 Carbon management – key tips for suppliers

General tips on how to approach carbon management:

- **Build your own business case for carbon management** – think through how good carbon management can benefit your business *and* help you meet customer demands. Think about cost savings, improved reputation, and being prepared for future government regulations. Plan and build an approach that meets all of these needs – you are more likely to succeed, and get buy-in across your business.
- **Link carbon management plans and targets to your main commercial objectives** where possible – this will also help you ensure buy-in from within your company.

- **Plan around different customer priorities**. Frustrating as it can be, customers vary in terms of their particular priorities on carbon management. This variation is unlikely to change in the short- to medium-term. So, take the time to fully understand the priorities of your key customers, and use these as a basis for your action planning. Break down your data collection as much as possible and consider sub-metering different parts of your business – and even different product lines. This gives you the flexibility to provide the specific emissions data required by your different customers.
- **And finally, don't be daunted!** For most companies, measuring emissions is not that complicated. Find out what data is already being collected across your company, pull it all together into one system, and identify and fill any gaps. You may find that improvements which are already being made to cut costs are also cutting emissions.

3. 'Measure': guidance on measuring carbon emissions

Chapter 3: Summary

Most customer questionnaires focus on measuring emissions. It's important to measure your emissions properly as customers are increasingly concerned about the accuracy of the emissions data that they receive.

Before you start measuring your emissions:

- Choose the methodology for measuring your emissions (there are several options);
- Decide which business units to include; and
- Decide the scope of emissions to be covered (i.e. whether you include indirect as well as direct emissions).

To measure your emissions:

- Identify your emissions sources;
- Select which calculation tools or conversion factors you will use to convert your activity data (e.g. electricity usage) into emissions data;
- Collect the activity data (e.g. litres of petrol consumed, kWh of electricity consumed);
- Convert the activity data into emissions data; and
- Combine the data from each business unit to calculate your overall company emissions.

3.1 Introduction

3.1.1 What do we mean by 'measuring carbon emissions'?

'Measuring carbon emissions' means identifying emissions sources, collecting activity data for each source (e.g. electricity usage) and converting this activity data into emissions levels.

'Carbon emissions' refers to emissions of all six greenhouse gases covered by the Kyoto Protocol (see **Section 2.2**).

Your customers may refer to the process of measuring carbon emissions as calculating or measuring your '**carbon footprint**', '**greenhouse gas accounting**', or compiling a '**greenhouse gas inventory**'. Basically, these all mean the same thing.

3.1.2 Why measure carbon emissions?

Many customers see measuring emissions as the first step in carbon management, so it's a key focus of most customer questionnaires. Seven of the nine questionnaires that were reviewed had questions about emissions measurement.

It is important to ensure that your emissions data is accurate and properly compiled. The lack of mandatory measurement standards or rules[3] means your customers may well ask questions about the accuracy of your emissions data, and the methods you use to compile the data.

Investing in a rigorous process for emissions measurement also brings other benefits:

- **Ability to identify more effective emissions reductions and potential cost savings**. Taking the time to properly understand and measure your carbon emissions can help to identify the most effective means of reducing emissions and potentially costs. These become more obvious when you look at emissions in a systematic way.

3 In the UK, guidance on how companies should measure will be issued this year – see Section 2.3.3 above.

- **Reliable and accurate emissions data are a prerequisite for public reporting.** If you intend to publish your emissions data or carbon footprint, you must be able to show that the data is accurate and calculated using a robust method. As public interest grows, the media is increasingly scrutinising what lies behind corporate carbon emissions data, so it is important you can defend your data. For the same reason, transparent and accurate emissions data is also important if you want to make claims about emissions reductions or being 'carbon neutral'.
- **Compliance with future legislation** – as noted in **Section 2.3.3** above, it may become mandatory for UK companies to measure and report their carbon emissions, either under the Climate Change Act, and/or if your company will be required to participate in the Carbon Reduction Commitment.

3.1.3 What this chapter covers

The rest of this chapter takes you through the main steps required to produce a reliable and credible set of carbon emissions data. These steps build on and are compatible with the **Greenhouse Gas Protocol®**, and are broadly compatible with the **ISO 14064-1** greenhouse gas accounting standard.

If your company has a corporate social responsibility (CSR) or environment manager with some environmental background, or a similar specialist, this chapter gives them step-by-step guidance to measuring emissions in-house.

If you intend to contract out the measurement process, this chapter summarises what is required to ensure that you get the right person to do the right job. Even if you are contracting out, your company will need to make some key decisions about what gets measured and how. This chapter will help you understand the implications of these decisions.

Section 3.2 covers what you need to consider **before** you start measuring your emissions:

- Being clear about what you want to achieve from measuring your emissions;
- Choosing the methodology you will use;
- Setting organisational boundaries for measurement; and
- Deciding the scope of emissions to be measured.

Section 3.3 covers practical steps you need to take to produce a set of emissions data:

- Identifying emissions sources;
- Selecting the calculation approach(es), tools and conversion factors to use;
- Collecting activity data;
- Calculating emissions levels from activity data; and
- Rolling up emissions data to the company level (i.e. aggregating data).

3.2 Before you start

Several important decisions need to be made before you start collecting data and measuring your emissions. This section explains what these are.

3.2.1 Identify what you want to achieve from measuring emissions

Measuring your emissions helps you meet your customers' requirements and can bring additional benefits (**Section 3.1.2)**. Your **reasons** for measuring your emissions affect **what** emissions you measure, and **how** you go about measuring them. So make sure at the outset that you are clear what you want from your emissions data, and design a measurement system around that.

3.2.2 Choose your methodology

You can measure your carbon emissions in a number of ways, so you need to decide on a method at the outset that meets your purposes. The three main approaches are:

- **Standard, cross-sectoral methodologies:** these are designed by external bodies to be applicable and relevant to all industries. The most widely recognised are:

    - **The Greenhouse Gas (GHG) Protocol®,** developed by the World Resources Institute and the World Business Council for Sustainable Development. As well as being the most widely recognised standard in its own right, most sector-specific methods and ISO 14064 are derived from the GHG Protocol®, and the forthcoming UK Government's voluntary measurement and reporting guidelines are also likely to build on the Protocol.
    - **The International Standards Organisation standard, ISO 14064-1**, which builds on many key concepts from the Greenhouse Gas Protocol®.
- **Industry-specific methodologies:** some industries have developed their own, industry-specific guidance for carbon footprinting (see **Box 2** below for some examples). Check with your relevant industry association whether one exists for your industry.
- **Tailored, company-specific methodologies**.

To start with, check if your key customers stipulate (or prefer) a specific method, in particular if you are thinking of using an industry-specific methodology.

In general, you should use one of the standard methodologies rather than develop your own company-specific approach, since you are likely to get quicker and better results that are seen as more credible by customers and other stakeholders. Also, your emissions levels can be compared with other companies who have used the same method.

As of October 2009, UK companies should also use the UK Government's voluntary reporting guidelines for guidance on measurement methodology (see Section 2.3.3 above).

The **advantage of the cross-sectoral methods** is that they are the most widely recognised. On the other hand, the **advantage of industry-specific methods** is that they are likely to provide the most tailored guidance for your sector. However, check that the methodology is compatible with at least one of the main cross-sectoral standards (GHG Protocol® or ISO 14064-1), and that it is recognised by key external stakeholders.

Box 2: Selected industry-specific carbon footprinting methodologies

- **Greenhouse Gas Protocol® sector-specific tools** – these are listed in **Appendix 2.**
- **Legal Sector Alliance Protocol** – a measurement tool and accompanying guidance adapted from existing GHG Protocol® measurement tools. See: www.legalsectoralliance.com/impact/carbonfootprint
- **UK Water Industry carbon accounting tool** – a methodology and spreadsheet tool developed by UK Water Industry Research (UKWIR) to help individual water companies account for CO_2 emissions from their operations. Available for purchase (free for UKWIR members) from: http://ukwir.forefront-library.com

3.2.3 Set organisational boundaries for measurement

Before you start measuring emissions, you need to decide which parts of the business to cover. For most companies with simple organisational and ownership structures, this is likely to be very easy. If you are:

- A company with a single operational site (e.g. a single manufacturing or production site); or
- A company with multiple operations, but you wholly own all of your operations/sites;

– then you should measure emissions associated with **all** of your operations/production sites.

If your company has a complex ownership or organisational structure and owns (or is involved in) one or more of the following:

- Subsidiaries;
- Joint ventures;
- Partnerships;
- Associated or affiliated companies;
- Franchises;

– then you need to consider whether and to what extent you report on carbon emissions from each of these. **You should decide which of two basic** approaches to use: the **equity share approach** or the **control approach.**

Under the **equity share approach**, a company reports emissions based on their share of equity in an operation, which typically (but not always) is equal to their percentage ownership of the operation. So, for example, if your company owns 50% of Operation A, then 50% of emissions from Operation A would be included in your company's carbon footprint.

Under the **control approach**, a company accounts for 100% of the carbon emissions from operations over which it has financial and/or operational control. So for example, if your company has full operational/financial control over Operation A, 100% of emissions from Operation A would be included in your company's carbon footprint, even though you only own 50% of the operation.

Chapter 3 of the Greenhouse Gas Protocol® gives guidance on choosing between these two approaches and how to apply them.

3.2.4 Determine the scope of emissions to be measured

Definition of 'scope': After defining your organisation's boundaries, the next step is to decide the **scope** of emissions to cover. In other words, you need to decide whether you want to measure **Scope 1**, **Scope 2** and/or **Scope 3** emissions:

- **Scope 1 emissions** are direct carbon emissions from sources that your company owns or controls (e.g. emissions from combustion of boilers, furnaces and vehicles that you own/control; and emissions from chemical production in process equipment that you own/control). A definition is also given in the Glossary (page 46) and Box 4 below.
- **Scope 2 emissions** are carbon emissions from the generation of electricity, heat or steam that is used by your company and has been bought in from elsewhere.
- **Scope 3 emissions** are all other carbon emissions not covered in Scope 1 and 2. They are a result of your company's activities but occur from sources that you do not own or control (e.g. extraction and production of purchased materials, transportation of purchased fuel, and use of sold products and services). A definition is also given in the Glossary (page 46) and Box 5 below.

The concepts and definitions of scope used above are taken from the Greenhouse Gas Protocol®, and are widely used to categorise carbon emissions.

Your customers and others may refer to '**direct**' and '**indirect**' emissions. Direct emissions are equivalent to Scope 1 emissions; indirect emissions refer to both Scope 2 and Scope 3 emissions.

Section 3.3.2 gives examples of the types of emissions included in each scope.

What scopes to measure? In general, you should measure your **Scope 1** and **Scope 2** emissions as a minimum because:

- Many customers want suppliers to provide information on both Scope 1 and 2 emissions;
- The Greenhouse Gas Protocol® considers the measurement and reporting of Scope 1 and 2 emissions as the minimum requirement;
- The forthcoming UK Government guidelines on company reporting are also likely to recommend reporting on Scope 1 and Scope 2 emissions as a minimum standard.

Some reasons for you to measure your Scope 3 emissions as well are:

- If the nature of your business means that Scope 3 emissions are much greater in scale than Scope 1 or 2 emissions, and consequently may be scrutinised by customers or other stakeholders;
- If substantial reductions in Scope 3 emissions are easier to make compared to reductions in Scope 1 or 2 emissions;
- If reducing Scope 3 emissions can yield significant cost savings for your company;
- If you want to publicly report your carbon footprint/emissions data, and/or participate in a voluntary carbon management programme that requires you to measure Scope 3 emissions.

If you are considering measuring Scope 3 emissions, bear in mind that suppliers (and companies in general) are rarely expected to accurately measure and monitor **all** their Scope 3 emissions. From a management point of view, it is often more valuable to focus on one or two major carbon-generating activities. Prioritising specific Scope 3 emissions for measurement and reduction is generally accepted practice, as long as you do this responsibly and transparently. **Box 3** gives tips on prioritising Scope 3 emissions for measurement.

Box 3: Tips for prioritising Scope 3 emissions

1. **Start by mapping your value chain** to get a full picture of the types of Scope 3 emissions your company is associated with, and how they relate to your company's activities. Use the list of Scope 3 emissions included in Section 3.3.2 as a checklist for identifying possible emissions.
2. Then **decide which of these emissions are most relevant/appropriate** to measure. You should probably include emissions if:
   - They are large (or believed to be large) relative to your Scope 1 and 2 emissions;
   - They are prioritised or are critical to your customers or other key stakeholders;
   - Potentially significant emissions reductions can be made or influenced by your company.
3. **Consider the quality of data available.** Activity data on Scope 3 emissions is usually more difficult to collect, so the quality of data is generally accepted as being lower than for Scope 1 or 2 emissions. However, you will be expected to be transparent about your data sources and their level of accuracy, so you should assess what data is available and the likely quality of this data *before* committing to include specific types of Scope 3 emissions in your carbon footprint.

3.3 Measuring your emissions

3.3.1 Introduction

This section outlines the main steps involved in measuring your emissions, once you have chosen the methodology, set your organisational boundaries and determined the scope of emissions you will measure (**Section 3.2**).

Even if you are contracting out emissions measurement to an external consultant, understanding the steps involved will help you in explaining your approach to customers and other stakeholders.

3.3.2 Identify emissions sources

The first step is to identify your company's sources of Scope 1, Scope 2 and (if relevant) Scope 3 emissions. **Section 3.2.4** defines each scope and **Boxes 4 and 5** below summarise what counts as Scope 1 and Scope 3 emissions. These checklists may help you identify your company's sources of emissions.

Box 4: What counts as Scope 1 emissions?

Scope 1 emissions are mainly the result of a company undertaking the following types of activity:

- **Generation of electricity, heat or steam** – combustion of fuels in stationary sources (e.g. boilers, furnaces, turbines);
- **Physical or chemical processing** – manufacture or processing of chemical and materials (e.g. cement, aluminium, waste processing);
- **Transportation of materials, products, waste and employees** – combustion of fuels in company owned/controlled mobile combustion sources (e.g. lorries, trains, ships, aeroplanes, buses and cars);
- **Fugitive emissions** – emissions from intentional or unintentional releases (e.g. from equipment leaks from joints, seals, packing, gaskets; methane emissions from coal mines and venting; HFC emissions during use of refrigeration and air conditioning units; methane leakages from gas transport).

