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Government

The Impact of Workplace Initiatives on Low Carbon Behaviours

Environment



social
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THE IMPACT OF WORKPLACE INITIATIVES ON LOW CARBON BEHAVIOURS

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Scottish Government Social Research
2012

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Table of Contents

1	EXECUTIVE SUMMARY	1
2	INTRODUCTION	7
	Research Objectives and Project Overview	7
	Background	8
	Research methods	9
	Stakeholder Workshop	12
	Structure of this report	13
3	MAPPING CURRENT EVIDENCE ON LOW CARBON WORKPLACE INITIATIVES: WHAT WORKS AND WHY	14
	Introduction	14
	Types of initiatives being implemented	15
	Level of employee participation in low carbon activities	17
	Successful initiatives	17
	What works: critical success factors	17
	Providing Feedback	18
	Workplace champions	18
	Engagement and commitment of senior managers	19
	Other Success Factors	20
	Why businesses engage in low carbon activities	21
	Overcoming challenges to encouraging low carbon behaviours	24
	Challenges of evaluating behaviour change initiatives	24
4	LOW CARBON INITIATIVES IN CASE STUDY ORGANISATIONS – TYPES OF CHANGE AND THEIR IMPACT	27
	Case study summaries	27
	Organisational motives for change	28
	Types of low carbon activities	29
	Impact of the initiatives	31
5	EXPLAINING ‘WHAT WORKS’ AND WHY : LEARNING POINTS FROM CRITICAL SUCCESS FACTORS AND OVERCOMING BARRIERS TO LOW CARBON BEHAVIOUR	33
	Introduction	34
	Theoretical framework	34
	Critical success factors and ways of overcoming blockages and barriers	38
	Individual factors	39
	Social factors	44
	Material factors	55
	Summary	62
6	CONCLUSIONS AND RECOMMENDATIONS	64
	Types of activity undertaken	65
	Why organisations engage in low carbon initiatives	65
	What works and doesn’t work (and why)	65
	BIBLIOGRAPHY	70
	ANNEX 1 MODEL OF THE RESEARCH PROCESS	73
	ANNEX 2 LITERATURE REVIEW	74
	ANNEX 3 INTERMEDIARY INTERVIEWS	76
	ANNEX 4 CASE STUDIES	77
	Aberdeenshire Council	77

BT	78
Coca Cola Enterprises (CCE)	79
Commercial Group	80
EAE	81
Halcrow	82
Hilton Edinburgh Grosvenor Hotel	84
Interface FLOR	86
SSE (Scottish and Southern Energy)	87
Wiles Greenworld	89

1 EXECUTIVE SUMMARY

Introduction

- 1.1 There is limited guidance available to help workplaces support employees to adopt low-carbon behaviours and the evidence on effective interventions is not robust. This research, commissioned jointly by the Scottish Government, Defra and the 2020 Climate Group in June 2011, seeks to address this gap by investigating ‘what works’ in delivering low-carbon behavioural initiatives in the workplace. The outputs from the research include a full report, a good practice guide for employers, and a separate report on the 10 case studies that formed the main body of the research. These outputs should be of interest to all types of employer, because they set out innovative examples of genuine impact in everyday work situations and provide clear insights on how to make low-carbon initiatives successful.

Research aims

- 1.2 In brief, the aims of the research were to:
- Explore the extent of workplace activity to encourage low-carbon behaviours amongst staff
 - Identify ‘what works’ for behavioural programmes, and what potential impacts might be
 - Explore why interventions work and how they should be delivered for maximum impact
 - Identify any evidence on the impact of work-based schemes on employee behaviour outside the workplace.

Research methods

- 1.3 The research used a multi-method approach, comprising a literature review to map the nature and extent of low-carbon activity involving staff, 27 interviews with practitioners (largely in so-called ‘intermediary’ organisations) to develop initial insights into what works, and ten detailed case studies in workplaces, focused on interviews with managers and employees, looking at what works in actual working contexts. The fieldwork took place in the latter six months of 2011.
- 1.4 To help explain the detail of the low-carbon initiatives being explored, a theoretical framework was developed. This is based on previous research for the Scottish Government (Southerton et al., 2011) which identified **Individual, Social and Material** factors that affect the degree to which behavioural change is embedded and sustainable. These factors can be defined as follows:

- *Individual factors* concern individual and personal motivations and barriers to change;
- *Social factors* concern influences which act on people when operating in groups (social norms, cultural conventions, and shared understandings);
- *Material factors* concern infrastructure, products, objects, technology or other physical aspects of the built environment in which people live and work. The material can also cover the 'softer infrastructure' of policies and frameworks.

- 1.5 The key point about this classification framework is that behavioural interventions tend to be most successful when they consider the three contexts together, at the same time: so, not simply focusing on trying to change attitudes or just installing new infrastructure. In other words, the aim of any intervention should be to take an ambitious, joined up approach that raises awareness and improves understanding with individuals, builds social norms around low-carbon working, and supports staff with the equipment and tools they need, backed up with clear and consistent policies.
- 1.6 Those workplaces which adopt a 'whole organisation approach' to reducing carbon are best placed to make big savings: these are the ones which work at the individual, social *and* material level, and which integrate the activities by leading with staff engagement.

The state of the evidence base on 'what works'

- 1.7 The evidence base on low-carbon behavioural activities in the workplace is not well developed. This reflects a lack of robust evaluation of low-carbon initiatives and difficulties in establishing the impacts on behaviour and on carbon emissions, combined with a lack of research which compares the relative effectiveness of different projects and techniques. It also reflects the emphasis of most workplace activity - relating to infrastructural changes, technology investment, and supply chain efficiencies, rather than focusing on what staff actually do.

Learning points from the research

- 1.8 Organisations seem to find it easier when starting off to focus on energy consumption and recycling/waste. It is more unusual to find organisations seeking to shape transport behaviours, particularly as a starter activity, simply because transport behaviours are more difficult to change. We also found few strong food examples, largely because many workplaces do not provide significant catering services for their staff. Energy saving measures are relatively easy to take action on, while workplace travel planning for individuals is more complicated to implement but has a bigger impact on carbon emissions.
- 1.9 There are considerable opportunities to generate wider staff engagement: practitioners estimated that between 20-50% of staff take part in voluntary low carbon activities at work.

- 1.10 Tough policies that seek to discourage and prohibit less sustainable behaviours, including mandatory recycling and limiting travel options, do also seem to have strong impacts. However, these seemed to be rarely mentioned in the literature.
- 1.11 There is a clear view from employers who are already closely involved in these issues that cutting carbon emissions has significant knock-on benefits, including building organisational reputation, being seen as a pro-environmental brand, improving sales/customer retention, recruiting and retaining high quality staff, reducing operating costs and meeting regulatory requirements.
- 1.12 There are some limited examples of where behaviours learned at work do 'spill over' to home and leisure activities, especially in recycling and travel behaviours, once these become routine. Crucially, exposure to environmental education as part of low-carbon initiatives seemed a key driver of this spill-over.
- 1.13 Organisation size should not be regarded as a barrier to low-carbon initiatives. Case studies undertaken in small firms show that they can implement far-reaching change by taking a pragmatic approach to implementation. This involves some resource investment, but it need not be extensive. Pragmatic motivations for cost reduction can sit comfortably alongside pro-environmental objectives.

Critical success factors for influencing behaviours via low-carbon initiatives

- 1.14 The research has developed a set of critical success factors for influencing behaviours as part of low-carbon initiatives at work. These are set out below.