The following do **not** count as Scope 1 emissions:

- CO_2 emissions from the combustion of biomass;
- Emissions from greenhouse gases that are not included in the Kyoto Protocol.

Box 5: What counts as Scope 3 emissions?

Scope 3 emissions include emissions from the following activities:

- **Extraction and production of purchased materials and fuels;**
- **Transport-related activities** by vehicles not owned by the company, including:
  - Transportation of purchased materials, goods or fuel;
  - Employee business travel;
  - Employees commuting to and from work;
  - Transportation of sold products;
  - Transportation of waste.
- **Electricity-related activities not included in Scope 2:**
  - Extraction, production and transportation of fuels consumed in the generation of electricity;
  - Purchase of electricity that is then sold to an end user;
  - Generation of electricity that is consumed in the transport and distribution system (distribution losses).
- **Use of sold products and service;**
- **Waste disposal:**
  - Disposal of waste generated by operations;
  - Disposal of waste generated in the production of purchased materials and fuels;
  - Disposal of sold products at the end of their life.

Section 4.2.1 (Identifying industry hotspots) shows you where to find lists of key emissions sources by industry.

3.3.3 Select calculation tools and/or conversion factors

It is rare to measure carbon emissions directly (i.e. to monitor actual CO_2/gas concentrations and flow rates). **Much more commonly accepted practice is to measure a proxy (substitute) indicator of activity** such as kWh of electricity consumed per month, and then to convert the activity data into emissions data using standard **conversion** or **emissions factors**, or tailored **calculation tools**. To ensure you collect the right type of activity data, decide which conversion factors or calculation tools you will use *before* you start collecting data.

When choosing which conversion factors or calculation tools to use, start with the **UK Department for Environment and Rural Affairs (Defra) Greenhouse gas conversion factors for company reporting.** These are the most widely used conversion factors in the UK, and are updated every year. They are available free from www.defra.gov.uk/environment/business/envrp/conversion-factors.htm, along with guidance on their application.

The Carbon Trust Energy and carbon conversions factsheet (CTL018), 2008 update summarises the Defra conversion factors, including the conversion factors for grid electricity and the most common types of fuel (e.g. natural gas, LPG, diesel, petrol).

If you find that the Defra conversion factors and guidance are not appropriate or comprehensive enough for your business/industry, try the Greenhouse Gas Protocol® sector-specific tools listed in **Appendix 2**.

3.3.4 Collect activity data

Once you have chosen the conversion factors or calculation tools to use, you are ready to start collecting activity data. For many companies, it is adequate to collect the following:

- **Scope 1: purchased quantities of commercial fuels (oil, gas etc.)** using data from meters and/or utility bills. You can convert most common units of fuel consumption into CO_2 emissions using published emissions factors.
- **Scope 2: purchased quantities of electricity consumption** using data from meters and/or electricity bills. You can convert electricity consumption into CO_2 emissions using national grid average conversion factors.
- **Scope 3**: **relevant activity data, e.g. fuel use, passenger miles**. Published emissions factors are available for many common Scope 3 activities.

If you have identified sources of GHG emissions other than CO_2 (e.g. HFCs and HCFCs from refrigeration equipment, methane and NO_2 emissions from agricultural activities) refer to sector-specific tools and guidance (see **Appendix 2**) and/or seek external advice.

Different customers (and other stakeholders) are likely to ask for different breakdowns of emissions. For example, many customers only want to know about emissions associated with production of their own product lines. **Disaggregating** the data you collect as far as possible will enable you to identify emissions from specific facilities/business units and (ideally) for specific product lines. Investing in **sub-metering systems** may be worthwhile, since these allow you to measure energy consumption within particular areas of your site or by particular items of equipment.

Finally, poor quality **activity data** leads to significant errors in overall emissions data, so ensure that your key activity data is accurate and consistent. See **Section 5.6** for guidance on how to ensure data quality.

3.3.5 Calculate emissions levels from activity data

Once activity data is collected, the next step is to apply the chosen conversion factors or calculation tools, taking care to follow any accompanying guidance. A simple example of applying a conversion factor to electricity consumption is shown in **Box 6** below.

Box 6: Example showing conversion of electricity consumption into CO_2 emissions

Company A's annual electricity consumption in 2008 was **198,000 kWh**. Its electricity is provided through the national grid.

The conversion factor for grid electricity is **0.537 kg CO_2 per kWh** (this is the 2008 Defra conversion factor as reproduced in the Carbon Trust leaflet *Energy and carbon conversions, 2008 update, CLT018*).

Therefore, Company A's CO_2 emissions from electricity consumption in 2008 were:
198,000 x 0.537 = **106,326 kg CO_2**.

3.3.6 Roll up emissions data to the company level

This should be very straightforward for companies with only one (or a few) facilities, where a single person or team collects and processes all the data. For a larger company with multiple facilities, rolling up (i.e. aggregating) data from different facilities is more complicated and needs careful thought. Basically, two approaches are used:

- **Centralised approach** in which individual facilities only collect and report activity data. Calculation/conversion of the activity data into emissions levels is done at the corporate (central) level. This is generally considered the best option as less room exists for calculation errors and only the central team has to be trained to use calculation tools.
- **Decentralised approach** where each facility collects activity data, converts it into emissions data and then reports this data to the corporate level. This approach may be better if substantial differences exist between facilities and/or if you need to report emissions at the facility level.

4. 'Reduce': guidance on reducing carbon emissions

Chapter 4: Summary

Many customers want to see evidence of emissions reductions in their supply chains. Reducing your emissions can also help you cut costs and prepare for future legislation. When planning how to cut emissions, you need to:

- Identify the emissions 'hotspots' for your industry, and the priorities of your key customers;
- Set an appropriate baseline year or period against which to measure emissions reductions;
- Consider whether you want to set emissions reductions targets, and if so, what targets to set;
- Develop an action plan to meet targets/achieve the desired reductions;
- Put in place the specific actions you have identified;
- Consult your employees – they are often best able to identify ways to reduce energy consumption or emissions;
- For the emissions that you cannot reduce, consider buying carbon offsets as part of your overall approach to carbon management.

4.1 Introduction

4.1.1 What do we mean by 'reducing carbon emissions'?

Reducing carbon emissions means cutting the amount of emissions of one or more of the six greenhouse gases covered by the Kyoto Protocol (see **Section 2.2**).

4.1.2 Why bother reducing emissions?

Many customers want to see evidence of emissions reductions programmes and/or actual emissions reductions in their supply chains. Seven out of the nine questionnaires reviewed during the production of this Guide included questions on emissions reductions.

As well as meeting increasing customer demand, making emissions reductions can also help you:

- **Make real cost savings**, particularly through increasing energy efficiency and cutting energy bills;
- **Prepare for future government regulation.** In the UK, the new Climate Change Act means that many suppliers, as well as your customers, are likely to come under direct pressure to cut emissions over the next few years;
- **Qualify for voluntary carbon management initiatives and certification schemes**, which often require members to set and demonstrate progress towards reduction targets (e.g. May Day Network, Carbon Trust Standard). Taking part in such schemes can help demonstrate to your customers and other stakeholders that you are committed to addressing climate change.

Of course, reducing your overall carbon emissions will also mean that you are making a concrete contribution to tackling global climate change. Measuring your emissions is a step in the right direction, but it is the actual cuts in emissions levels that will have real impact.

4.1.3 What this chapter covers

This chapter suggests five key steps to reducing your emissions, drawing on recognised good practice in this area. The key steps described are:

- Identifying industry hotspots and customer priorities;
- Setting a baseline against which to measure emissions reductions;
- Setting reduction targets;
- Establishing an action plan and setting up specific reduction initiatives; and
- Consideration of carbon offsetting as part of your overall carbon management strategy.

4.2 Identifying industry hotspots and customer priorities

Focus on cutting emissions from a few key sources, since this is likely to be most effective. Two key factors to consider when prioritising your efforts are the 'hotspots' or major emissions sources for your particular industry, and the priorities of your key customers. **Sections 4.2.1** and **4.2.2** below covers each of these in turn.

4.2.1 Industry hotspots

Find out what are the typical hotspots or major emissions sources for your industry, and focus your efforts on reducing emissions from these sources. They are likely to make up a substantial proportion of your overall carbon footprint (although of course all businesses are different).

Appendix 3 lists the major emissions sources for selected primary industries and **Box 7** below provides additional sources of information on hotspots for some other industries. Check with your industry association or the Carbon Trust if your industry is not covered.

Box 7: Sources of information on industry 'hotspots' for selected industries

The **Carbon Trust** produces free factsheets and online pages that highlight key emissions sources (and potential emissions reductions to be made) for the following industries (www.carbontrust.co.uk/energy/startsaving/):

- **Agriculture and horticulture** (online page and factsheet). This page also includes specific hotspots for dairy, poultry, cereals, protected horticulture, pigs and potatoes;
- **Ceramics, glass and cement** (online page);
- **Chemicals and chemical products** (online page and factsheet);
- **Construction** (online page);
- **Food, drink and tobacco** (online page and factsheet);
- **Metals and metal products** (online page);
- **Paper products and printing** (online page);
- **Plastics and rubber** (online page);
- **Textiles** (online page).

The **Food and Drink Federation** has also produced a free guide on carbon management, which highlights the key emissions sources for food and drink manufacturers – as well as providing 'top 10 tips' on how to reduce energy consumption in this sector. See: https://www.fdf.org.uk/publicgeneral/carbon_management_guidance_2008.pdf

4.2.2 Customer priorities

Next, find out what are the carbon management priorities of your key customers. Their priorities will be influenced by what is driving their interest in carbon management at the corporate level, which in turn will depend on their industry, business values and other factors. For example:

- **Consumer messaging** – some of your customers may have made claims about the green credentials of specific products/product lines. In such cases, your customer will be particularly concerned about cutting emissions associated with that specific product(s).
- **Efficiency savings** – other customers may be more concerned about improving overall energy efficiency in sites or parts of the business that supply the customer, since this could also generate cost savings. In this case, the emphasis is likely to be on cutting emissions where the greatest cost savings can be made.
- **Legislative drivers** – if customers are mainly concerned about staying ahead of forthcoming legislation, focus on the specific legislative requirements for your industry.
- **Risk management** – customers may have identified certain types of emissions sources and/or parts of the supply chain as particularly high risk. They may therefore be more concerned about the practices of some of **your** suppliers, rather than your own business operations.

So, check the following with your key customers:

- **What emissions reductions do they expect suppliers to make**? What are their targets/objectives/priorities for achieving carbon reductions in the supply chain?
- **What are their corporate level carbon management objectives and reduction targets/priorities?** What are the particular drivers/pressures that they are aiming to address at the corporate level?

4.3 Setting a baseline

4.3.1 Setting a baseline

To set meaningful reduction targets and/or be able to report to customers and others about what emissions reductions you have made, you will normally be expected to set a **baseline date** (year) against which your targets and reduction achievements are compared. There are essentially three approaches:

- **Single year baseline:** the most common and easily understandable approach is to use a single year as the baseline. Generally, you should use the first year for which you have reasonable quality emissions data. Some companies choose instead to use 1990 as the baseline year, to be consistent with the Kyoto Protocol (and UK Government emissions reductions targets/baselines set under the Climate Change Act). However, this is not advised if you do not have reliable emissions data that go that far back.
- **Average annual emissions over several consecutive years:** some companies choose instead to use average emissions levels over several years as a baseline. This approach can help smooth out unusual/unrepresentative fluctuations in emissions levels.
- **Rolling base years:** the third approach is to use rolling base years, where targets/progress are always measured against the previous period of measurement, for example the previous year. This may be attractive if your company is intending to grow through multiple acquisitions over several years, or otherwise undergo continual structural change. However, bear in mind that most emissions trading schemes require a fixed rather than rolling base year against which to set reduction targets and measure progress.

Box 8 under Section **4.4.2** below provides some examples of the three different approaches to setting a baseline year.

4.3.2 Recalculating base year emissions where necessary

To ensure you are comparing like with like, it is good practice to recalculate your base year emissions if:

- Your company undergoes **significant structural changes** that involve a change in ownership or control of facilities/operations, e.g. mergers, acquisitions and divestments; or outsourcing and insourcing;
- There are changes in the **calculation methodology you use** or improvements in the accuracy of activity data or conversion factors you use, which result in a significant impact on base year emissions data;
- **You discover significant data or calculation errors.**

If any of these three conditions apply, please see **GHG Protocol®, Chapter 4: Setting organisational boundaries, pp. 37–39** for guidance on how to recalculate base year emissions.

4.4. Setting reduction targets

4.4.1 Introduction

Many customers want to see reduction targets – four out of the nine questionnaires that were reviewed include questions on this issue. Setting explicit reduction targets can also help to:

- Focus and motivate staff to achieve real reductions;
- Demonstrate leadership and commitment to your customers, and potentially to other key stakeholders.

However, setting and reporting reduction targets is a significant commitment to make, so it is important you consider the implications carefully. If you have a company carbon management policy (see **Section 5.3** below), you should also make sure that your targets support this policy. The rest of this section explains the key decisions that need to be made if you decide to set reduction targets:

- **Decide on target type –** absolute targets, intensity targets, or both?
- **Decide on target boundaries** – which GHGs to include? Which Scope 1, 2 and/or 3 emissions? Which parts of your business?
- **Define target time periods.**
- **Decide on target level.**

4.4.2 Decide on target type

Two types of target are widely used:

- **Absolute targets:** these are usually expressed as a reduction over time in a specified quantity of emissions to the atmosphere, the unit typically being tonnes of CO_2 equivalents (CO_2-eq).
- **Intensity targets:** these are usually expressed as a reduction in the **ratio** of GHG emissions **relative to another business metric**. The business metric can be a measure of the output of the company (e.g. tonnes CO_2-eq per tonne of product, or per kWh), or some other metric, e.g. sales, revenues or office space.

Box 8 below provides some examples of both types of target. **Appendix 4** lists key advantages and disadvantages of using the two different types of target. In particular, bear in mind that relying on intensity targets alone can bring reputational risks. This is because meeting intensity targets may not result in a reduction in your absolute emissions, and so you could be accused of failing to make a real contribution to tackling climate change.