Starting Off

- 1.15 Creating positive **perceptions of costs and benefits** for employees was an important factor in gaining initial interest in initiatives, usually expressed in terms of personal time and monetary costs or savings.
- 1.16 Organisations need to be careful to **minimise initial perceptions of inconvenience**, as employees often became less concerned as they were accustomed to new routines. This requires developing an understanding of the values, beliefs and attitudes of workers and the likely impact of new initiatives on them in as much detail as possible before designing or implementing a low-carbon initiative, especially where participation is voluntary.
- 1.17 Initiatives were more successful in organisations which were seeking to **embed shared values** about the importance of environmental sustainability. This created a sense of shared purpose and meaning for employees and managers. This was usually linked to organisational strategy, internal and external brand and market position as a source of competitive advantage, and undertaken through an engaging staff education programme. Where less

extensive education programmes were in place, corporate values sometimes failed to translate meaningfully down to front line employees.

- 1.18 Gaining **access to expertise**, especially if low carbon management is a new area of organisational activity, can be critical, particularly in the early stages of deciding what to do and how to do it. Helpful sources of advice include three different types of network: internal staff networks; supply chain or client networks; independent advisory bodies with expertise on specific issues such as calculating carbon emissions.

Staff who lead and influence

- 1.19 **Involving staff** in low-carbon initiatives, in particular through seeking and implementing employee suggestions is critically important in any organisation. Providing feedback on the impact of their suggestions and participation is important to sustain engagement and motivation.
- 1.20 Providing **information, advice and guidance** for employees is important and the best of method of communicating is face-to-face by peers and line managers, backed up with online resources.
- 1.21 **Consulting staff in advance** of change helps to secure staff support for initiatives by offering all colleagues a stake in the project and reducing the likelihood of opposition. It also has a substantive function in generating ideas for making proposed initiatives successful and gathering suggestions for new ones.
- 1.22 The **active and visible participation of senior managers** in any low-carbon activity is essential.
- 1.23 Organisations benefit from **using multiple influencers**, including managers responsible for buildings and energy use, line managers, senior managers and peer champions and networks. These influencers can help reshape social norms and organisational cultures. The number of multiple influencers needed is usually proportionate to the size of the organisation and is therefore more important in larger companies.
- 1.24 Setting up **'green teams'** which give staff the chance to devise and implement activities, and to learn from the results, is helpful. These kinds of shared activity help change underlying assumptions about how workplaces operate. Using informal peer champions to lead by example and spread norms of behaviour can be a helpful alternative to a team-based approach.
- 1.25 Influencers are most successful where they help to establish employee perceptions of low-carbon behaviours as being **part of their jobs**, rather than optional extras, and in making low-carbon behaviours aspirational.
- 1.26 In some organisations, it was surprising that HR staff were not involved in the design and implementation of projects, especially where these involved changes to policies affecting employees. Organisations may benefit from **greater use of HR expertise** to help them influence staff behaviour.

Providing feedback and equipment

- 1.27 Organisations should show how employees can and do influence outcomes by **sharing performance feedback**. This works best when it is tailored to the appropriate level of team, department or work group.
- 1.28 **Providing supporting infrastructure and equipment** is essential both to help provide feedback (e.g. via energy monitors) and also to make it easy for staff to take part in low carbon initiatives (e.g. bike locks, racks and showers for cyclists commuting to work).

Frameworks and policies

- 1.29 Using **formal incentive schemes** can help to develop and strengthen positive norms, where they fit organisational cultures. Framing targets at a local level can help make them appear less daunting and more meaningful to employees.
- 1.30 **Organisational frameworks and policies** are important tools in shaping travel and recycling behaviours. Shaping organisational expectations with policies on particular behaviours can be effective where change is most challenging, particularly in relation to travel behaviours. Such policies are more effective when supported by social factors, including shared values and a consultative organisational culture to convince employees of the need for change. Major change such as choice of commuting methods is easier when it is regarded as a responsibility which organisations and workers share together, rather than a matter of individual choice.
- 1.31 Organisations need to think carefully about **balancing ‘carrot and stick’ approaches** in the overall order of change when implementing low-carbon initiatives. Where organisations have begun the change process with ‘sticks’, the evidence suggests that staff may be less likely to engage in voluntary activities subsequently. This could be due to staff forming negative perceptions of how low-carbon initiatives affect them. Organisations may therefore want to consider beginning low-carbon management approaches with initiatives that will be popular with staff.

Time and ‘Moments of change’

- 1.32 Making low-carbon activities **part of organisational routines** and allocating time within the working day to enable employees to take part helps to foster staff participation. It created a sense of shared responsibility between organisations to provide time for employees to get involved and individuals to contribute their effort and ideas.
- 1.33 Major organisational changes such as relocation, mergers and expansion into new products/services provided opportunities for transformative **moments of change**. Collaborating with other employers to negotiate changes to public transport provision where required is also a useful tactic in gaining support.

Conclusions for best practice

- 1.34 This research has illustrated how using a combination of educational activities, changes in organisational policies and investments in infrastructure can foster new organisational values which lead to sustained behavioural change and employee participation in low-carbon management activities. Addressing individual, social and material factors jointly, in a coherent and holistic programme, is essential to foster lasting change.
- 1.35 The case study evidence suggests that the most important factors in making low carbon initiatives successful are building shared individual and organisational values through individual and group-based staff involvement combined with senior management commitment.
- 1.36 This does not mean that organisations need to make large initial investments in time and money. Simple changes to reduce waste and save energy can be made quickly and easily and opportunities provided by major business change, such as relocation, financial challenges or expansion of products and services, can provide catalysts for wider change which benefit both the organisation and the environment.

2 INTRODUCTION

OVERVIEW

This research project was funded by the Scottish Government, Defra and the 2020 Climate Group to investigate what works for organisations aiming to involve staff in cutting carbon emissions. The project included a literature review, 27 interviews with practitioners and 10 detailed case studies with managers and employees in organisations of varying sizes and from a range of sectors. Analysing the case studies using a common theoretical framework has provided insights for business on how best to create successful low carbon initiatives to engage staff and support low carbon behaviours. Guidance to advise and inspire employers based on the evidence from the project is published separately, as is a case study report which outlines in more detail the implementation process and impact of low carbon initiatives within the case study organisations.

Research Objectives and Project Overview

- 2.1 This research project has been commissioned and funded by the Scottish Government, the 2020 Climate Group and Defra to *identify, document and review* best practice in reducing carbon emissions at work through influencing employee behaviours. The research should be of interest to managers in all types of organisations because it has generated a wide range of key findings that provide insights for business on how best to create successful low carbon initiatives to engage staff and facilitate behaviour change, and provides examples of how organisations have achieved success in this field.
- 2.2 The project aims to explore the evidence on what works in delivering low carbon behaviour change initiatives through workplaces, in order to provide good practice guidance to employers.
- 2.3 Within this broad goal, the specific objectives for the research are to:
 - explore the extent of workplace initiatives to encourage low carbon behaviours, and to characterise these within a classification framework
 - identify ‘what works’ for each type of intervention, and what its potential impacts might be
 - explore why these interventions work, and isolate their theoretical and logistical elements of success, in order to facilitate replication elsewhere
 - identify success factors relating to how an intervention is delivered
 - identify any evidence on the impact of work-based schemes on employees’ behaviour outside the workplace.
- 2.4 Details of the research methods are provided in the research methods section in this chapter, but overall they included a literature review, 27 interviews with practitioners and 10 detailed case studies in organisations.