Box 8: Examples of emissions reductions targets

Absolute targets:

- **ABB:** Reduce GHGs by 1% per year from 1998 to 2005 (*rolling base year/targets*).
- **Alcoa:** Reduce GHGs by 25% from 1990 levels by 2010, and by 50% from 1990 levels over the same period, if inert anode technology succeeds.
- **Ford:** Reduce CO_2 by 4% over 2003–2006 timeframe, based on average 1998–2001 baseline (*multiple year average baseline*).
- **Royal Dutch/Shell:** Manage GHG emissions so that they are still 5% or more below the 1990 baseline by 2010, even while growing the business.

Intensity targets:

- **Kansai Electric Power Company:** reduce CO_2 emissions per kWh sold in 2010 to approximately 0.34 kg CO_2/kWh.
- **Miller Brewing Company:** reduce GHGs by 18% per barrel of production from 2001 to 2006.

Source: adapted from the Greenhouse Gas Protocol®, World Resources Institute and World Business Council for Sustainable Development, 2004

4.4.3 Decide on target boundaries

Many companies only set reduction targets for specific parts of their business or for certain types of emissions. However, there are reputational risks involved in doing this, as your total company emissions may go up even if targeted emissions go down (see **Section 4.4.2** above). So, if you only want to set targets for certain parts of your business and/or for specific types of emissions, make sure that this is properly justified and transparent.

In setting target boundaries, consider:

- **Which greenhouse gases?** Your are advised to include CO_2 emissions in your target, plus any of the other six greenhouse gases covered by the Kyoto Protocol for which your company has significant emissions.
- **Which geographical operations?** If you have operations in more than one country, it is acceptable to start off by setting targets for only those countries/regions where you have reliable emissions data. However, you should aim to cover all operations in the long term.
- **Which Scope 1, 2 and/or 3 emissions?** As a minimum, set targets for Scope 1 and Scope 2 emissions. If you decide to set targets for Scope 3 emissions, bear in mind that you may not have much influence over many of your indirect emissions. So, only set targets for those types of emissions where you do have significant influence.
- **Separate targets for different business units?** If your company has diverse operations, consider setting different targets for the different types of business, especially if you are using intensity targets.

4.4.4 Decide on target time periods

Two choices you need to make are:

- **Short- or long-term target?** It may be tempting to set a target completion date for a long time into the future, to allow time for significant capital investment in new, more eco-efficient equipment. However, the size and nature of your company may change substantially over a longer time period. What seems a reasonable target now may become very difficult to meet in, say, ten years' time, especially if you have set an absolute target and your company grows significantly over this period.
- **Single- or multiple-year commitment period?** Do you say (a) "Company X will reduce emissions by 25% by the year 2015, compared to base year 2008", or do you say (b) "Average annual emissions in the period 2013–2015 will be 25% less than in the base year 2008"? (a) is more intuitive, but (b) mitigates against unexpected events in any single year.

4.4.5 Decide on target level(s)

Finally, decide on your target level, taking into account:

- **What you expect to happen to key business metrics** over the target period, e.g. sales, production levels, number of employees, square footage of office/factory space? How do these metrics impact on carbon emissions levels?
- **What are the biggest reduction opportunities** you have identified, and what will be their likely impact on your total emissions/carbon footprint? What factors might prevent predicted reductions being achieved, and how likely are they to occur?

4.5 Establishing an action plan and setting up specific reduction initiatives

4.5.1 Developing an action plan

If you have a company carbon management policy, make sure that your action plan is consistent with this policy and contributes to its aims.

To develop your action plan, a good starting point is to carry out an energy survey to get an initial overview of where CO_2 emissions reductions could be made. This could be done by an internal staff member, or you may decide to commission an external energy consultant to help you. The Carbon Trust[4] suggests the following key steps:

- Assess your overall energy consumption and expenditure at each site;
- Compare your energy consumption/expenditure against any benchmarks that are available for your industry;
- Identify the physical location of key energy-consuming processes, activities – e.g. location of boilers, furnaces, refrigeration units etc.;
- Visit all production sites, paying particular attention to key energy-consuming areas, and list obvious sources of wastage, energy-saving opportunities;
- Divide recommendations into 'no cost', 'low cost' or 'measures requiring capital investment'.

If you have identified significant sources of other greenhouse gases (i.e. other than carbon dioxide), it is advised that you seek industry-specific guidance and/or specialist advice (see **4.5.2** below).

As with any action plan, remember to ensure that you have secured enough resources to implement it (see **Section 5.4)**. Also, invest in staff awareness-raising and training to make sure everyone who needs to be involved is aware of the plan, why it exists, and what they need to do (see **Section 5.5** for guidance on how to do this).

Finally, consider developing a flow chart or organogram to help identify linkages between different carbon reduction initiatives and explain your approach to staff and customers. **Figure 1** provides an example of what this might look like.

4 *Practical energy management overview (CTV023),* the Carbon Trust, 2007

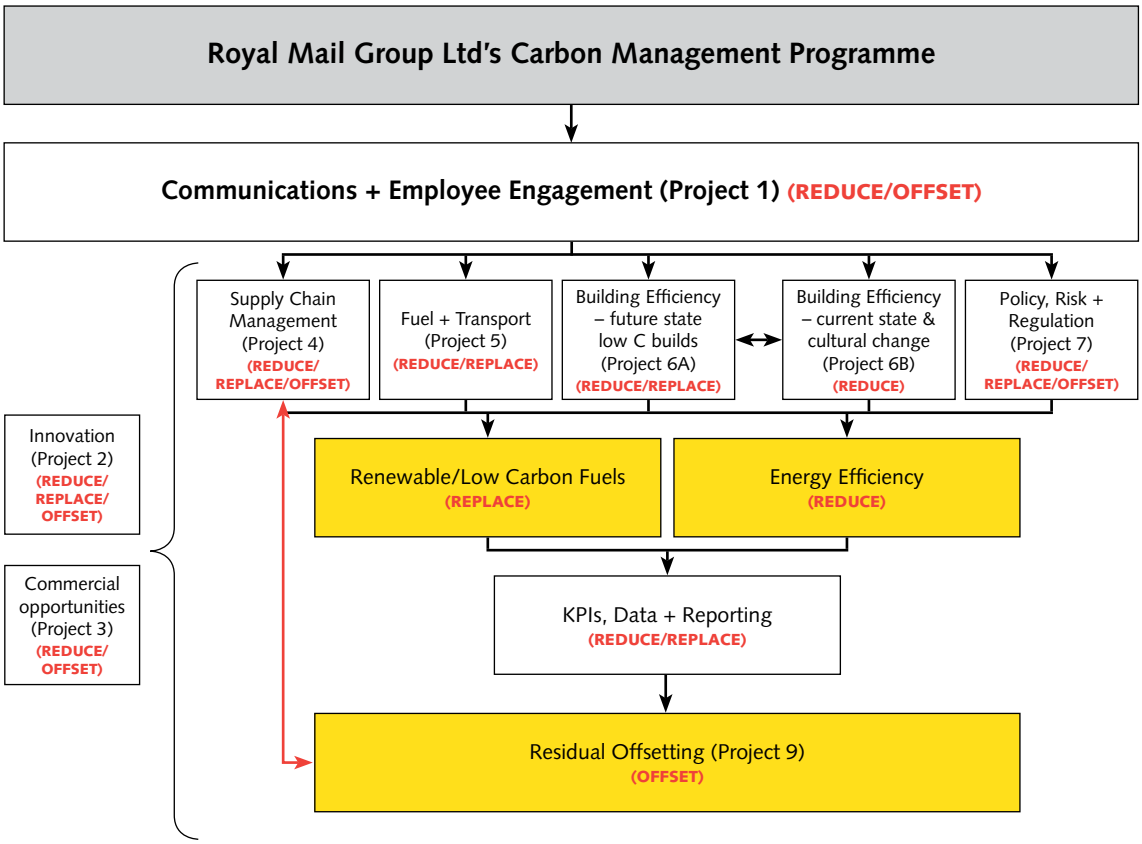

Figure 1: Royal Mail Group Ltd's Carbon Management Programme

4.5.2 Implementing specific reduction initiatives

What specific reduction initiatives you take will of course depend on the industry, so it is important to seek industry-specific guidance and advice:

- **Industry-specific guidance documents – Box 7** above lists a selection of free online guides that provide practical guidance on the most effective reduction initiatives for each industry.
- **Case studies of reduction initiatives made by other companies in your industry. Appendix 5** and **Appendix 6** provide case studies of energy-saving and product-specific initiatives from a range of industries. Further carbon reduction case studies can be found on the Business in the Community (BITC) website (www.bitc.org.uk/resources/case_studies) and on the Carbon Trust website (www.carbontrust.co.uk/energy/whysavecarbon/case_studies.htm).
- **Specialist carbon management/energy advisers. Appendix 7** lists selected UK organisations that provide tailored advice and consultancy on carbon management and energy efficiency.

Sources of Financial Support: UK businesses may be able to get the following financial support for energy-efficient investments:

- **Energy-efficient loans for SMEs:** the Carbon Trust offers unsecured, interest-free loans of £5,000–£100,000 to SMEs in England, Scotland and Wales (subject to eligibility criteria), for energy-efficient initiatives. See: www.carbontrust.co.uk/loans
- **Tax incentives:** The UK Government offers Enhanced Capital Allowances (ECAs) to businesses for buying energy efficient equipment, using a 100% rate of tax allowance in the year of purchase. See www.eca.gov.uk/energy

4.6 Carbon offsets

4.6.1 Introduction

Although few of the questionnaires reviewed covered carbon offsets, offsetting is relevant to this Guide because:

- It is a common component of many corporate carbon management strategies, so some suppliers may be considering offsetting as an option; and
- It is a complex and controversial aspect of carbon management, and therefore requires some explanation.

This section therefore provides an introduction to the subject and explains the key factors to consider when choosing offsets.

4.6.2 What are carbon offsets?

Carbon offsets are carbon emissions credits purchased from a third party to 'offset' or cancel out a specified amount of your own emissions. The third party from whom you buy offsets carries out activities that reduce the amount of CO_2 or other greenhouse gases in the atmosphere, and/or carry out activities that avoid the release of greenhouse gases that would otherwise have occurred. The principle of offsetting works because the impact of GHG emissions is not geographically dependent – so it is possible for example to compensate for emissions generated in the UK by avoiding the production of an equivalent amount of emissions in India.

4.6.3 Using offsets as part of your carbon management strategy

It is generally recognised good practice to only use offsets as a last resort, after all reasonable efforts have been made to reduce the company's direct and indirect emissions. Therefore, to maintain credibility, offsetting should only be undertaken as part of a broader programme to manage and reduce emissions.

Some non-governmental organisations (NGOs) are critical of offsets, since they see offsetting as an easy 'opt-out' for companies who wish to avoid making any substantive environmental improvements to their own business operations. So if you are considering offsets, check with your customers and other key stakeholders about their policies and attitudes towards offsetting.

4.6.4 Selecting the right offset scheme(s)

Offset schemes and products vary considerably, both in terms of the types of product available, and also in terms of the quality or reliability of the 'offset service' you are buying. Simply buying the cheapest offset products available is a risky option, since these products may well be unreliable and lack credibility.

So, take your time to choose the right offset product(s) and scheme. Consider:

- **What type of offsets do you want to buy?** There are many different types of offset projects, from reforestation projects to renewable energy and fuel-switching schemes. Some schemes also offer additional benefits, such as a 'carbon neutral' label, guarantees against the failure of projects, and the opportunity to contribute to broader social and/or environmental benefits. The different product types and their respective advantages and disadvantages are explained in **Appendix 8**.
- **The quality or reliability of the offset scheme.** Until recently, the offset market has not been regulated, and the poor quality of some offset schemes has received significant media attention. However, at the time of writing, the UK Department of Energy and Climate Change (DECC) had just launched a carbon offsetting accreditation scheme, where participating schemes will be accredited by the government. To minimise reputational risk, you should therefore buy offsets from schemes which:
  - **Are accredited under the DECC initiative** (see www.direct.gov.uk/actonco2); and/or
  - **Comply with a recognised independent standard**, such as the Clean Development Mechanism (CDM), Joint Implementation (JI) scheme, Voluntary Gold Standard, Climate Group Voluntary Carbon Standard, Plan Vivo or the Climate, Community and Biodiversity Standards (CCB) scheme.

Accreditation/compliance with any of the above standards means that the offset scheme should comply with recognised minimum quality requirements (you can find further information about these minimum requirements in **Appendix 9**).

For a list of offset providers/retailers and an independent assessment of their relative merits, see the recently published *Environmental Data Service (ENDS) Guide to Carbon Offsets,* which is available for purchase (£75) from www.endscarbonoffsets.com

For further guidance on selecting offset products, schemes and providers, see *The Carbon Trust three stage approach to developing a robust offsetting strategy (CTC621), 2006.* (Download the guide from www.carbontrust.co.uk/publications/publicationdetail?productid=CTC621)

5. 'Manage': guidance on management systems

Chapter 5: Summary

Customers are increasingly concerned about the **credibility** of emissions data and reduction plans being reported by their suppliers, and good management systems are essential to maintain credibility. Effective management systems also improve the efficiency of your carbon management activities. To develop good management systems, you need to:

- Build a solid business case for carbon management;
- Allocate responsibility and resources for carbon management;
- Consider developing a carbon management policy;
- Engage and incentivise your employees;
- Develop systems and procedures to ensure the quality of your emissions data;
- Regularly review progress on reducing emissions;
- Consider getting your emissions data verified; and
- Consider public disclosure of your emissions data and reduction plans.

5.1 Introduction

5.1.1 What do we mean by 'management systems'?

By management systems, we mean the policies, frameworks and procedures that are needed to ensure effective and credible carbon management.

5.1.2 Why bother with management systems?

Customers are increasingly concerned about the credibility of suppliers' emissions data and reduction plans. About half of the questionnaires we reviewed included questions on external verification and public reporting of suppliers' emissions data and reduction plans. To maintain credibility, you need both to ensure the quality of your emissions data and be able to demonstrate emissions reductions over time. Both depend on having effective management systems in place.

Good management systems also can help you:

- **Increase the efficiency of your carbon management programme;**
- **Meet the requirements of independent carbon management and CSR schemes**, including the Business in the Community Corporate Responsibility (CR) Index, the Carbon Trust Standard and the Carbon Disclosure Project questionnaire. All three schemes include specific criteria/questions on management systems.