Background

- 2.5 The context for the research project is set by the ambitious targets for reductions in greenhouse gas emissions committed to in the Climate Change (Scotland) Act of 42 per cent by 2020 and 80 per cent by 2050 (from 1990 levels). In order to achieve these targets, a shift to low carbon ways of living will need to occur across all areas of society: in the public sector, in the private sector, and among individual citizens.
- 2.6 Workplaces are important because of the influence they have on people's behaviours. This is because they are one of the three basic 'microenvironments' in which individuals pass most of their daily lives, along with homes and schools¹. Workplaces are seen as influential sites for behaviour change for a number of reasons because:
- as institutions, they have the potential to exemplify patterns of desirable behaviour to their staff
 - as communities of people, they can develop and demonstrate social norms across their staff
 - as single sites with large numbers of people in regular attendance, they represent an effective channel through which to target individuals.
- 2.7 However, relatively little is known about behaviour change interventions in the workplace, particularly in the context of low carbon behaviours. Examples of the shortages of evidence in the field are:
- no single-source survey of current business activities in this context
 - difficulties in establishing the impacts of such interventions, some of which are due to the general difficulties of measuring the impacts of projects to change behaviour and their ultimate effect on carbon emissions
 - understanding of the diverse motivations for organisations to engage in running such initiatives, and the potential drivers to increase uptake, is weak
 - identity and role of the key gatekeeper for pro-environmental activities within an organisation is poorly understood and it certainly is deemed to vary by company size among other dimensions².
- 2.8 The extensive literature on behaviour among individuals is such a large resource of evidence that it is not necessarily easy for employers and practitioners to find the most helpful sources of information and guidance. In addition, behaviour change principles have been applied in a variety of contexts which may require practitioners to 'translate' ideas from one subject

¹ See e.g. Bronfenbrenner 1979 on ecological models of behaviour
² EPPI/Rathouse/Darnton for Defra 2011

area to another. This can be challenging e.g. borrowing ideas from tackling obesity to encouraging pro-environmental behaviours.

- 2.9 This need for translation is important because there are relatively few examples of behaviour changes in low carbon management which have been adopted and sustained across society. Recycling activity is relatively widespread but changes to transport behaviours, such as greater use of public transport, are more patchy. Where those examples do exist, they tend to show that effective change involves multiple elements, undertaken by a variety of actors working together to provide complementary support. It is in this context that the goals and objectives for this research project have been defined.
- 2.10 This research therefore uses a multi-disciplinary approach, drawing lessons from social psychology, behavioural economics and sociology, because this gives the greatest likelihood of being able to analyse 'what works' in influencing behaviour thoroughly. Different disciplines bring different perspectives on behaviour and highlight different avenues for intervention.
- 2.11 Analysing the success of interventions also requires a clear definition of what we mean by 'behaviour' and the desirability of – and trade-offs between – different outcomes. There are different types of behaviour change. These include starting a behaviour, stopping a behaviour or replacing one behaviour with another. It can involve making a single non-recurrent change such as giving up car ownership or moderating a behaviour e.g. reducing car use. Where new behaviours are adopted or existing ones modified, frequency of behaviour may vary and can range from ongoing repeated activities (such as switching off lights) to infrequent ones (such as replacing heating systems)³. The level of change involved in any behaviour may also range from the very simple to much more complex. The duration of change is also important for long-term impact and sustainability and may relate to the levers being deployed.
- 2.12 Changing behaviours without changing attitudes and values may not result in behaviour which is sustained over the long-term. This research therefore seeks to identify behaviours which range in variety and scale from small to large in the demands they make on individuals and in the levers organisations use for change ranging from education and encouragement to compulsion.

Research methods

- 2.13 The research process involved four phases which are illustrated in Annex 1.

A **literature review** was conducted to identify previous research undertaken on stimulating pro-environmental behaviours in a workplace setting including any existing good practice guidance. This involved a focused search of nine academic databases using search terms agreed with the Scottish Government and supplemented with commissioned reports, think pieces and

³ Christmas et al. (2009) Nine Big Questions about Behaviour Change, Department for Transport

evaluations from central government and devolved administrations, government agencies and relevant organisations within the public, private and voluntary sectors.

- 2.14 A **theoretical framework** was developed drawing on insights from the extensive behavioural change literature principally covering the disciplines of psychology, economics and sociology. The purpose of the framework was to identify and categorise factors which are of key importance in influencing the degree of success in workplace interventions to change employee behaviour. This was used to analyse the findings from the desk research and interviews, and to help interpret and structure the case study evidence. In turn this helped to shape the development of the good practice guidance by illustrating for practitioners ‘what works’ in achieving behavioural change and how this may vary by organisational context. The framework has been customised with examples of how each factor may apply within the subject domain of this project, but it can equally be applied to other behavioural domains and policy challenges.
- 2.15 A scoping phase of **27 interviews with representatives of ‘intermediary’** organisations took place. These organisations consisted of public, private and voluntary sector bodies which work with organisations to help them increase low carbon behaviours. The main purpose of this phase of the work was to identify the range and types of initiatives being implemented by employers to achieve behavioural change in reducing carbon consumption and emissions. This phase of the research was also used to identify likely cases of promising practice where employers or third parties have undertaken some monitoring or evaluation activity to assess the impact of the initiatives which have been implemented. This was an important consideration in selecting organisations to approach in the subsequent case study phase of the project since the intention was to investigate workplace initiatives that were particularly novel and/or successful.
- 2.16 The intermediary organisations were identified through consultation with the Scottish Government, members of the project Steering Group, previous contacts and internet searches. Each organisation received an invitation to participate by email and a follow-up phone call to identify the most suitable person to interview who was best placed to comment on practices in a range of businesses and recommend potential organisations as case studies. The interviews took place by telephone in July and August 2011 and lasted between 20 and 45 minutes. The findings were analysed using an Excel grid with a mix of pre-coded and open responses.
- 2.17 **Ten organisational case studies** were conducted to examine in detail the types of initiatives that employers were introducing to encourage low carbon behaviours among staff. This was done with the intention of identifying examples of good practice and the factors and processes which supported the introduction and sustained impact of initiatives to encourage low carbon behaviours, with a view to providing transferable learning for other organisations. Case studies were selected on the basis of recommendation as examples of innovative and/or successful practice by intermediary organisations and Project Steering Group members. These

recommendations were subsequently validated through seeking further information about current practice from the case studies themselves supported by documentary evidence of impact and existing external recognition of success. The following criteria were taken into account in selecting case studies:

- **Location** – five of the case studies organisations were solely located in Scotland to ensure that any factors which affect management of carbon use reduction, mitigation or avoidance which are specific to the geography of the country in terms of (transport) infrastructure, climate and culture are captured. The rest of the case studies were located in England or in companies with locations in both countries. Where initiatives were particular to the location of the organisation, this was noted in analysing the results.
- **Range and impact of initiatives** – based on the information gathered in the mapping exercise, supplemented by desk research including analysis of awards schemes and competitions which recognise good environmental performance, we identified case studies which best illustrated impact on staff in terms of range of low carbon behaviours which are promoted, use of multiple levers to encourage behaviour change among staff and evidence of impact on greenhouse gas emissions. We sought to include cases where there is evidence of widespread impact on organisational culture and where there is evidence that employee behaviours at home have been affected. Organisations whose activities were primarily focused on changing infrastructure and equipment were not included within the research. Topic areas of interest were specified by the Scottish Government to include organisations which had engaged in a range of initiatives covering transport behaviours, energy use, food supply and reducing waste generation and/or increasing recycling.
- **Sector** – the case studies included a range of sectors to ensure organisations facing a range of different challenges in managing carbon consumption were represented. These included sectors which are greater or lesser users of energy in producing goods and services, those with different demands in terms of travel to work and for work among their staff, and organisations where different types of activities are the highest sources of carbon emissions e.g. energy, use of raw materials.
- **Size of organisation** – the case studies included three SMEs with fewer than 250 staff with the rest made up of larger organisations. This enabled us to take account of the range of challenges faced by organisations in implementing strategies to tackle climate change depending on organisational size.

2.18 The case studies are shown in the following table:

Table 2.1: Case studies

Organisation	Type	Location
Aberdeenshire Council	Local government	Scotland
Wiles Greenwood	Office supplies (SME)	England
EAE	Leaflet distribution (SME)	Scotland
Halcrow	Construction/engineering	UK
BT	Communications	UK
Hilton Edinburgh Grosvenor Hotel	Hospitality	Scotland
InterfaceFLOR	Manufacturing	England
SSE (Scottish and Southern Energy)	Power generation and distribution	UK
Coca Cola Enterprises	Manufacturing	Scotland
The Commercial Group	Office supplies (SME)	England

2.19 The case studies involved semi-structured interviews with a customised topic guide developed in consultation with the Scottish Government. The staff interviewed included:

- up to three senior staff with either overall or project management responsibilities for activities to reduce carbon consumption to identify how these were chosen, implemented and embedded and the results achieved
- up to three front line employees to find out their level of engagement with and responses to the activities, including the nature and extent of any behavioural change, and in addition:
- up to two focus groups with four to eight front line staff in Aberdeenshire Council, SSE and BT, which were able to release this number of staff from work at one time and convene them in a single location.
- All interviews were tape recorded and full notes were compiled.

2.20 In addition, analysis was made of any documentary evidence of impact or evaluations of interventions undertaken by the organisations.

Stakeholder Workshop

2.21 This was convened at the Scottish Government in December 2011. The purposes of the workshop were to:

- present the theoretical framework, and discuss available evidence presented in the literature review;

- discuss the emerging findings from the case studies with case study organisations' representatives, policy makers and other stakeholders;
- help design the shape of the practical guidance in order to meet organisations' needs and maximise usability.

Structure of this report

2.22 The rest of this report consists of four chapters:

- Chapter 3 summarises the findings from the desk research and intermediary interviews about the extent, nature and impact of workplace initiatives to encourage low carbon behaviours
- Chapter 4 provides a summary of the workplace initiatives being undertaken by the case study organisations and their impact
- Chapter 5 uses the theoretical framework of individual, social and material factors to identify 'what works' in encouraging low carbon behaviours among workers, considering which factors are most important in which contexts and why, and whether factors need to be considered in any particular sequence
- Chapter 6 presents the conclusions, lessons learned and policy/practice recommendations.

2.23 The full case studies for each organisation are available separately and an accompanying short guide to good practice for employers and practitioners is available as a separate document.

3 MAPPING CURRENT EVIDENCE ON LOW CARBON WORKPLACE INITIATIVES: WHAT WORKS AND WHY

OVERVIEW

- There is limited guidance available to support organisations in helping employees to adopt low carbon behaviours and the evidence on which much current guidance is founded is not clear. This reflects a lack of evaluation of low carbon initiatives and difficulties in distinguishing between the impact on behaviour and the impact on carbon emissions, combined with lack of research which compares the relative effectiveness of different projects and techniques to encourage behaviour change.
- There is most evidence of employer initiatives to reduce energy use and recycling and less evidence of employer projects to change transport methods and low carbon food consumption.
- Practitioners interviewed estimated that between 20 and 50 per cent of staff participate voluntarily in low carbon initiatives when organisations implement them.
- The factors commonly identified as affecting the success of initiatives are:
 - Senior management commitment and leadership
 - Giving staff ongoing feedback about the performance and impact of initiatives
 - Gaining individual support from workplace champions or informal ambassadors to drive change.
- Additional success factors included: providing information, advice and guidance for staff with suitable infrastructure and equipment to facilitate behaviour change; demonstrating what desired behaviours look like; offering incentives and competitions where needed; and developing personal responsibility.
- Evidence from the literature review shows that most organisations engage with low carbon management due to the appeal of the associated business case founded on improved market reputation, sales and/or customer retention, reducing operating costs and meeting regulatory requirements.

Introduction

- 3.1 This chapter seeks to use secondary sources to map the range of activities undertaken by employers to reduce carbon consumption and to outline any initial evidence about the relative impact of different initiatives and the critical success factors that have made them effective. It draws on a literature search and 27 interviews with representatives from organisations which provide advice and support direct to employers (see Annex 3) for which the methodology is described in Chapter 2 of this report. The findings cannot be regarded as fully comprehensive and representative but they do combine evidence from published sources and contemporary experience from

organisations with expert knowledge of the activity taking place across a range of employers.

- 3.2 The weaknesses of the existing empirical literature mean that it is not possible to single out particularly effective interventions based on published studies. Similarly, the volume of literature does not necessarily reflect the relative effectiveness of different factors as there is an insufficiently comprehensive evidence base on which to draw and only a limited number of factors have been considered within existing studies. The lack of reported evidence about what works and why makes the task of summarising the evidence on workplace behaviour change more difficult and it is hard to establish whether the apparent theoretical basis for a given intervention is more a reflection of researchers' assumptions than of the organisations' approaches themselves.

Types of initiatives being implemented

- 3.3 Much of the behaviour change research relating to sustainability has explored the behaviour of individuals in a home setting. As other recent reviews of the evidence have found⁴, there has been a limited research focus on influencing the environmental behaviour of employees in a workplace context. Four types of initiatives were of interest to this project:

- reducing energy consumption;
- reducing carbon emissions from travel and transport;
- encouraging consumption of food with a low carbon footprint;
- reducing waste creation and increasing recycling.

- 3.4 In terms of activities covered, there is most evidence of employer initiatives to reduce energy use and recycling and least evidence of employer projects to change transport methods and low carbon food consumption. Practitioners from intermediary organisations confirmed that most employer activity was focused on energy efficiency and least activity focused on food sourcing.

- 3.5 Examples of the most common employer activities to change energy consumption include switching off lights/computers, recycling and use of efficient light bulbs⁵. Practitioners noted that common initiatives included:

- providing information on consumption to improve employee awareness
- using incentives, rewards, reminders and penalties to break existing habits and instil new behaviours. These sometimes involved using material symbols or incentives such as stickers or chocolates on computer monitors which were switched off
- appointing energy 'champions' and eco-committees to encourage others to change

⁴ Davies et al., 2009; Bartlett, 2011

⁵ Zibarras et al., 2010

- ranking teams according to their energy efficiency
 - offering home energy checks to staff.
- 3.6 Around half of employers were reported in one survey to encourage use of public transport and around a fifth were trying to reduce business travel⁶. In terms of travel-related initiatives, practitioner interviewees noted that car-sharing, travel plans and cycle-to-work schemes were most popular with employers. A variety of mechanisms were used to encourage participation including:
- incentives and rewards such as subsidised bike purchase schemes and additional annual leave to employees who cycled to work
 - restricting car-parking space, or allocating it only to car sharers
 - providing low-carbon company cars
 - providing shuttle buses between train stations and offices in larger employers, and reducing flights and other travel between office sites
 - support to help staff to work from home.
- 3.7 Efforts to source food sustainably appear to be least common and no evaluation of projects on this topic was found. Practitioners reported that most initiatives focused on encouraging caterers to source local food produce. Other strategies included:
- providing more vegetarian food
 - substituting tap water for bottled water
 - providing advice to staff on smarter food shopping, food storage and uses for leftovers, mostly in larger organisations.
- 3.8 Common waste reduction measures reported by practitioners included:
- removal of individual waste bins
 - reducing use of plastic bottles, cups and spoons
 - using recycled instead of virgin paper.
- 3.9 The literature showed that most employer activities and projects are likely to involve attempts to reduce the negative effects of behaviour rather than stop the behaviour itself (i.e. recycling rather than reducing consumption or promoting public transport rather than avoiding travel altogether)⁷ and small scale changes which are easy to implement, especially in SMEs⁸. This was

⁶ Zibarras, *ibid.*

⁷ Whitmarsh, 2009; Darnton, 2011

⁸ Step Ahead, 2008

corroborated by practitioner interviewees who stated that evaluations usually find greater uptake of 'easy' behaviours.