5.1.3 What this chapter covers

The rest of this chapter provides guidance on the following aspects of management systems:

- Building a business case for carbon management;
- Developing a carbon management policy;
- Allocating responsibility and resources (human and financial);
- Engaging and incentivising employees;
- Developing systems and procedures to ensure data quality;
- Monitoring progress on reducing emissions;
- Verification; and
- Public reporting/disclosure.

5.2 Building a business case for carbon management

As a first step, build a strong business case for taking action on carbon. This will help you get the financial and human support you need to manage carbon effectively. Build your business case around the following three arguments:

- Customers are increasingly interested in supply chain carbon management;
- Reducing emissions can cut costs significantly;
- Many UK companies may soon be required by law to measure and reduce their carbon emissions.

Strengthen your case by:

- **Using evidence of cost savings made by other companies** to back up your case – see **Box 1** in Section **2.3.2** for some examples. Further company case studies can be found on the websites of Business in the Community (BITC) (www.bitc.org.uk/resources/case_studies) and the Carbon Trust (www.carbontrust.co.uk/energy/whysavecarbon/case_studies.htm).
- **Making estimates of potential cost savings your own company could make** by reducing emissions.
- **Getting an external expert** to help make the case to your Board or other decision makers. This could be an independent carbon management expert, or a carbon management 'champion' from another company.

5.3 Producing a carbon management policy

Consider developing a formal carbon management policy for your business. This can help you:

- Communicate senior management commitment internally, which in turn can help increase staff buy-in to carbon management commitments and activities;
- Demonstrate commitment and leadership on carbon management to your customers and other key stakeholders;
- Develop and review your carbon management strategy and action plan, by providing a clear and transparent framework for doing so.

Appendix 10 provides a checklist from which to develop your own carbon management policy.

Note: it may be more effective to integrate your carbon management policy into existing, wider business policies, rather than develop a stand-alone policy. Integrating the policy makes carbon management seem more relevant to employees' day-to-day responsibilities, which can help to mainstream carbon management within the business.

5.4 Assigning responsibility and resources for carbon management

As with setting up and maintaining any new area of corporate strategy, make sure that you:

- **Obtain senior level commitment** to key carbon management goals and targets, preferably at Board level:
  - Use the business case you have built (see **Section 5.2** above) to get their commitment;
  - Find out if any Board members have a personal interest in carbon management or environmental issues, and get them on-side to help champion the case.
- **Secure sufficient financial resources** to implement your action plan and ensure you meet any reduction targets that you publish.
- **Ensure adequate human resources are allocated** to carbon management. If carbon management responsibilities are being integrated into existing roles, ensure that the relevant staff are allocated enough time to spend on these responsibilities. This may mean reviewing their job descriptions. Allocated staff also need the necessary skills and knowledge to do the job. Set aside time to train existing staff, and consider bringing in specialists to support your team.
- **Allocate clear roles and responsibilities** to the staff involved, which will depend on the characteristics of your company. **Box 9** shows how carbon management responsibilities might typically be allocated within a company.

Box 9: Typical allocation of responsibilities for carbon management

Facilities/operations manager

- Overall responsibility for carbon management programme;
- Survey of inventory and energy use;
- Ongoing monitoring and target-setting;
- Technical aspects of carbon management.

Financial manager

- Collation of carbon management statistics and production of reports;
- Quantifying energy and other cost savings.

Purchasing manager

- Applying carbon management criteria to selection of suppliers and purchasing of goods;
- Negotiation of energy supply contracts.

Marketing manager

- Raising staff awareness;
- Promoting results internally and externally.

Source: Adapted from Energy Management Strategy (CTV022), the Carbon Trust, 2007

5.5 Engaging and incentivising employees

5.5.1 Why engage employees?

Two main reasons for engaging your staff on carbon management are to:

- **Increase the effectiveness of your corporate carbon management policies and programmes**. Engaging your staff is essential to enforce corporate carbon management policies, and help achieve overall corporate emissions reductions goals and targets. This is particularly important where meeting targets requires staff to change their behaviours, e.g. by switching off electrical equipment or recycling.
- **Extend the impact beyond your company.** Engaging employees can help to reduce your company's Scope 3 (indirect) emissions that arise, for example, from employees' commuting, and can encourage emissions reductions in the wider community. Whether or not this is relevant to your company depends on what scope of emissions you are targeting.

5.5.2 Employee engagement – key components

The following three components are key to your employee engagement programme:

- **Raise awareness of carbon management**. Do your employees understand why carbon management is important to your company, what your company's carbon management policies, goals and targets are, and what they can (or should) do to help achieve these goals? You can raise awareness by:
  - Putting posters and leaflets in key communal areas;
  - Adding a carbon management section on the company intranet;
  - Asking for a regular agenda item at staff meetings;
  - Incorporating carbon management into new employee induction sessions.
- **Motivating/incentivising employees** – make carbon management worth their while. For example:
  - Formally include carbon management responsibilities in their job descriptions;
  - Build carbon management deliverables into individual and team annual objectives and appraisals;
  - Set up emissions reductions competitions between teams or individuals, and recognise and reward the winners.
- **Developing the requisite knowledge and skills** – make sure staff are given the necessary information and skills to know **what** to, and **how** to do it.

5.5.3 Examples of employee engagement

The table below shows how three different companies are engaging their employees on carbon management:

Company	*Employee Engagement Initiatives*
United Utilities (owner and operator of water, waste-water, electricity and gas networks in the UK and overseas)	**The 'Think Carbon' employee engagement programme** United Utilities (UU) has developed a network of nearly 40 'carbon champions' who represent all areas of the business and perform the role of carbon advocate within their business unit. To date, these carbon champions have: • Developed team-specific carbon plans, and individual carbon commitments, e.g. turning off IT equipment each night, car sharing, taking public transport; • Incorporated carbon measures within team scorecards; • Identified suitable projects for UU's £1 million carbon funding scheme.
Lloyds TSB (a UK-based financial institution)	**Inspiring employees to champion resource efficiency and staff behaviour change** As part of the strategy to harness the energy and enthusiasm of environmentally aware staff and encourage action to drive resource efficiency in the business, Lloyds TSB worked with Global Action Plan to pilot an Environment Champions Programme of activity in one office building: Following one day of training, the champions: • Worked with the local facilities management to design/implement a simple behaviour change programme to encourage reductions across the building in e.g. energy usage, contamination of recycling points, paper use; • Held visible and high impact activities to encourage personal action: e.g. public bin rummages, visual information displays in prominent places, talks and presentations by senior executives with staff, sponsored mugs, reusable bags; • Took behavioural baseline measurements to support traditional measurements for energy and waste. After 6 months they celebrated 70% reduction in plastic cup waste, only 2% waste contamination of recycling points, over 20% reduction in energy use. The group continues to run building activities and recruit new members to maintain the current culture.
Serco Leisure (UK company managing leisure centres on behalf of local authorities and trusts)	**Encouraging entrepreneurship to save energy** To engage staff on meeting corporate energy reduction targets, Serco Leisure have: • Introduced a staff suggestion scheme – 'Big Ideas' – which led to the use of bubble wrap to insulate swimming pool filters, an innovation which makes calculated savings of up to 696,000kWh/£20,000 per filter, per annum; • Created competition between sites to reduce energy use, through league tables and incentive schemes; • Communicated the importance of energy saving through emails, staff meetings, workshops and notice boards.

5.5.4 Sources of support

The following organisations provide support to UK companies on employee engagement programmes:

- The **Global Action Plan**, a UK-based environmental charity, has 15 years' experience working with companies to bring about behavioural change. They can provide external facilitators who work with your company to develop, implement and evaluate a tailored employee engagement programme (their Environmental Champions Programme). They also provide an online toolkit for companies that already have an internal department/champion who can facilitate the process in-house. See www.globalactionplan.org.uk/services.aspx for further information.
- The **Carbon Trust** has published a range of awareness-raising posters, as well as a pack providing specific guidance and tips on engaging employees on carbon management (*Creating an awareness campaign*, CTG001, downloadable from: www.carbontrust.co.uk/Publications/). All are available free of charge from the Carbon Trust.

5.6 Developing systems and procedures to ensure data quality

5.6.1 Why is data quality important?

Ensuring the quality of your emissions data is important because:

- Customers and other stakeholders increasingly want to know how reliable your data is;
- Senior management want to know that the emissions data they are using to set targets and make investment decisions are robust and reliable.

Pay particular attention to your data quality if:

- You publicly report your emissions data, or intend to do so in the future;
- You are considering getting your emissions data verified externally.

5.6.2 How to ensure data quality

To ensure the quality of your emissions data:

- **Use robust and appropriate calculation methods.** Select appropriate calculation methods or conversion factors for each type of emissions, and apply these tools/conversion factors accurately.
- **Ensure the quality of your activity data.** Set up consistent and replicable data collection procedures, so that you or another staff member could follow exactly the same procedure in the future.
- **Set up robust data management systems and procedures**. Set up effective institutional, managerial and technical procedures for preparing your emissions data. A system is only as good as the people who operate it, so make sure that responsibilities and roles are clearly allocated to individual staff members, and that all staff who maintain these systems have the skills and information to do their job properly.
- **Document all methods and procedures.** Accurately record all your data collection and calculation methods, any assumptions you make in your calculations, as well as any estimates you make and on what basis these were made. Good documentation ensures that consistent methods are used from year to year. It also allows you to track sources of errors and is essential if you are considering external verification of your data. Finally, it helps ensure the credibility of your system to customers and other stakeholders.
- **Perform regular quality checks.** Build in regular (e.g. yearly) checks on the four elements above. Larger companies may need to design formal quality assurance systems – see **Chapter 7 of the Greenhouse Gas Protocol®** for further guidance. For smaller companies, carrying out a few regular spot checks is likely to be adequate. For example:
    - **Check for any new calculation tools/conversion factors available** for your sector – are they more accurate than the ones you are currently using?
    - **Compare current emissions data with historical data.** Is your current data comparable to previous data sets? Can any substantial variations be explained by known external variables?

- **Check staff knowledge** – do staff know what data they should be collecting/processing and how the data will be used?
- **Check technical procedures** – are calculation tools (e.g. equations in spreadsheets) accurately set up?
- **Check documentation** – are all procedures being accurately and consistently documented?

Box 10 below shows how United Utilities manages its carbon emissions data.

Box 10: United Utilities

United Utilities (UU) have measured and reported their carbon footprint for many years. Initially they took advice from external consultants and are now self-sufficient. Their approach is in harmony with latest carbon accounting standards. Using UK Government-approved conversion factors they regularly check data quality and compare their latest results to previous years. Despite the very complex and broad-ranging nature of the company (in scope and geographical spread) they have adopted an evolving Microsoft Excel spreadsheet approach to data collection and manipulation, it being a standard industry tool that also allows for flexibility and growth. Spreadsheets offer accessibility to a wider range of participants as opposed to bespoke software. Given UU's high number of data sources, data capture and its full appreciation is a challenge, but meeting the data-source providers offers an opportunity to discuss carbon issues and is of huge benefit to both the practitioner and the carbon accountant. They have standard templates to capture the data, which frequently saves time and effort in compiling their annual report. UU have their carbon data independently verified.

5.7 Reviewing progress against reductions targets

Set up mechanisms to regularly review your progress towards reducing emissions, particularly if you have published emissions reductions targets. For smaller companies, it is probably adequate to hold regular review meetings with relevant personnel. These meetings should assess progress made against reductions targets and annual reductions plans, and agree what changes need to be made to stay on target. Larger companies will need more formal and systematised review mechanisms and procedures – see **Box 11** below for an example of review mechanisms used by Kingfisher.

Box 11: Kingfisher plc – 'Steps to Responsible Growth'

Kingfisher, a leading home improvement retail group in Europe and Asia, with brands such as B&Q and Castorama; treats information on climate change and carbon management as part of its overall business management processes. It measures and monitors emissions reductions procedures through its environmental and social management system 'Steps to Responsible Growth'. This system was developed by Kingfisher for its operating companies and consists of a number of online questions around 14 key issues (such as climate change, transport, sustainable materials and water, waste, product design, timber and packaging). Individual operating companies establish a minimum action plan and policy targets and report their progress twice yearly. Progress is also monitored by external auditors and an internal audit system that looks at the data collection methods. Results are reported to the Board and included in Kingfisher's Annual Report and Corporate Responsibility (CR) Website. An independent stakeholder panel provides input into Kingfisher's CR programme and provides an assurance statement for the CR Website Report.

5.8 Getting external verification of your emissions data

5.8.1 What is (external) verification?

Verification is an objective assessment of the accuracy and completeness of the carbon management information you report, and how this information conforms to the carbon accounting standards/ methodologies that you claim to be using.

External verification is where verification is done by an external organisation. Verification can also be done internally by individuals or parts of your company who are not normally involved in carbon management. However, this section focuses only on external verification since this is the focus of customer questionnaires.

At present, there is no single widely accepted process for verification, nor a single accreditation system for verifiers (although ISO 14064-3 may be emerging to fill this gap – see **Section 5.8.4** below). So, if you are considering verification, it is important to weigh up the advantages and disadvantages of different options before you choose a particular verifier or verification process.

5.8.2 Why bother with external verification?

External verification is mainly relevant only if you are publicly reporting your emissions data. Benefits are:

- **Increased credibility and trust of customers and key stakeholders**. Half of the carbon questionnaires reviewed asked questions about external verification. Since the quality of emissions data and methods used varies widely, customers and other stakeholders increasingly seek independent assurance that your data is reliable.
- **Increased senior management confidence**. External verification is likely to increase senior management's confidence that the data they are using to set targets and make investment decisions are robust and reliable.
- **Compliance with some regulatory and voluntary schemes.** Many regulatory and voluntary schemes require or encourage external verification of emissions data, e.g. European Union Emissions Trading Scheme (EU-ETS), Carbon Disclosure Project.

5.8.3 Who can verify?

A growing number of organisations offer GHG emissions verification services, including many of the large accounting firms. However, at present there is no universally recognised accreditation system for GHG verifiers, so make sure you check credentials before choosing a verifier. Check that the verifier has:

- Experience and competence specifically in GHG verification;
- A good understanding of GHG issues, including understanding and practical experience of GHG emissions calculation methodologies;
- An understanding of your industry; and
- Objectivity, independence and credibility in the eyes of your customers and key stakeholders.

A good place to start is the list of verification bodies accredited to verify for the EU Emissions Trading Scheme (EU-ETS) Phase 2, which can be found at: www.ukas.com/about_accreditation/accredited_bodies/certification_body_schedules.asp (go to the pdf document linked under the section 'Verification for EU Emissions Trading Scheme (EU-ETS)').