Level of employee participation in low carbon activities

3.10 Employee participation rates in voluntary activities varied, but were estimated to be quite low. One interviewee stated that it was reasonable for companies of more than 2,000 staff to expect 10-20 per cent of staff to take part; another estimated usual participation levels of between 20-50 per cent of staff. In some cases interviewees focused on participation in the implementation of schemes and in some cases they focused on employee participation in projects once they were running. Factors affecting participation also varied, but lack of staff time was viewed as a particular problem.

What works: evidence on initiatives and success factors

Successful initiatives

3.11 Although it is not possible to single out particularly effective interventions based on published studies, practitioners cited two low carbon initiatives as commonly successful in engaging staff and reducing carbon consumption. These were:

- workplace travel planning, which could include asking employees to draw up and commit to a plan for a low carbon journey to work. This can be demanding in terms of planning and building staff engagement but has a relatively powerful impact on reducing carbon emissions
- basic energy-saving initiatives which provided clear cost benefits, such as switching off lights and computer monitors.

What works: critical success factors

3.12 Overall, it possible to identify some common success factors cited both within the literature and by the practitioners interviewed, in addition to factors only cited by practitioners. Practitioners identified a wide range of success factors that they believed provided causal explanations of more successful employee engagement or overall impact of the initiatives they had seen used in workplaces. They identified these factors as being of common importance regardless of the subject matter or topic of the particular project. These are:

- provision of ongoing feedback to staff on performance and impact of initiatives which demonstrate clear cash savings
- use of workplace champions to engage staff and change norms of behaviour and organisational culture, also including competition between teams
- senior management commitment and leadership.

Providing Feedback

- 3.13 Several studies⁹ have highlighted the importance of collecting and monitoring workplace data relating to sustainability. Two aspects of monitoring and measuring change emerge as being particularly relevant.
- 3.14 First, it is important to provide feedback to staff about the impact of environmental initiatives on specific outcomes¹⁰. Lack of feedback about the impact of changes, and a lack of perceived control over sustainability in the workplace, were identified as key barriers to sustainable behaviour¹¹. Second, performance measures (e.g. carbon emissions, energy consumed) should be communicated at a level meaningful to staff rather than at an organisation level¹². This helps to illustrate how individual behaviour can make a difference¹³. Provision of feedback on impact, particularly in terms of cash savings generated was also cited by practitioners as a major success factor for effective initiatives.

Workplace champions

- 3.15 Several of the research studies report the effectiveness of workplace champions as employees with a role and responsibility for promoting low carbon activities and changes. For example, a literature review and consultation with stakeholders about communicating on the sustainability agenda found that having a named individual within the workplace with responsibility for promoting resource efficiency was effective in improving resource use¹⁴. This is because champions can be effective at publicising performance and at challenging established work practices due to their understanding of the impact on environmental performance¹² and maintain employee interest and engagement over a period of time¹⁵. Further evidence suggests that face-to-face engagement of employees by champions is more effective than web-based methods¹⁶. It is also likely that contextual knowledge of an organisation which can take into account the existing culture and social norms is important in building momentum among bottom-up approaches and tailoring initiatives for specific workplaces¹⁷. Practitioners emphasised the role of champions in ensuring that employee ideas and suggestions are clearly invited and acted upon as well as engaging staff with different kinds of characteristics e.g. role and personal background. This is because widespread engagement of staff in low carbon initiatives was regarded in itself as an important factor in helping to change workplace norms and cultures. Champions may also have a role in stimulating competition between teams, which practitioners believed was important in generating a dimension of social motivation through team identification. Schemes which

⁹ Kane, 2011; Plank, 2011; Feasby and Wells, 2011

¹⁰ Carrico et al., 2010

¹¹ Plank, 2011

¹² Feasby and Wells, 2011

¹³ GROW, 2011

¹⁴ AEA, 2009

¹⁵ Anderton et al., 2011

¹⁶ Centre for Sustainable Energy, 2009

¹⁷ GROW, 2011; Centre for Sustainable Energy, 2009; Southerton et al., 2011

secured higher participation from staff had gained commitment from local managers, but also engaged with a broad a range of staff – both during implementation and in the day-to-day running of the project – so they were not seen as a purely top-down process.

- 3.16 The evidence also suggests that there may be differing effects between different champions depending on their approach and commitment to the role. For the majority of employees ‘green’ behaviours are extra-role activities which can compete with other (higher) priorities for time and attention¹⁸. As a result, individuals may not all devote the same amount of effort to the role¹⁹.

Engagement and commitment of senior managers

- 3.17 The engagement and commitment of senior managers is reported to be a critical success factor in initiating and sustaining workplace initiatives to encourage low carbon behaviours²⁰. This is primarily because they are custodians of resources that are required to make projects successful. In SMEs, organisational cultures can be particularly dominated by the owner-manager²¹ and one study reported that pro-environmental activities in SMEs stemmed from the personal beliefs of directors and managers²². This was echoed by practitioners who stressed the importance of senior management commitment and the appointment of a manager with dedicated responsibility for environmental issues.
- 3.18 According to case study research, senior managers must be visibly involved and lead by example in order to demonstrate required behaviours to employees and persuade them to perform them¹². Most employers in a survey believed championing ‘green’ initiatives through senior managers was one of the most effective ways of promoting sustainable workplace behaviour⁵.
- 3.19 Practitioners believed that evidence of senior management commitment should take the form of including low carbon management principles within an organisation’s overall strategy and regularly reviewing organisational practice. They pointed out opportunities to link low carbon initiatives more closely to Corporate Social Responsibility policies and brand identity. However, some interviewees stressed that managers ‘practising what they preach’ was the most important factor, as some organisations publicise their environmental policies widely but do not embed them fully within management practice.

¹⁸ Ramus et al., 2007

¹⁹ Carrico et al., 2010

²⁰ Zibarras et al., 2011; Centre for Sustainable Energy, 2009; CMI, 2009; Feasby and Wells, 2011

²¹ Vickers et al., 2009

²² Step Ahead, 2008

Other Success Factors

3.20 In addition to the factors identified in both the empirical literature and from practitioner interviews, further critical success factors were identified by practitioners and these are now summarised below. The first two points were generally considered to be most important.

- **Provision of supporting infrastructure and equipment:** the equipment recommended as most useful by practitioners was energy monitors because they provide tangible and visible feedback on performance. Some practitioners suggested providing teleconferencing facilities and bicycles for travelling to work as examples where infrastructure/ equipment was important for success. However, practitioners noted that changing infrastructure without staff engagement was potentially problematic, and that staff needed to be properly trained in the use of any specialist equipment.
- **Providing information, advice and guidance:** practitioners believed this was important particularly in terms of explaining how projects and initiatives worked in practice but noted that it was usually insufficient on its own to generate change, stressing the role of feedback on performance and incentives to accompany it. Several practitioners emphasised the importance of ensuring information was not patronising and was easy to access. The evidence from the empirical literature suggests that face-to-face communication from peers in the role of workplace champions may be an important medium for providing information, advice and guidance.
- **Provision of suitable incentives:** practitioners stressed the need for incentives and, consistent with psychological theory, pointed out that the incentives offered must be ones valued by staff, simple to understand and, ideally, relatively cheap for the organisation. They recommended financial incentives or the chance to gain additional holiday as likely to be most popular and successful. Some practitioners believed that targets for low-carbon behaviour should be linked to staff appraisals, but could not provide examples of this change being made. A minority of practitioners noted that using external incentives rather than seeking to change individuals' fundamental values may not bring about a sustained change in attitudes. However, most believed that incentives were essential. It is not clear whether incentives are required simply at the point of initial engagement or whether they are required on a long-term basis to sustain behavioural change.
- **Developing a sense of personal responsibility:** several interviewees mentioned the importance of individuals taking ownership for their actions and the possibility for building impetus for change from connecting 'green' behaviour to personal values.
- **Use of inter-staff competitions:** this factor is likely to be important because group dynamics and collaboration are likely to engage initial employee interest and help sustain momentum. They may also add an

enjoyable social dimension to the activities. Public recognition of team performance is also likely to reinforce desired behaviours.

- **Capitalising on ‘moments of change’:** practitioners who discussed making and breaking habits talked of the significance of catching staff at ‘transition’ points, such as starting in a new role, which could serve as a trigger point for reflecting on and changing existing behaviours. A number mentioned the importance of including low carbon behaviours as part of the induction process.
- **Demonstrating what alternative behaviours look like:** practitioners stressed that it was important not to assume that workers know, understand or can imagine working in a different way or adopting different behaviours. Providing examples of these which are as concrete and tangible as possible and providing support for staff to understand and try out new behaviours with constructive feedback, where necessary, was important to change habits.

Why businesses engage in low carbon activities

- 3.21 The evidence presented above has highlighted the key role played by senior managers in the effectiveness of environmental management practice. This raises the question of why organisations engage in low carbon initiatives in the first place, and what the key rationales are that appeal to senior managers.
- 3.22 The evidence suggests that messages encouraging employers to develop a low-carbon workplace should be based around a business case, in part because many businesses are still reported to view sustainability as distracting from their core business¹⁴. One survey of 1,500 managers found that there was some scepticism about environmental issues at work, and that this increased with seniority: 54 per cent of directors were identified as cynics about carbon management and their ability to reduce their carbon impact²³.
- 3.23 However, there is conflicting evidence about the extent to which messages should focus explicitly on ‘green’ messages or on other factors, such as cost saving. Suggestions for business relevant messages include focusing on the reduced costs and increased benefits of a low carbon workplace. CMI (2009) suggest that a focus on costs is likely to resonate with managers better than messages about carbon emissions, which can seem more abstract and not directly related to business.
- 3.24 Effective cost and benefit messages are reported to include:
- an enhanced reputation (e.g. with consumers) and as a potential marketing device²⁴; practitioners believed that brand image was more important to larger organisations

²³ CMI, 2009

²⁴ Parker, 2011

- creating competitive advantage and green market opportunities²¹
- reduced operating costs and increasing margins²⁵; pressures on staff time increasing the attraction of reduced commuting time²⁶
- keeping one step ahead of legislation and taxation, especially for SMEs²¹.

3.25 On the other hand, some argue that focusing on non-environmental messages to influence behaviour does not create an identification with or loyalty to specific 'green' behaviours²⁷. An example of this is found in the planned behaviours of consumers participating in a focus group, undertaken by IPPR (2009). They found that consumers were motivated to take on more 'green' behaviours by the message of money saving. However, there was evidence of rebound effects in that some consumers would then transfer the money they saved to other (more) carbon intensive behaviours, such as flying. Although this research was not undertaken with businesses, it highlights the need to ensure that there is also some understanding about the reasons why changing behaviour is important so that changes in behaviour do not result in unintended consequences. This is also echoed in guidance on developing values around sustainability, where engaging individuals through appealing to extrinsic values of status, cost saving or profit is argued to reinforce those values, making it subsequently harder to challenge them²⁸.

3.26 It is likely that some degree of targeting of different kinds of organisations is needed, based on evidence that employers engage with the low carbon agenda for different reasons and are in different states of readiness to make changes. Larger organisations are more likely to have measures for calculating and managing their carbon footprint and practitioners reported that bigger organisations were more advanced in adopting low carbon management principles, since they were better equipped to absorb infrastructure costs and appoint dedicated managers. This suggests that some smaller organisations might need to be convinced that environmental management activities are relatively easy and time investment in undertaking them will pay off. Some evidence reports that financial savings may not be a primary motivation for SMEs in engaging in activities such as recycling, but the activities must be at least cost-neutral compared to landfill disposal and facilities must be provided²⁹. Practitioners took a stronger view and emphasised that cost saving was a strong and important incentive to SMEs, though they also emphasised that some leading examples of SMEs with successful low carbon initiatives had made such changes on the basis of commitment to environmental sustainability, not profit or costs. Public sector organisations were found to be taking the lead relative to voluntary and

²⁵ Kane, 2011; Ramus et al, 2007

²⁶ Southerton et al., 2011

²⁷ Simpson, 2011

²⁸ PIRC, 2011

²⁹ WRAP, 2008

community sector organisations and private sector companies so messages to engage the private sector may need to be developed^{23,30}.

- 3.27 Organisations which are growing are more likely to have carbon management practices in place. The benefits of implementing these initiatives may need to be identified and sold more clearly to organisations which are stable or declining in size³¹. This is reflected in the views of practitioners who expressed strong concerns that the economic context may be having an adverse effect on take-up of initiatives. Interviewees believed that financial pressures could cause firms to lose sight of low carbon initiatives as they focused on short-term issues, despite the potential for longer-term savings from initial investment.
- 3.28 Many practitioners felt that larger firms were generally more advanced in adoption of environmental initiatives. Some interviewees linked this to the relative level of workforce education and felt it could be important to organisational willingness to engage in low carbon behaviours. Some reported that for lower skilled, lower paid workers, incentives and sanctions could be important levers in addition to simply awareness-raising activities.
- 3.29 Overall, these findings are not consistent in their assessment of employer motivations for promoting low carbon activities. This reflects the diversity of the business community, the likelihood that many organisations have multiple, mixed motivations for engaging in change and the difficulty of tailoring messages by trying to categorise businesses simplistically. However, it is likely that for the short-term at least, business engagement is likely to be cost-sensitive where it is not required through regulatory compulsion, and some consideration needs to be given of how to balance messages based on ethical principles of sustainability and/or profit and costs.
- 3.30 This concern with business engagement is reflected in a relatively large number of good practice guides identified during the literature search relating to sustainability in the workplace. Most of these are concerned with energy consumption, low carbon transport, waste minimisation, reducing water use and green procurement. However, the focus of such guides is on engaging organisations with low carbon activities, not employees within organisations. Some of the messages may be applicable at the individual as well as organisational level, but given the relative lack of theoretical rigour in the literature, it is also not certain how well-founded the guidance is. Much of the advice within good practice guides consists of key pointers or issues that employers need to consider, but there is often very little description or detail of e.g. how to 'engage and/or consult with employees'.

³⁰ The report does not specify whether the sample is representative, whether the data are weighted or the survey response rate

³¹ Ramus et al., 2007

Overcoming challenges to encouraging low carbon behaviours

3.31 Practitioners identified that the most common challenges that organisations face in promoting low carbon behaviours among staff include:

- Lack of capacity or willingness to invest in resources (both time and money). This reinforces the need to develop initiatives which are simple and effective and the added value of external resources, but also the importance of shifting management beliefs as they are often the decision-makers about resourcing priorities
- Challenging staff attitudes and values, requiring effort both to generate interest and to tackle scepticism about climate change. Practitioners felt that employees should be provided with educational opportunities about their responsibilities in environmental management, but that environmental goals should also be portrayed as consistent, rather than competing with, wider business objectives.
- Difficulties of overcoming habitual behaviour, and in encouraging staff to adopt new practices which points to the need to capitalise on moments of change
- Lack of leadership and co-ordination making environmental initiatives harder to implement and to sustain over the long-term. This points to the need to mainstream and integrate environmental initiatives as part of broader organisational priorities around branding, bottom line and or corporate social responsibility principles, and the need for committing resources to co-ordinate projects.