Finally, remember to:

- **Check with your key customers** if they have any specific requirements for verifiers, or whether they recommend specific organisations.
- **Scrutinise the individual(s) as well as their organisation**. The quality of the verification process will depend very much on the individuals involved, especially the lead verifier. So, check the credentials of the lead verifier as well as of their organisation as a whole.
- **Assess what you are paying for.** Remember that a cheap verification service is unlikely to be as comprehensive or rigorous as others, and may therefore be less credible.

5.8.4 What does/should the verification process involve?

The International Standards Organisation **ISO 14064-3** standard, released in 2006, attempts to define what a GHG verification process should consist of, and is probably the closest we have to a globally recognised standard for GHG verification. However, not all verifiers follow this standard and may use quite different verification processes.

ISO 14064-3 is based on key principles taken from best practice in financial accounting and environmental auditing. It also draws on emerging GHG verification experiences from mandatory schemes such as the Kyoto Protocol Clean Development Mechanism and the UK Emissions Trading Scheme. The verification process has three parts:

- **Evaluation of the information system.** Could any parts/areas of the system potentially lead to a misstatement of emissions data (i.e. to systems risks)?
- **Evaluation of the emissions data.** Did any of the identified systems risks lead to any actual misstatements?
- **Are the data and statements consistent with the standard and methodologies** that the company claims to follow?

5.9 Public disclosure of emissions and other carbon management information

5.9.1 Why report publicly?

Public reporting of your emissions data and and/or reductions targets is not a commitment to be taken lightly, as you are opening your company up to a greater risk of critical scrutiny. So, before committing to public disclosure, make sure you are confident about your data and targets, and that your data management systems and procedures are robust.

Public reporting can help you:

- **Achieve positive recognition** by your customers and other key external stakeholders. Public reporting is seen as a 'gold standard' by many non-government organisations.
- **Prepare for likely future legislation.** In the UK, company reporting of carbon emissions may well become mandatory in the next few years. In the meantime, there will be Government guidance issued later this year on how and what you should report on your carbon emissions.

5.9.2 What information needs to be reported?

At present, there is no universally accepted standard for reporting carbon emissions data or other carbon management information. Nevertheless, there is growing consensus on what good practice looks like, and we outline the key elements below.

Reporting emissions data: When reporting your emissions data, make sure that you include the information specified in:

- The **Greenhouse Gas Protocol® Corporate Standard** 'required information' for company reporting, reproduced in **Box 12** below;
- The **ISO 14064-1** standard – the section on reporting;
- The **Carbon Disclosure Project** (CDP) questionnaire 'Minimum standard' questions under **Section 2 GHG Emissions Accounting** (www.cdproject.net/questionnaire.asp).

For UK companies, you should also check Defra's forthcoming voluntary reporting guidelines when they are published (due October 2009).

The carbon reporting requirements in ISO 14064-1, the CDP questionnaire[5] and the Global Reporting Initiative (GRI) framework are all very similar to, and based on, the required information for reporting given in the GHG Protocol®. The Defra Guidelines are also intended to be compatible with the GHG Protocol®.

5 However, the CDP questionnaire does request some additional information not included in the GHG minimum standards (e.g. breakdown of emissions from countries in Annex B to the Kyoto Protocol http://unfccc.int/kyoto_protocol/items/3145.php, and information on emissions trading).

Box 12: GHG Protocol® Corporate Standard 'required information' for reporting

Description of the company and inventory boundary

- An outline of the organisational boundaries chosen, including the chosen consolidation approach;
- An outline of the operational boundaries chosen and, if Scope 3 is included, a list specifying which types of activities are covered;
- The reporting period covered.

Information on emissions

- Total Scope 1 and 2 emissions independent of any GHG trades such as sales, purchases, transfers, or banking of allowances;
- Emissions data separately for each scope;
- Emissions data for all six GHGs separately (CO_2, CH_4, N_2O, HFCs, PFCs and SF_4) in metric tonnes and in tonnes of CO_2 equivalents;
- Year chosen as base year, and an emissions profile over time that is consistent and clarifies the chosen policy for making base year emissions recalculations;
- Appropriate context for any significant emissions changes that trigger base year emissions recalculation (acquisitions/divestitures, outsourcing/insourcing, changes in reporting boundaries or calculation methodologies etc.);
- Emissions data for direct CO_2 emissions from biologically sequestered carbon (e.g. CO_2 from burning biomass/biofuels), reported separately from scopes;
- Methodologies used to calculate or measure emissions, with a reference or link to any calculation tools used;
- Any specific exclusions of sources, facilities and/or operations.

Source: pp 63–64, Chapter 9, The Greenhouse Gas Protocol®: a corporate accounting and reporting standard (Revised Edition), World Business Council for Sustainable Development and World Resources Institute, 2004.

Reporting other aspects of carbon management: Many companies also choose to report on other aspects of carbon management as well as their emissions data. This may include, for example, their reductions targets and progress towards meeting them, any specific initiatives taken to reduce emissions, and the management systems they use to support carbon management. For guidance on what information to include, refer to the **Carbon Disclosure Project** questionnaire – in particular, see **Section 3 (Performance), Section 4 (Governance)** and **Section 5 (Scope 1 and 2 emissions split by business category)**.

5.9.3 Where/how to report?

There are basically two options (which are not mutually exclusive):

- **Reporting via existing company communications channels**. You can report carbon management information in your company annual report, on your website and/or in your corporate social responsibility (CSR) report – see for example Nike (http://nikeresponsibility.com/?#crreport/considered_design), Gap (www.gapinc.com/public/SocialResponsibility/sr_enviro_energy.shtml) and Next (www.nextplc.co.uk/nextplc/corporateresponsibility/corprespreport/). You don't have to include all the information listed in **Section 5.9.2** in every report. For example, you can include top-level figures and a summary in your annual report, with a reference to the detailed information published in your CSR report or on your website.

- **Reporting via external CSR/carbon management reporting mechanisms.** While this normally requires a standard format for reporting, this approach offers the credibility of being associated with an independent scheme. The main globally recognised carbon-specific reporting mechanism is the Carbon Disclosure Project (www.cdproject.net). In the UK, you can also join the May Day Network and report annually via this Network (www.bitc.org.uk/environment/the_princes_may_day_network_on_climate_change/index.html).

6. 'Extend': guidance on extending carbon management down the supply chain

Chapter 6: Summary

Many customers are increasingly interested in extending carbon management beyond first-tier suppliers. They are interested particularly if they are making low carbon claims about specific products or they see significant carbon-related risks further down the supply chain. What is more, they are likely to enlist the help of first-tier suppliers. To extend carbon management down your supply chain, you need to:

- Choose which of your suppliers to work with;
- Communicate your carbon management aims and expectations to these suppliers; and
- Provide feedback, ongoing support and incentives for your suppliers to help them improve.

6.1 Introduction

6.1.1 What do we mean by 'extending carbon management down the supply chain'?

Extending carbon management down the supply chain is about working with ***your*** suppliers to manage their carbon emissions. If you outsource any of your business operations, this includes engaging with the sub-contractors who manage these operations on your behalf.

6.1.2 Why bother with supply chain emissions?

Customers are increasingly interested in extending carbon management beyond their first-tier suppliers, as:

- **Consumers are increasingly concerned about the carbon footprint of the products they buy,** so retailers are responding by making low carbon claims about specific high-profile products. This means looking at the full product life cycle, so involves measuring and reducing emissions through the supply chain.
- **Understanding your suppliers operations can lead to reduced costs.** By working with your supply chain on carbon you can develop an enhanced understanding of their operations and of your supply chain relationship and operations. You may be able to highlight opportunities for improving operations and systems with suppliers, which may result in cost reductions.
- **Supply chains can create large carbon risks.** Consumers and other stakeholders may be more concerned about carbon emissions from the supply chain than emissions from your own operations. This may be the case if the supply chain generates high levels of emissions (e.g. about 50% of greenhouse gas emissions in the food chain come from primary production, i.e. agriculture, as opposed to only 10% from food manufacture), and/or there is high consumer awareness about a particular source or type of emissions from goods or services within the chain (e.g. 'food miles' associated with air freighting of fresh produce).

Your suppliers' emissions count as part of your own Scope 3 emissions. So, if you have committed to measuring and reducing your Scope 3 emissions, managing supply chain emissions should be a key component of your carbon management strategy.

6.1.3 What this chapter covers

The rest of Chapter 6 provides guidance on:

- Choosing/prioritising which suppliers to engage with;
- Communicating with your suppliers; and
- Following up with your suppliers – providing feedback, ongoing support and incentives to improve performance.

6.2 Choosing (prioritising) which suppliers to engage with

Unless you only have a handful of suppliers, select specific suppliers to engage with in the first instance, rather than aiming to work with all your suppliers at once. When choosing which suppliers to work with, consider:

- **The level of risk**. Prioritise high-risk suppliers or sectors, i.e. those suppliers/sectors that have high carbon emissions and/or present a particular reputational risk to your company.
- **Your ability to influence their actions**. Prioritise key suppliers (i.e. suppliers from whom you buy a significant proportion of their overall output), direct suppliers (i.e. suppliers you do business with directly rather than through an agent or distributor) and, perhaps, suppliers that are geographically close to you.
- **The level of impact.** Consider targeting your top 10 suppliers by turnover. This often is the easiest way to make large cuts in total supply chain emissions.
- **Potential opportunities.** Prioritise suppliers or parts of the supply chain. This provides you with the biggest opportunities to cut emissions and/or make cost savings.

Finally, think about long-term versus short-term aims. Which categories or suppliers are strategically important? Which provide some quick wins? These may not be the same suppliers, and each group of suppliers may require a different approach.

6.3 Communicating with suppliers

Communicating effectively with your suppliers requires much more than simply sending out a questionnaire. So, plan your communications carefully, and make sure you have enough money and time to do what you plan. Communicating with your suppliers is an ongoing, rather than a one-off, exercise particularly if you have a high turnover of suppliers.

6.3.1 What to communicate

Tell your suppliers:

- Why you are asking them about carbon emissions;
- How good carbon management can benefit their businesses;
- Which suppliers you have selected to engage with, and why;
- What you will do with the information they provide;
- What you do and don't expect from them, including:
    - What are the timescales for compliance? Do they have to comply immediately? If not, by when?
    - Which questions/issues are considered 'must do', and which are considered optional?
- What are the implications of good/poor performance?
    - What if they don't comply? Will they get penalised?
    - What if they do comply? Do they get rewarded, for example through getting preferred supplier status?
- How to measure and reduce their emissions. Provide practical guidance and support on how they can meet your requirements.

6.3.2 How to communicate

To communicate the messages in **Section 6.3.1**, consider:

- ***Who* should communicate?** Who has most credibility with your suppliers? Buyers typically have more influence than technical managers, so get your buyers on board and ask them to help reinforce key messages with your suppliers.
- **Running face-to-face seminars or workshops.** Face-to-face sessions are a good way to raise awareness initially and get buy-in from suppliers. They also work well for exchanging good practice further down the line. If you don't have the resources to run workshops for all suppliers, prioritise your key suppliers and/or run a few workshops in locations that have the highest concentration of suppliers.
- **Setting up a carbon management section on your intranet**. This can be effective for exchanging good practice examples and tips, and providing easy access to relevant guidance tools and resources, particularly if you have suppliers in many different countries.
- **Joining forces with other companies**, particularly if you share many common suppliers.
- **Using questionnaires**, either for initial risk assessment, and/or as a regular self-assessment tool for suppliers. Questionnaires can be a useful tool not only for collecting information, but also for communicating what issues are important to your company. However, don't rely on questionnaires alone – they will only be effective if they are supported by other methods of communication.

Box 13 below describes how Marks & Spencer has engaged their suppliers on carbon management.

Box 13: How Marks & Spencer has engaged their suppliers to reduce carbon emissions

Marks & Spencer is one of the UK's leading multiple retailers, selling food, clothing and homeware products. The company has a very diverse and complex supply chain consisting of 2,000 suppliers and 20,000 farmers locally and internationally – a chain that contributes to a large part of the company's overall carbon footprint. Conscious of this, Marks & Spencer has introduced a range of initiatives to encourage their suppliers to reduce emissions. They have:

- Launched their **Supplier Exchange website**, which provides practical guidance on reducing emissions and good practice case studies. To date, the website has been used by over 1,500 suppliers in 36 countries;
- Included carbon management as a theme within their series of **'Plan A' conferences** for suppliers;
- Supported the development of **textile 'eco-factories'** in the UK, China and Sri Lanka, using experience gained from their pilot eco-stores to improve energy efficiency in the factories through better building design, construction and resource use;
- **Reduced 'food miles'** by sourcing seasonal food more locally, and by working with suppliers to understand how to improve efficiency of deliveries.

Source: www.bitc.org.uk/resources/case_studies

6.4 Following up with suppliers

It is important to follow up with your suppliers to maintain the momentum and ensure that their improvements in carbon management are sustained over time.

6.4.1 Assessing questionnaire responses and providing feedback

Review questionnaire responses and provide feedback to suppliers as soon as possible, highlighting:

- Areas of good performance;
- Areas requiring improvement; and
- How they compare to other suppliers in the same sector and country.

6.4.2 Agreeing and monitoring improvement plans

For areas requiring improvement, negotiate and agree improvement plans with each supplier, making sure the improvement plans:

- **Take account of the financial and other constraints** faced by each supplier;
- **Set appropriate time-scales for making improvements** that take into account whether actions are quick-wins requiring no or low cost, or whether they require longer-term investment
- **Allow suppliers flexibility** in how they meet your requirements. Being too prescriptive can put suppliers off or prevent them from achieving the same results at lower cost.

6.4.3 Providing ongoing support and guidance

Make sure you provide ongoing support and guidance to your suppliers on how to measure and reduce their emissions. Allow for churn in your supply chain, and ensure you brief new suppliers and provide guidance once they are contracted.

See **Section 6.3.2** for examples of how to provide ongoing support and guidance to your suppliers. In addition:

- **Regularly update any carbon management section on your website** with new web links and resources;
- **Consider organising regular workshops** for your suppliers to share carbon 'breakthroughs' with each other. Alternatively, consider focusing each workshop around particular carbon reduction challenges raised by your suppliers, and bring in external experts to provide advice on how to overcome these challenges.