3.32 The relative difficulty of these challenges varies according to organisational context but some practitioners commonly noted force of habit and resistance to change as particularly important obstacles. Suggested ways of solving these challenges included:

- Taking ownership of initiatives, often through appointing a dedicated leader, as a way of allocating responsibility and driving change
- Development of appropriate incentives and penalties
- Active engagement of staff at all levels by demonstrating the difference that low carbon behaviour could make, being open to staff suggestions, highlighting the competitive advantages of these practices, and offering support or mentoring to make changes.

Challenges of evaluating behaviour change initiatives

3.33 Much of the literature that covers environmental behaviour in the workplace is based on opinion, rather than evidence of what works and why. There are inevitably multiple definitions of what constitutes success and 'effectiveness', including intermediate outcomes such as scale of sustained impact on

employee behaviour and overall carbon emissions reduction, but these are not always distinguished clearly in the literature and there appears to be very little research using a multi-level methodology which considers both behavioural outcomes and impact on carbon emissions.

- 3.34 Those papers that seek to explore environmental interventions and their outcomes often fail to consider the impact of other organisational factors on the success of an intervention and tend to lack theoretical underpinning. For example, the research about what is effective tends to be based on employers' views of what has worked; these self-reported assessments of effectiveness tend not to be based on objective evidence, and the majority of employers do not collect data about their environmental impact, or measure and monitor any changes⁵.
- 3.35 Similarly, practitioners interviewed reported that some but not all organisations attempted to monitor and evaluate their initiatives. Types of indicators used included intermediate outcomes such as the volume of recycling, and overall outcomes in terms of reduced carbon emissions. It was more common to measure overall carbon impacts or intermediate outcomes than changes in employee behaviour. This may be important because it is common for organisations to make changes to infrastructure simultaneously with encouraging behaviour change, and in these cases measuring employee behaviour may be important to identify the relative impact and contribution of changes. Practitioners reported numerous barriers which inhibited employer evaluation activity including:
- complexity of measurement, with some outcomes being much easier to measure than others. For example, organisations tend to be able to track changes in their overall energy use, but often find it more difficult to disaggregate this data to measure savings in particular areas.
 - difficulty in identifying concrete links between initiatives and changed behaviour, because of difficulty in attributing causality for individual behaviour
 - difficulty in distinguishing contribution of behavioural change from that of improved technology.
- 3.36 Evaluation problems can also be caused by lack of data or relevant benchmarks, although many practitioners reported that organisations they worked with did attempt to benchmark their carbon emissions against similar firms. However, SMEs in particular view measurement activities as an unwelcome administrative burden. Several practitioners also highlighted the lack of qualitative data to assess behavioural change, because carrying out detailed research takes time and resources.
- 3.37 There is scant research which compares the relative effectiveness of different types of interventions and considers a wide range of factors in determining success. Most of the research is relatively small scale. Overall this suggests that the evidence which maps our understanding of environmental behaviours among employees at work is at a very early stage of development. We need

much greater understanding of 'what works', how results are achieved and why and how this might vary in different organisational contexts.

4 LOW CARBON INITIATIVES IN CASE STUDY ORGANISATIONS – TYPES OF CHANGE AND THEIR IMPACT

OVERVIEW

- Across the case studies, organisations of all types engaged in a range of low carbon initiatives, rather than a single initiative in isolation, especially where the projects were relatively straightforward.
- Case study examples show a range of projects of different scale and complexity. Those schemes which are easier to implement, such as recycling and energy saving techniques, were more common than challenging changes such as transport policies.
- Organisational motives for change included:
 - Personal commitment of senior managers to protecting the environment
 - Commercial benefits from increased business, linked to customer pressures and building a positive environmental brand
 - Pressures of regulation and cost savings
 - Taking advantage of ‘moments of change’ such as relocation
- Case study organisations do not tend to compare the impact of their initiatives with those of other organisations or to use standardised methods of measuring impact. Organisations contemplating implementing low carbon initiatives may benefit from access to common guidelines on the costs and benefits of these schemes.

Introduction

4.1 This chapter examines the range and impact of low carbon initiatives that have been implemented in case study organisations. It begins with summaries of the main activities in each of the case study organisations followed by discussion of the impact of the initiatives and an overview of the different types of low carbon activity across the case study organisations.

Case study summaries

4.2 Annex 4 provides brief summaries of the activities at each of the case study sites. Fuller versions of these cases are available separately.

4.3 It is important to note that the qualitative research methods used for this study focus on understanding how low carbon initiatives operate in a workplace context and case studies have been chosen to illustrate a range of different activities. It is therefore not possible to make generalisations about how typical the approaches used by organisations in this research are across the wider population. The summary of low carbon activities does not necessarily encompass all the initiatives that the organisations were using, as the research focused selectively on those of particular interest due to the subject matter or methods of implementation.

Organisational motives for change

4.4 Organisational motivations for change encompassed four broad triggers:

- Personal commitment of senior managers to protecting the environment
- Commercial benefits from increased business, linked to customer pressures and building a positive environmental brand
- Pressures of regulation and cost savings
- Taking advantage of 'moments of change' such as relocation.

4.5 Managers from some of the case study organisations voiced a moral imperative for their activities, couched in a belief that encouraging low carbon behaviour is the 'right' thing to do. As such, engagement in low carbon activity was often driven by the personal beliefs of key individuals, for example in the case of managers at Wiles Greenworld, Edinburgh Grosvenor and EAE. Some organisations also felt they were morally obliged to seek to minimise carbon emissions due to the potential impact of their operations. InterfaceFLOR, Halcrow and SSE noted that core business activities could have detrimental impacts on the environment so it was necessary to reduce or offset these effects. EAE and Commercial similarly felt their industries were responsible for a high degree of waste and so needed to mitigate these outputs.

4.6 Potential commercial benefits from low carbon activities were a factor leading to their adoption for EAE, Hilton Edinburgh Grosvenor, Commercial, Wiles Greenworld, InterfaceFLOR and Halcrow. EAE and Hilton Edinburgh Grosvenor are affected by the tourism industry and Commercial and Wiles Greenworld provide office supplies to other companies. All four companies believed there was a general trend in their sector towards engagement in low carbon initiatives and therefore there was a need to at keep up with, if not improve upon, the schemes of their competitors. The salience of environmental issues in office supplies is the sector's association with waste e.g. paper, print cartridges, cardboard, while in the tourism industry there were concerns about the negative effects of environmental damage to tourist attractions. In both sectors corporate customers, rather than private individuals, were the key triggers for low carbon activity motivated by client pressures. Similar pressures were described at Halcrow. In particular there were high demands from public sector customers for low carbon management to be built into contracts. Some of Halcrow's initiatives were developed for these contracts and then expanded across the organisation.

4.7 For some case study organisations regulation was a motivation to pursue low carbon behaviour initiatives, although to a much lesser extent than commercial and moral reasons. Coca Cola Enterprises (CCE) discussed the impact of the Climate Change Levy as a reason to become more energy efficient. Regulation was also discussed in general terms as a motivating factor by Wiles Greenworld.