6.4.4 Integrating carbon management criteria into the buying process

Ideally, you should also ensure that carbon management criteria are integrated into your buying process, so that suppliers have an incentive to perform well on carbon management. This means committing to:

- **Screening new suppliers** – ensuring that only those who demonstrate a commitment to carbon management get awarded a contract in the first place;
- **De-listing suppliers who consistently fail** to meet agreed targets on carbon management;
- **Rewarding good performance** with larger orders, preferential supplier status or other commercial benefits.

Acronyms

BITC	Business in the Community
CDM	Clean Development Mechanism
CDP	Carbon Disclosure Project
CERs	Certified Emissions Reductions
CHP	combined heat and power
CO_2	carbon dioxide
CO_2-eq	carbon dioxide equivalent
CSR	corporate social responsibility
DECC	Department of Energy and Climate Change (UK)
Defra	Department for Environment, Food and Rural Affairs (UK)
ECA	Enhanced Capital Allowances
EU-ETS	European Union's Emissions Trading Scheme
GHG	greenhouse gas
GHG Protocol®	Greenhouse Gas Protocol®
GRI	Global Reporting Initiative
HCFCs	hydrochlorofluorocarbons
HFCs	hydrofluorocarbons
HRH	His Royal Highness
JI	Joint Implementation
KPI	key performance indicator
kWh	kilowatt hours
LPG	liquefied petroleum gas
MWh	megawatt hours
PFCs	perfluorocarbons
SEDEX	Supplier Ethical Data Exchange
SMEs	small- and medium-sized enterprises

Glossary

Absolute target	A target which specifies a reduction in **absolute** emissions over time, e.g. to reduce CO_2 emissions by 25% below 1994 levels by 2010 (see **Section 4.4.2**).[1]
Activity data	Data that indicates the level or quantity of an emissions-generating activity, e.g. kWh of electricity consumed, or kilometres travelled by a lorry. Emissions levels are usually calculated by collecting activity data, which are then converted into emissions data using conversion factors or tools. See **Section 3.3.3**.
Additionality (of carbon offsets)	Additionality is a key requirement for any carbon offset. It refers to the principle that emissions reductions represented by an offset should always be **additional** to what would have happened in the absence of the project. See **Appendix 9**.
Baseline year (or base year)	The year against which a company's emissions are tracked over time (see **Section 4.3**).[1]
Calculation tool/ approach	A tool used to convert activity data into carbon emissions levels. See **Section 3.3.3**.
Cap-and-trade	A system or scheme that sets an overall emissions limit or 'cap', allocates emission allowances to each participant in the scheme, and allows them to trade these allowances with each other.[1]
Carbon emissions	Emissions of the six greenhouse gases covered by the Kyoto Protocol.
Carbon footprint	The total set of greenhouse gas emissions caused by an organisation, individual, event or product. It is normally expressed in tonnes of carbon dioxide equivalent (CO_2-eq).[3]
Carbon management	The measurement and management of emissions of the six greenhouse gases covered by the Kyoto Protocol.
Carbon offset	Carbon emissions credits purchased from a third party to 'offset' or cancel out a specified amount of your own emissions. See **Section 4.6.2**.
Climate change	The increase in the average temperature of the Earth's near-surface air and the oceans since the mid-twentieth century, and its projected continuation. There is now widespread scientific consensus that most of this observed temperature increase is due to greenhouse gas emissions caused by human activity.
Control approach (financial *or* operational control)	One of two broad approaches to setting organisational boundaries for measuring carbon emissions. Under the control approach, a company accounts for 100% of the carbon emissions from operations over which it has financial or operational control. See **Section 3.2.3.**[1]
Conversion factor	Conversions factors enable conversion of activity or energy use data (e.g. kWh of electricity consumed), into the amount of carbon dioxide emissions that will result. Also called **emissions factor**. [3]

Customer	Since this Guide is written primarily for first-tier suppliers, the term 'customer' is used to refer to retailers or other companies to whom suppliers are supplying product.
Direct emissions	Emissions from sources that are owned or controlled by the company. Equivalent to **Scope 1 emissions.**[1]
Emissions factor	See **Conversion factor**.
Emissions trading (schemes)	(Schemes that allow) the purchase or sale of GHG emissions allowances, offsets and/or credits.[1]
Equity share approach	One of two broad approaches to setting organisational boundaries for measuring carbon emissions. Under the equity share approach, a company reports emissions based on its share of equity in an operation. This is typically (but not always) equal to its percentage ownership of the operation. See **Section 3.2.3.**[1]
First-tier suppliers	Companies which supply goods directly to a retailer or other corporation.
Fugitive emissions	Emissions that result from intentional or unintentional releases of greenhouse gases, for example leaks from joints, seals, packing and gaskets[1]. See **Section 3.3.2**.
Greenhouse gases	Greenhouse gases are those which contribute to the greenhouse effect when present in the atmosphere. Six greenhouse gases are regulated by the Kyoto Protocol, as they are emitted in significant quantity by human activities and are key contributors to climate change. The six regulated greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and Sulphur hexafluoride (SF_6).[3] As used in this Guide, the term 'greenhouse gases' refers specifically to these six gases.
Greenhouse gas accounting	The process of measuring your carbon emissions or drawing up a **greenhouse gas inventory**.
Greenhouse gas inventory	A quantified list of an organisation's greenhouse gas emissions and sources.[1]
Indirect emissions	Emissions that are a consequence of the operations of the company, but occur at sources owned or controlled by another company. Both Scope 2 and Scope 3 emissions count as indirect emissions.[1]
Intensity target	An emissions reductions target expressed as a reduction in the **ratio** of GHG emissions **relative to another business metric**[1]. See Section **4.4.2**.
Methodology (for measuring emissions)	The method or approach used for measuring your carbon emissions. See **Section 3.2.2.**
Mobile combustion	Burning of fuels by transportation devices such as cars, lorries, trains, aeroplanes, ships etc.[1]

Organisational boundaries	The parts of your business for which you decide to measure emissions. See **Section 3.2.3**.
Permanency (of carbon offsets)	Permanency is a minimum requirement for a credible carbon offset. It refers to the principle that emissions reductions represented by an offset should be maintained over time. See **Appendix 9**.
Process emissions	Emissions generated from manufacturing processes, such as the CO_2 that arises from the breakdown of calcium carbonate ($CaCO_3$) during cement manufacture.[1]
Scope 1 emissions	Carbon emissions from sources that your company owns or controls.[1] See **Section 3.2.4**.
Scope 2 emissions	Carbon emissions from the generation of electricity, heat or steam that is used by your company and has been bought in from elsewhere.[1] See **Section 3.2.4**.
Scope 3 emissions	Carbon emissions that are a result of your company's activities but occur from sources that you do not own or control, **excluding** Scope 2 emissions.[1] See **Section 3.2.4**.
Stationary combustion	Burning of fuels to generate electricity, steam, heat or power in stationary equipment such as boilers, furnaces etc.[1]
Sub-metering	Sub-metering systems allow you to measure energy consumption within particular areas of your site or by particular items of equipment. This allows much more specific identification of emissions sources and energy saving opportunities than is possible by using data from the primary utility meter. See **Section 3.3.4**.
'Thin client' computer	A computer which depends primarily on the central server for processing activities, and mainly focuses on conveying input and output between the user and the remote server. In contrast, a 'thick' or 'fat client' computer does as much processing as possible itself, and only passes data for communications and storage to the server.
Verification	An objective assessment of the accuracy and completeness of the carbon management information you report, and the conformity of this information to the carbon accounting standards/methodologies that you claim to use.[1] See **Section 5.8.1**.
Voluntary (carbon) programme/scheme	A programme or scheme where participation is not mandatory, i.e. not required by governmental legislation or regulations.

Sources of definitions used in the Glossary

[1] *The Greenhouse Gas Protocol®: a corporate accounting and reporting standard (Revised Edition),* World Business Council for Sustainable Development and World Resources Institute, 2004

[2] Glossary, Carbon Disclosure Project website (www.cdproject.net/glossary.asp)

[3] *Carbon Footprinting: an introduction for organisations,* the Carbon Trust, 2007

List of carbon initiatives and legislation

Carbon Disclosure Project	CDP is a not-for-profit initiative launched by the investment industry to encourage companies to publicly report their carbon emissions and reduction plans. Information collected through CDP's annual questionnaire is publicly shared on the CDP web database. See www.cdproject.net
Carbon Reduction Commitment	A new cap-and-trade scheme introduced by the UK Government in 2008, which mainly covers medium and large scale, non-energy intensive companies. See **Section 2.3.3**.
Carbon Trust	The Carbon Trust is a private company set up by the UK Government to accelerate the move to a low carbon economy. It works with UK businesses and public sector organisations to reduce carbon emissions and develop low carbon technologies. See www.carbontrust.co.uk
Carbon Trust Standard	A voluntary certification scheme for UK companies wishing to demonstrate their commitment to reducing their carbon footprint. Developed by the Carbon Trust. See www.carbontruststandard.com
Clean Development Mechanism (CDM)	One of the 'flexible mechanisms' established by the Kyoto Protocol, which can be used by developed countries who have ratified the Protocol (i.e. Annex 1 countries) to meet their legally binding reduction targets. CDM issues emissions credits, or Certified Emissions Reductions (CERs), which are generated from offset-type projects in developing countries and can be purchased by Annex 1 countries to help meet their targets.[4]
Climate Change Act (UK)	The Climate Change Act, which became UK law in November 2008, is a long-term, legally binding framework to tackle the causes and consequences of climate change. See **Section 2.3.3**.
Enhanced Capital Allowances (ECA)	UK Government tax incentives offered to businesses for buying energy-efficient equipment. See **Section 4.5.2**.
European Union Emissions Trading Scheme (EU-ETS)	A cap-and-trade scheme launched in 2005 to help EU countries meet their reduction targets under the Kyoto Protocol. The scheme focuses on major energy-intensive industries, and allocates emissions allowances called EU Allowances (EUAs) to companies covered by the scheme. Participating companies can then buy or sell EUAs, depending on whether their emissions exceed or are less than their allowances. The EU-ETS is currently in its second phase (2008–2012).[2, 4]

Greenhouse Gas (GHG) Protocol®	A widely used standard for greenhouse gas accounting and reporting, which includes a detailed methodology and guidance for calculating a carbon footprint. The Protocol was developed by the Greenhouse Gas Protocol Initiative, a multi-stakeholder partnership convened by the World Resources Institute and the World Business Council for Sustainable Development. The Protocol is available online from www.ghgprotocol.org[1, 3]
Global Action Plan	A UK-based environmental charity which supports individuals, companies, schools and other organisations to take practical actions that help the environment. See www.globalactionplan.org.uk
Global Reporting Initiative (GRI)	The Global Reporting Initiative is a not-for-profit organisation that promotes public disclosure of organisations' social and environmental performance, principally through promoting use of the GRI Sustainability Reporting Framework and Guidelines. See www.globalreporting.org
ISO 14064-1	The International Standards Organisation (ISO) standard for measuring and reporting greenhouse gas emissions at the organisational (as opposed to project) level. Published in 2006, it builds on the key principles of, and is broadly compatible with, the Greenhouse Gas Protocol®. However, ISO 14064-1 is more prescriptive than the GHG Protocol®, in that it establishes minimum standards for compliance.
Joint Implementation (JI)	One of the 'flexible mechanisms' established by the Kyoto Protocol, which can be used by developed countries who have ratified the Protocol (i.e. Annex 1 countries) to meet their legally binding reduction targets. It is based on the same principles as the Clean Development Mechanism, but JI projects operate in Annex 1 countries (i.e. developed countries with legally binding targets under the Kyoto Protocol) rather than developing countries.[4]
Kyoto Protocol	A protocol to the United Nations Framework Convention on Climate Change, which came into force in 2005. It sets legally binding emissions reductions targets for developed countries that have ratified the Protocol, known as Annex 1 countries. Under the Protocol, Annex 1 countries are committed to reducing their combined emissions of six greenhouse gases by 5.2% below 1990 levels over the five-year period 2008 to 2012. The six greenhouse gases covered by the Protocol are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).[1, 2, 4]
May Day Journey	An online tool that provides guidance to May Day Network members and others on how to measure, manage and reduce carbon emissions. See: www.bitc.org.uk/environment/the_princes_may_day_network_on_climate_change/the_may_day_journey_on_climate_change.
May Day Network	The Prince's May Day Network, convened by Business in the Community (BITC), is a group of over 1,300 UK businesses who have pledged to take action on climate change. See: www.bitc.org.uk/environment/the_princes_may_day_network_on_climate_change.

Supplier Ethical Data Exchange (SEDEX)	SEDEX is a secure, web-based system for suppliers to maintain data on labour practices (and some environmental practices including carbon management) at productions sites and make it available to their customers, in order to drive and demonstrate improvements. See www.sedex.org.uk.

Sources of definitions used

[1] *The Greenhouse Gas Protocol®: a corporate accounting and reporting standard (Revised Edition),* World Business Council for Sustainable Development and World Resources Institute, 2004

[2] Glossary, Carbon Disclosure Project website (www.cdproject.net/glossary.asp)

[3] *Carbon Footprinting: an introduction for organisations,* the Carbon Trust, 2007

[4] *The Carbon Trust three stage approach to developing a robust offsetting strategy (CTC621),* the Carbon Trust, 2006

Appendix 1: List of questionnaires reviewed

During the preparation of this Guide, nine questionnaires/reporting frameworks were reviewed in detail:

- Global Reporting Initiative (GRI) reporting framework;
- Carbon Disclosure Project Supply Chain Leadership Collaboration (SCLC) Questionnaire, 2008;
- Insight Investment's assessment framework used in *Taking the temperature: assessing the performance of large UK and European companies in responding to climate change*, Insight Investments;
- Supplier Ethical Data Exchange (SEDEX) questionnaire ;
- Business in the Community's Corporate Responsibility (CR) Index;
- Financial Services Purchasing Forum Corporate Responsibility Programme Supplier Questionnaire, July 2008;
- The Information and Communications Technology (ICT) Supplier Self-Assessment Questionnaire (joint initiative of the Global e-Sustainability Initiative Supply Chain Working Group and Electronic Industry Code of Conduct Implementation Group);
- One Planet Products Product Questionnaire;
- One Planet Products Supplier Questionnaire.

Appendix 2: GHG Protocol® sector-specific calculation tools

The **Greenhouse Gas Protocol®** website (www.ghgprotocol.org) has the following sector-specific calculation tools, all of which can be downloaded free of charge:

- Guide for small office-based organisations;
- Aluminium and other non-ferrous metal production;
- Iron and steel;
- Nitric acid manufacture;
- Ammonia manufacture;
- Adipic acid manufacture;
- Cement;
- Lime;
- HFC-23 from HCFC-22 Production;
- Pulp and Paper;
- Semi-Conductor Wafer production.

Appendix 3: Major emissions sources for selected industries

The following table shows the key emissions sources or 'industry hotspots' for selected industries, and has been adapted from Appendix D of *The Greenhouse Gas Protocol®: a corporate accounting and reporting standard (Revised Edition),* World Business Council for Sustainable Development and World Resources Institute, 2004. See the **Glossary** for definitions of 'stationary combustion', 'mobile combustion', 'fugitive emissions' and 'process emissions'.

Sector	*Scope 1 Emissions Sources*	*Scope 2 Emissions Sources*	*Scope 3 Emissions Sources*
Services			
Service sector/ office based organisations	*Stationary combustion:* production of electricity, heat or steam; *Mobile combustion:* transportation of raw materials and waste; *Fugitive emissions:* mainly HFC emissions during use of refrigeration and air-conditioning equipment.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* production of purchased materials; *Process emissions:* production of purchased materials; *Mobile combustion:* transportation of raw materials, products and waste, employee business travel, employee commuting.
Energy			
Energy generation	*Stationary combustion:* boilers and turbines used in the production of electricity, heat or steam, fuel pumps, fuel cells, flaring; *Mobile combustion:* lorries, barges and trains for the transportation of fuels; *Fugitive emissions:* CH_4 leakage from transmission and storage facilities, HFC emissions from LPG storage facilities, SF_6 emissions from transmission and distribution equipment.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* mining and extraction of fuels, energy for refining or processing fuels; *Process emissions:* production of fuels, SF_6 emissions; *Mobile combustion:* transportation of fuels, waste, employee business travel, employee commuting; *Fugitive emissions:* CH_4 and CO_2 from waste landfills, pipelines, SF_6 emissions.

Sector	*Scope 1 Emissions Sources*	*Scope 2 Emissions Sources*	*Scope 3 Emissions Sources*
Oil and gas	*Stationary combustion:* process heaters, engines, turbines, flares, incinerators, oxidisers, production of electricity, heat and steam; *Process emissions:* process vents, equipment vents, maintenance/turnaround activities, non-routine activities; *Mobile combustion:* transportation of raw materials/products/waste, company owned vehicles; *Fugitive emissions:* leaks from pressurised equipment, wastewater treatment, surface impoundments.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* product use as fuel or combustion for the production of purchased materials; *Process emissions:* product use as feedstock or emissions from the production of purchased materials; *Mobile combustion:* transportation of raw materials/products/waste, employee business travel, employee commuting, product use as fuel; *Fugitive emissions:* CH_4 and CO_2 from waste landfills or from the production of purchased materials.
Coal mining	*Stationary combustion:* methane flaring and use, use of explosives, mine fires; *Mobile combustion:* mining equipment, transportation of coal; *Fugitive emissions:* CH_4 emissions from coal mines and coal piles.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* product use as fuel; *Process emissions:* gasification; *Mobile combustion:* transportation of coal/ waste, employee business travel, employee commuting.

Sector	*Scope 1 Emissions Sources*	*Scope 2 Emissions Sources*	*Scope 3 Emissions Sources*
Metals			
Aluminium	*Stationary combustion:* bauxite to aluminium processing, coke baking, lime, soda ash and fuel use, on-site CHP; *Process emissions:* carbon anode oxidation, electrolysis, PFCs; *Mobile combustion:* pre- and post-smelting transportation, ore haulers; *Fugitive emissions:* fuel line CH_4, HFC and PFC, SF_6 cover gas.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* raw material processing and coke production by second party suppliers, manufacture of production line machinery; *Process emissions:* during production of purchased materials; *Mobile combustion:* transportation services, business travel, employee commuting; *Fugitive emissions:* mining and landfill CH_4 and CO_2, outsourced process emissions.
Iron and steel	*Stationary combustion:* coke, coal and carbonate fluxes, boilers, flares; *Process emissions:* crude iron oxidation, consumption of reducing agent, carbon content of crude iron/ferroalloys; *Mobile combustion:* on-site transportation; *Fugitive emissions:* CH_4, N_2O.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* mining equipment, production of purchased materials; *Process emissions:* production of ferroalloys; *Mobile combustion:* transportation of raw materials/products/waste and intermediate products; *Fugitive emissions:* CH_4 and CO_2 from waste landfills.

Sector	*Scope 1 Emissions Sources*	*Scope 2 Emissions Sources*	*Scope 3 Emissions Sources*
Chemicals			
Nitric acid, ammonia, adipic acid, urea, and petro-chemicals	*Stationary combustion:* boilers, flaring, reductive furnaces, flame reactors, steam reformers; *Process emissions:* oxidation/reduction of substrates, impurity removal, N_2O by-products, catalytic cracking, myriad other emissions individual to each process; *Mobile combustion:* transportation of raw materials/products/waste; *Fugitive emissions:* HFC use, storage tank leakage.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* production of purchased materials, waste combustion; *Process emissions:* production of purchased materials; *Mobile combustion:* transportation of raw materials/products/waste, employee business travel, employee commuting; *Fugitive emissions:* CH_4 and CO_2 from waste landfills and pipelines.
Minerals			
Cement and lime	*Stationary combustion:* clinker kiln, drying of raw materials, production of electricity; *Process emissions:* calcination of limestone; *Mobile combustion:* quarry operations, on-site transportation.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* production of purchased materials, waste combustion; *Process emissions:* production of purchased clinker and lime; *Mobile combustion:* transportation of raw materials/products/waste, employee business travel, employee commuting; *Fugitive emissions:* mining and landfill CH_4 and CO_2, outsourced process emissions.

Sector	*Scope 1 Emissions Sources*	*Scope 2 Emissions Sources*	*Scope 3 Emissions Sources*
Waste			
Landfills, waste combustion, water services	*Stationary combustion:* incinerators, boilers, flaring; *Process emissions:* sewage treatment, nitrogen loading; *Mobile combustion:* transportation of waste/ products; *Fugitive emissions:* CH_4 and CO_2 emissions from waste and animal product decomposition.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* recycled waste use as a fuel; *Process emissions:* recycled waste use as a feedstock; *Mobile combustion:* transportation of waste/ products, employee business travel, employee commuting.
Pulp & Paper			
Pulp and paper	*Stationary combustion:* production of steam and electricity, fossil fuel-derived emissions from calcination of calcium carbonate in lime kilns, drying products with infrared driers fired with fossil fuels; *Mobile combustion:* transportation of raw materials, products and wastes, operation of harvesting equipment; *Fugitive emissions:* CH_4 and CO_2 from waste.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* production of purchased materials, waste combustion; *Process emissions:* production of purchased materials; *Mobile combustion:* transportation of raw materials/products/waste, employee business travel, employee commuting; *Fugitive emissions:* landfill CH_4 and CO_2 emissions.

Sector	Scope 1 Emissions Sources	Scope 2 Emissions Sources	Scope 3 Emissions Sources
HFC, PFC, SF_6 and HCFC Production			
HCFC 22 production	*Stationary combustion:* production of electricity, heat or steam; *Process emissions:* HFC venting; *Mobile combustion:* transportation of raw materials/products/waste; *Fugitive emissions:* HFC use.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* production of purchased materials; *Process emissions:* production of purchased materials; *Mobile combustion:* transportation of raw materials/products/waste, employee business travel, employee commuting; *Fugitive emissions:* fugitive leaks in product use, CH_4 and CO_2 from waste landfills.
Semiconductor Production			
Semi-conductor production	*Stationary combustion:* oxidation of volatile organic waste, production of electricity, heat or steam; *Process emissions:* C_2F_6, CH_4, CHF_3, SF_6, NF_3, C_3F_8, C_4F_8, N_2O used in wafer fabrication, CF_4 created from C_2F_6 and C_3F_8 processing; *Mobile combustion:* transportation of raw materials/products/waste; *Fugitive emissions:* process gas storage leaks, container remainders/heel leakage.	*Stationary combustion:* consumption of purchased electricity, heat or steam.	*Stationary combustion:* production of imported materials, waste combustion, upstream transport and distribution losses of purchased electricity; *Process emissions:* production of purchased materials, outsourced disposal of returned process gases and container remainder/heel; *Mobile combustion:* transportation of raw materials/products/waste, employee business travel, employee commuting; *Fugitive emissions:* landfill CH_4 and CO_2 emissions, downstream process gas container remainder/heel leakage.

Appendix 4: Comparing absolute targets and intensity targets

The following information is adapted from Box 4, Chapter 11 of *The Greenhouse Gas Protocol®: a corporate accounting and reporting standard (Revised Edition),* World Business Council for Sustainable Development and World Resources Institute, 2004.

Absolute targets

Advantages:

- They are environmentally robust, in that they entail a commitment to reduce GHG emissions by a specified, absolute amount;
- They are more transparent and easily understood by the public and key stakeholders.

Disadvantages:

- They do not allow comparison of GHG intensity/efficiency;
- They present a skewed picture if production/output goes down significantly (emissions are likely to be reduced, but not as a result of any positive actions taken by the company);
- They can become difficult to achieve if the company grows unexpectedly;
- You may need to recalculate base year emissions if the company undergoes significant structural change.

Intensity targets

Advantages:

- They reflect GHG performance improvements, regardless of growth or decline of the company;
- You don't normally need to recalculate base year emissions if the company undergoes significant structural change;
- They can help to increase comparability of GHG performance between companies.

Disadvantages:

- They are environmentally less robust as the impact on absolute GHG emissions to the atmosphere is not specified/guaranteed. For example, if your output increases significantly, absolute emissions can increase even if emissions intensity goes down;
- Companies with diverse operations might find it difficult to choose a single business metric that is meaningful or applicable to the whole company;
- Using a monetary value, e.g. sales or revenue, for the business metric can make it complicated to calculate, as you may have to adjust for inflation or changes in product price.

Appendix 5: Examples of energy efficiency/renewable energy initiatives taken by UK companies

The following examples are drawn and adapted from case studies on the Business in the Community website (www.bitc.org.uk/resources/case_studies).

Company	*Energy Efficiency/Renewable Energy Initiatives*
Adnams (medium sized brewer, UK)	**New 'eco-efficient' brewery and distribution centre** • **New eco-efficient brewery opened in March 2008.** The new brewstream recovers 100% of the heat from each brew to reheat the next, a process that reduces the amount of the gas needed during the brewing process and can also brew larger batches in less time, resulting in an overall reduction in gas usage. • **New distribution centre built in 2006**, using a combination of hemcrete walls, a green roof, rainwater catchments and glulam wood beams. Due to the insulating properties of this combination, and the buffer spacer at entrances, the centre does not require any mechanical cooling or ventilating systems. Use of movement sensors and a solar collector gas boiler also contribute to reducing GHG emissions. Overall, the new distribution centre saves £49,000 per annum, using 58% less gas per square metre and 67% less electricity per square metre compared to the old warehouse.
Reed (one of UK's largest recruitment specialists)	**Switch to 'thin client' computers** • Reed's IT portfolio once encompassed 4,500 desktop PCs and over 400 laptops running twenty four hours a day, seven days a week. Recognising that the network was oversized and inefficient, and wanting to reduce the carbon impact of the system, Reed **replaced all PCs with 'thin client' terminals** and invested in new blade servers in the data centre. • Whereas each of the 4,500 PCs were switched on for 8,760 hours per annum, the new 'thin terminals' only need to be on for 1,748 core working hours – an 80% reduction. Within a year of switching to the new 'thin clients', Reed has **reduced annual energy consumption** by approximately 5.4 million kWh of power - approximately 2,800 tonnes of CO_2 per annum.

Company	*Energy Efficiency/Renewable Energy Initiatives*
Man Group (global provider of investment products and services)	**Office-based energy efficiency measures** As part of their efforts to become carbon neutral, Man Group implemented the following measures to reduce carbon emissions in their London head office. They: • **Installed a combined heat and power (CHP) unit**. This can increase fuel efficiency to more than 75% (compared to 50% efficiency when using conventional electricity generation from the grid). • **Fitted light sensors** to reduce energy use. • **Installed 'Ice Bank' cooling technology** to cool the building. • **Switched to a 'green' tariff electricity supplier**. • **Bought video conferencing equipment** to keep travel, especially air travel, to a minimum. As a result of these and other initiatives, Man Group has reduced their overall CO_2 emissions by 43% per employee from 2005 to 2007.
Bio-health (UK specialist healthcare manufacturer)	**Example of steps taken by an SME** Since 2004, Bio-health has taken various steps to reduce CO_2 emissions in an effort to encourage other SMEs in Kent (where they are based) to follow suit. They: • **Introduced incentives for reducing emissions**. For example, employees are paid an additional £1,000 a year for transferring to a smaller environmentally friendly car. Bio-health also built a new cycle shed to encourage employees to cycle to work, and provide free bicycles to those who leave their car at home. • **Bought shredding machines** to shred warehouse and office paper and provide packing material for the dispatch department, so they no longer need to buy other packaging material. • **Reviewed and re-organised the company's information system**, increasing tele-sales and reducing unnecessary on-site visits by company representatives. • **Developed and circulated a green policy document and questionnaire** to engage customers and suppliers.
James McNaughton Paper Group Ltd (supplier of paper, board, plastics and other substrates to UK and Ireland)	**Reducing emissions from vehicle fleets** With the help of the Energy Saving Trust, James McNaughton Group overhauled its company car fleet and distribution operations, cutting road mileage by over 1 million miles per year and reducing its CO_2 emissions by over 1,100 tonnes. They achieved this by: • **Replacing the old delivery fleet with 30 new vehicles** specifying Euro 5 engines, the highest standard for low emission engines, and two new all-electric commercial trucks to deliver office paper in London and Belfast. • **Changing its company car policy to allow only diesel or hybrid vehicles.** • **Altering travel routes** to more carbon and cost-efficient alternatives. • **Producing a drivers' guide** to inform and educate company drivers about how to enjoy safer, cleaner and greener driving.

Company	*Energy Efficiency/Renewable Energy Initiatives*
Cadbury Schweppes (international confectionary and beverage company)	Use of renewables and energy efficiency measures in food manufacture As part of its efforts to reduce absolute carbon emissions by 50% by 2020, Cadbury Schweppes has found ways both to save energy and switch to greener forms of energy: • At their Sheffield site, they have **introduced new air compression units** that operate at a lower pressure so use less energy (air compression is the largest use of electricity on this site). They are also replacing electric motors, which account for 30% of the electricity usage, with high-efficiency models. • At their Bournville site, they are **replacing four coal-fired boilers with natural gas**. This is expected to reduce carbon emissions by 30% as well as eliminating the emissions from transporting coal and ash to and from the site.

Appendix 6: Examples of product-specific reduction initiatives taken by UK companies

Company	*Product-Specific Reduction Initiatives*
Innocent Drinks (leading UK smoothie manufacturer)	**Switch to 100% recycled plastic bottles** In September 2007, Innocent Drinks became the first ever drink company to offer bottles made from 100% recycled plastic – an initiative which has reduced the carbon footprint of the containers by 55%. Innocent pay no more for their recycled plastic than they did for their original packaging. Innocent also ensures that the bottles: • Use 20% less plastic overall than the original packaging; • Use labels which are made from 25% recycled paper and 75% paper from forests that have been certified by the Forest Stewardship Council; • Are distributed in boxes made from 100% post-consumer recycled paper. *Source: www.bitc.org.uk/resources/case_studies*
United Utilities (owner and operator of water, waste-water, electricity and gas networks in the UK and overseas)	**Processing and reusing waste materials from their operations** United Utilities has introduced two initiatives that produce reusable products from waste materials, reducing waste to landfill and use/extraction of virgin materials: • **Using paper ash instead of burnt lime in treating wastewater biosolids,** which prevents the landfill of 70,000 tonnes of paper ash per year and also prevents the extraction and energy intensive conversion of limestone into burnt lime. The final product from the treatment is used as an agricultural fertiliser; • **Making foam concrete from excavated street-works material.** The excavated street-works material from pipeline replacement projects is being recycled into a foam concrete, using a locally based recycling centre in Yorkshire. This initiative reduces material sent to landfill, and also reduces the extraction of virgin aggregate that would otherwise have been used to make the concrete. *Source: United Utilities*

Boots the Chemist (leading UK retailer of health and beauty products)	**Introducing a range of waste reduction measures** Since 2001/2, Boots has introduced a range of measures to reduce waste at source and reduce reliance on landfill. **To reduce waste at source** (i.e. reduce use of virgin materials), Boots introduced 30% recycled plastic (rPET) into its 'Ingredients' range of toiletries bottles, making it the first retailer in the UK to use recycled material in toiletries packaging, and also reduced the thickness of plastic Monitored Dosage Service blister packs; **To reduce reliance of landfill,** the company: • Recycles and reuses over 17 different types of material which otherwise would be disposed of to landfill. As a result, since 2001/2002 Boots' percentage of total waste recycled has increased from 37% to 50.5%; • Introduced 100% recyclable Free Standing Display Units (FSDU); • Introduced fully compostable packaging for its sandwiches. *Source: www.bitc.org.uk/resources/case_studies*

Appendix 7: Sources of specialist advice on carbon management and energy efficiency

The following organisations provide information and advice on carbon management and energy efficiency to UK companies:

- **The Carbon Trust:** the Carbon Trust has produced free, sector-specific guidance on key energy savings to be made in selected sectors. See **Box 7** in **Section 4.2.1** for the list of sectors covered and web links to the relevant pages/factsheets. The Carbon Trust also provides tailored advice for individual companies, for which a fee may be charged. See www.carbontrust.co.uk
- **Global Action Plan:** the Global Action Plan offers free or subsidised energy efficiency and related advice to **SMEs** (i.e. companies with less than 250 staff) in London and South West England. See: www.globalactionplan.org.uk/Envision.aspx
- **The Energy Saving Trust:** the Energy Saving Trust provides a wide range of free guidance documents and free telephone advice for **building/construction businesses**, and for any business wishing to reduce emissions from their **transport activities** (including from own vehicle fleets). See: www.energysavingtrust.org.uk/business

Appendix 8: Comparing different types of offset products

The following information is adapted from *The Carbon Trust three stage approach to developing a robust offsetting strategy (CTC621),* the Carbon Trust, 2006.

When deciding the type of offsets to buy, consider the following seven key characteristics:

- **Product type.** Many different types of offset products exist, including offsets from renewable energy projects, energy efficiency projects, fuel-switching, greenhouse gas recovery/destruction, CO_2 capture/storage and biological sinks (e.g. reforestation).
- **The standards used.** Offset schemes may comply with mandatory scheme standards (e.g. the Clean Development Mechanism or Joint Implementation standards), independent voluntary standards (e.g. Plan Vivo), or proprietary standards (i.e. standards developed by the scheme itself).
- **Project location.** You can buy offsets from projects located in developing countries, in developed countries that have ratified the Kyoto Protocol (Annex 1 countries), or developed countries that are outside the Kyoto Protocol.
- **Additional benefits.** Some schemes offer additional benefits as well as emissions offsetting; for example, broader environmental/conservation benefits, social development benefits, and/or technology transfer to developing countries.
- **Level of aggregation.** You can buy offsets from a portfolio of multiple projects, or offsets that are tied specifically to an individual project.
- **Provision of guarantees.** Schemes offer different levels of guarantees against the failure to deliver predicted emissions reductions/avoidance.
- **Whether or not a labelling service is offered.** Some schemes offer a labelling service to those who purchase offsets, e.g. providing a 'carbon neutral' label.

The table below compares the main advantages and disadvantages of the types of offsets available.

Options	*Advantages*	*Disadvantages*
Product type		
Renewable energy	Easier to prove additionality; technology transfer benefits to developing country; long-term benefits.	Complex projects; delivery of credits could, for example, be affected by delays in making projects operational; difficulties in establishing baseline, or changing baseline conditions.
Energy efficiency	Technology transfer benefits to developing country; long-term benefits.	Complex projects; delivery of credits could for example be affected by difficult in establishing baselines or concerns over additionality.
Fuel switching	Simple projects, proven technologies.	Concerns over additionality.
Gas recovery or destruction	Simple projects, proven technologies.	Concerns over additionality.

Options	*Advantages*	*Disadvantages*
Carbon capture and storage	Technology transfer benefits to developing country; long-term benefits.	Methodological accounting issues yet to be resolved, concerns over long-term environmental impact; early stage technology.
Biological sinks – land use, land use change and forestry	Additional socio-economic and environmental benefits; reverses contribution of approximately 20% of anthropogenic GHG emissions caused by land use change and forestry; viable way for least-developed countries to participate in climate change mitigation and bring sustainable development benefits to those countries.	Permanence issues (not able to guarantee CO_2 capture over time); accounting and methodological issues; negative secondary effects (leakages); seen by some as distraction from the real problem (world's fossil fuel-based energy systems); credits granted on predicted CO_2 absorption level rather than actual absorption levels.
Standards[1,2]		
Clean Development Mechanism/Joint Implementation standards	Robust/reliable standards, broad acceptance as good quality credits.	Difficult to buy compliance credits for voluntary purposes (depending on volume); prices could be high.
Voluntary Gold Standard	Robust standard for small-scale projects – based on CDM standards; strong focus on sustainable development component of project; good acceptance by stakeholders.	Limited track record (launched in 2006).
Voluntary Carbon Standard	Robust standard based on CDM rules; strong backup from international organisations.	Limited track record.
Climate, Community and Biodiversity standards (CCB)	Robust standard, use methodologies developed by the Intergovernmental Panel on Climate Change (IPCC); strong stakeholder backup.	
Plan Vivo	Robust standard, seven years of field work experience.	Small number of projects developed under this standard.

1 Also relevant is the newly launched (February 2009) Department of Energy and Climate Change (DECC)'s carbon offsetting accreditation scheme. See **Section 4.6.4**.

2 The information provided on specific standards was correct as of 2006, when the original version of this table was published by the Carbon Trust. For more up-to-date information, check the *Environmental Data Services (ENDS) Guide to carbon offsets* (www.endscarbonoffsets.com).

Options	*Advantages*	*Disadvantages*
Proprietary (self-developed) standards	In general, generates cheaper credits.	More difficult to assess; weak standard can put credit buyer's reputation at risk; not always accredited third-party verification or auditing.
Project locations		
Developing country	Easier to prove additionality; sustainable development benefits.	Country risk, non-delivery.
Developed country outside Kyoto	Cheaper credits, lower country risk.	Credibility concerns; subsidising free-riding from countries benefiting from carbon market but without themselves making commitments to reduce their emissions under a legally binding framework.
Developed country inside Kyoto	Promotion of reductions in home country.	Additionality concerns.
Additional benefits		
Environmental/ conservation benefits Social benefits Technology transfer	Buyers can be associated with particular projects that bring broader sustainable development benefits.	Credits usually more expensive; exposure to additional reputational risks if social component of project goes wrong.
Aggregation		
Credits from portfolio of projects	Cheaper credits; minimises risk of underperforming (non-delivery, impermanency).	Credit cannot be associated with individual project; credit's credibility can be affected by poor quality of any individual project in the portfolio (higher probability of reputational risks); scheme/ retailer may profile the better projects within the portfolio and not mention the others; non-customisable.
Credits from individual projects	Credits can be associated with a particular project (can provide positive PR and improved CSR position); customisable.	Expect higher credit prices; higher exposure to underperformance and credibility risks.

Options	*Advantages*	*Disadvantages*
Guarantees		
Provide guarantees against non-delivery, permanence issues, or changes in baseline	Cover against uncertainties; provides insurance for biological sink projects.	Expect higher credit prices.
Labelling		
Carbon neutrality stamp	Provides positive PR and improved CSR position.	Exposure to label brand risk.

Appendix 9: Minimum quality requirements for offsets

The following recommended minimum quality requirements for carbon offsets are adapted from *The Carbon Trust three-stage approach to developing a robust offsetting strategy (CTC621),* the Carbon Trust, 2006.

- **Verification:** the offset scheme should be verified by a third party according to a specified offset standard or protocol.
- **Additionality:** the emissions reductions represented by the offset should be *additional* to what would have happened in the absence of the project. Additionality is often not straightforward to determine, but a project is generally seen to be additional if it:
  - Is not required by current regulation;
  - Is not common practice in the country/sector where the project is being carried out;
  - Faces economic, investment or technological barriers that would otherwise prevent the implementation of the project.
- **Accounts for leakages:** the scheme should take into account any negative impacts of the project beyond the project boundary, e.g. where a reforestation project displaces agricultural activities to other areas where they could generate GHG emissions. The scheme should have mechanisms in place to ensure that the level of resulting emissions is deducted from the emissions reductions achieved through reforestation.
- **Permanency:** mechanisms should be in place to ensure that emissions reductions achieved are maintained over time. This is particularly critical for carbon sink projects since, for example, if forest is burnt or cut down for agricultural use, the captured carbon will be re-released to the atmosphere. Schemes which include carbon sink projects should manage this risk, for example through committing to replace offsets from failed projects with offsets from other projects/schemes.
- **Double-counting:** the scheme should have measures in place to guard against double-counting of emissions reductions. The scheme should have an effective registration system to ensure that offsets cannot be sold to more than one buyer. In addition, for offsets from Annex 1 countries (i.e. countries who are signatories to the Kyoto Protocol) the offset provider should ensure that the emissions reductions they sell have not already been counted against mandatory emissions reductions targets.

Appendix 10: Sample energy policy

The following sample energy policy is adapted from *Energy Management Strategy (CTV022)*, the Carbon Trust, 2007, and could be used as a template for developing your own carbon management policy.

Corporate Policy Statement

Our long- and medium-term corporate goals are to:

- Commit organisational resources to energy management;
- Reduce our energy costs;
- Give high priority to energy efficiency investments;
- Consider life-cycle energy costs for all new projects;
- Minimise CO_2 emissions;
- Minimise environmental impact;
- Where possible, to use energy from sustainable sources.

Our short-term objectives are to:

- Reduce environmental impact of fuels used by reducing our emissions of ***a*** tonnes of CO_2 by ***x***% over ***y*** years;
- Reduce energy consumption to typical/good practice benchmark levels within ***y*** years;
- Set and publish performance improvement targets;
- Report performance changes and improvements annually;
- Increase staff awareness;
- Nominate employees to act as departmental energy champions;
- Identify all cost-effective energy efficiency measures;
- Establish a system for monitoring energy use, including implementing a regular programme of energy audits;
- Provide regular management reports on energy consumption and costs;
- Establish a budget for investing in energy efficiency;
- Specify energy efficient design of new buildings, and procure energy efficient plant and equipment.

Statement of Commitment

We are committed to:

- Increasing energy efficiency in terms of, for example, energy consumed per unit of production;
- Reducing CO_2 emissions;
- Investing in new technology where this meets investment criteria (including renewable energy sources);
- Considering life-cycle energy costs when procuring new projects;
- Purchasing energy-efficient plant and equipment (including office equipment);
- Reducing environmental emissions associated with travel (including employee travel to work, business travel and distribution of goods);
- Investing in energy-saving technologies that are eligible for Enhanced Capital Allowances.

We will address energy efficiency in all areas of our business including:

Management issues:

- Define roles and responsibilities for energy management;
- Educate and raise awareness among staff;
- Encourage continual professional development for technical staff involved in energy management;
- Establish clear reporting procedures;
- Publicise our performance and report areas for improvements.

Procurement issues:

- Procure equipment with low energy ratings;
- Consider life-cycle energy costs for new projects and modifications to existing plant;
- Establish technical guidelines for new projects and refurbishment.

Financial issues:

- Establish ownership of energy costs at departmental level.

Technical issues:

- Establish procedures for operation of plant and equipment.

We will improve on past performance:

Over the past y years:

- Our energy costs have increased/decreased by **x**%;
- Our energy efficiency has increased/decreased by **x**%;
- Our emissions of CO_2 have increased/decreased by **x**%;
- Our consumption of fossil fuels has increased/decreased by **x**%;
- Our investment in clean, energy-efficient technologies has increased/decreased by **x**%.

We are committed to reversing/reinforcing/accelerating* these trends through a strategic plan that will be reviewed for progress and updated each year.

* Delete as appropriate

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