- 4.8 Cost pressures played a part in some schemes. This was most notable in the case of Aberdeenshire where the Worksmart flexible working programme was primarily marketed as a cost saving initiative. At Halcrow, restrictions on business travel were also mainly driven by a need to reduce travel costs. Overall it is interesting that few organisations cited cost as a major factor and most comments regarding cost were restricted to observations that schemes were not particularly expensive or in some way paid for themselves by making savings which offset upfront costs. This varied significantly depending on organisational context and each workplace's current financial position and performance. It is likely that cost pressures may be more important among the wider business population.
- 4.9 'Moments of change' or points when normal patterns of business activity are disrupted, have been important in a number of cases. For an organisation, the most obvious example is a change of premises. Changes of premises played a major role in the Halcrow and EAE initiatives. Both organisations were committed to low carbon management but the change of premises provided a stimulus to act on those inclinations to a greater extent.
- 4.10 Other organisations had similar moments which sparked initiatives. At Commercial the director who instigated much of the low carbon activity attended a talk by Al Gore which encouraged her to take action. At CCE a visit from the Scottish Cabinet Secretary for Rural Affairs and the Environment who enquired about the site's waste strategy led to an intensification of efforts on waste.

Types of low carbon activities

- 4.11 Of the four areas of low carbon activity covered by this study (i.e. energy, waste minimisation/recycling, transport and food) most activity was focused on the first three. Most of the case studies had implemented projects in two or more of these areas. There was less evidence of initiatives related to food, with only two organisations taking action in this area. The focus on waste processing and energy use, and the lack of activity in the area of food, supports the evidence on the popularity of different types of initiatives reported by the scoping interviews and literature discussed in Chapter 3. It is likely that this is because many workplaces do not provide catering for staff.
- 4.12 Within **recycling and waste initiatives**, by far the most popular approach was to increase the provision of recycling facilities and take steps to raise awareness of those facilities. A number of cases also changed the distribution of waste and recycling bins to encourage recycling, for example removing individual waste bins from beneath desks in offices and placing recycling bins in locations where staff congregate. In general, fewer organisations focused on re-use or waste reduction with only three organisations explicitly mentioning initiatives in this area (Halcrow, Coca Cola, InterfaceFLOR). These included efforts to encourage re-use of cardboard and other packaging.
- 4.13 **Energy initiatives** were dominated by schemes aimed at encouraging employees to reduce energy consumption by switching off lights, computers

and other electrical devices. Approaches to this varied but often involved providing information and reminders, attempts to embed a 'norm' of switching off equipment along with steps to make it easier, for example by having easily accessible single power switches. In addition to this, installing infrastructure such as low energy lighting and motion sensors attached to lighting was fairly common. Finally, several case study organisations introduced energy monitors and energy audits to make staff aware of the levels of energy being used.

- 4.14 Among the **transport initiatives**, organisations have adopted a number of schemes to shape employee behaviours related to both commuting and business travel. Providing training on fuel efficient driving is one of the most popular initiatives, usually aimed at drivers of company vehicles in organisations with a sizeable commercial fleet. Fuel efficient driving training was often combined with methods to reduce carbon emissions more generally, for example by purchasing low carbon vehicles or installing a biofuel pump for both private and commercial use. A smaller number of organisations put specific restrictions on business travel, including discouraging travel, limiting air travel and encouraging public transport use for business travel.
- 4.15 To encourage sustainable transport methods when commuting, organisations commonly supported cycling through providing money towards equipment as well as facilities for cyclists such as cycle racks, showers and lockers. Direct restrictions on how people commuted to work were much rarer, with only two organisations introducing policies which restricted car parking (Halcrow and Scottish and Southern Energy [SSE]).
- 4.16 Initiatives on **food procurement** were rare among the case study organisations. Although not focused on employee behaviour, the Hilton Edinburgh Grosvenor have introduced a policy of using locally sourced food. To a large extent the absence of food-based initiatives is due to many of the case study organisations having no onsite catering facilities.

Reasons for relative levels of popularity among different initiatives

- 4.17 The most common initiatives were those which are generally most straightforward to implement, in particular increasing levels of recycling and encouraging staff to switch off electrical appliances. These initiatives tend to cost very little money and time to implement, though achieving a high level of compliance may require a high degree of persistence as well as giving some thought to potential barriers to behaviour change. Additionally, awareness of these kinds of initiatives is likely to be high because of the long history of public campaigns encouraging individuals to recycle and reduce energy consumption.
- 4.18 Among low carbon initiatives on waste, re-using materials and reducing waste production received much less attention than recycling. Even at companies where re-use took place, for example Edinburgh Grosvenor and Commercial, interviewees focused less on this than recycling. This is likely to be because

re-use initiatives require more effort to implement and awareness of techniques involved may also be lower.

- 4.19 The popularity of fuel efficient driving initiatives may be at least partially due to their potential for cost savings in organisations with sizeable vehicle fleets. Changing individuals' transport and commuting behaviours to more sustainable methods is known to be challenging and therefore, unsurprisingly less common among the case study organisations.

Impact of the initiatives

- 4.20 Broadly speaking there are three main levels at which organisations measured the impact of low carbon initiatives:

- Level 1: some organisations have attempted to measure the impact of schemes directly on behaviours. For some types of initiatives this is relatively easy; for example, it is relatively straightforward to count the number of people cycling to work according to the number of bike racks used. Other types of transport behaviours may be more difficult to monitor and require staff surveys.
- Level 2: the second level of impact measurement uses intermediate outcomes, for example, the amount of waste being recycled or reductions in energy use.
- Level 3: the third level of impact assessment monitors overall change in carbon emissions.

- 4.21 Overall, schemes in the areas of transport and energy appear to produce the largest cost savings, although we must be cautious in interpretation because figures are not necessarily comparable across organisations of different sizes and in different sectors. A number of organisations have found it difficult to disaggregate the impact of behavioural changes from infrastructure changes, particularly where they only calculated their overall carbon emissions.

- 3.21 There is some evidence of spillover effects from work to home behaviours, most commonly in fuel efficient driving and recycling, but also noticeable that the attraction of personal cost savings sometimes led to employees adopting fuel efficient driving techniques at home before using them in the workplace. It was less common to find changes to choices of transport methods. This also varied depending upon the geographical location of the organisation and the availability of public transport options. More extensive spillover effects were found where organisations had used educational approaches to changing employee values and attitudes, rather than simply applying a corporate policy (see Chapter 5 for further discussion).

- 4.22 Typically case study sites have invested in additional infrastructure such as energy efficient lighting or low carbon vehicles at the same time as encouraging behaviour change. As a result when indicators such as energy usage fall, it is difficult to establish whether this is due to behaviour change or infrastructure change. This was particularly noted by EAE where eco-driver

training was accompanied by regular improvements in the fuel efficiency of vans. Some measures are easier to disaggregate than others. For example, increases in recycling can be almost entirely attributed to behaviour changes.

- 4.23 Equally it is sometimes difficult to 'scale up' the impact of measured behaviour change into a carbon impact, as this often relies on assumptions about the carbon impact of previous behaviours. For example, at Halcrow, efforts at calculating the carbon impact of individuals taking public transport to work had to be based upon assumptions that each journey via public transport saved a car journey of three miles by car. These figures are therefore only approximate.
- 4.24 There are also challenges in comparing impact of initiatives between case studies. The cases come from very different industries with different scope for making carbon savings. The organisations did not collect the same kind of information with the intention of making it comparable. Finally the schemes have been implemented over different periods of time, and changes in indicators have consequently been measured over varying periods of time.

5 EXPLAINING ‘WHAT WORKS’ AND WHY : LEARNING POINTS FROM CRITICAL SUCCESS FACTORS AND OVERCOMING BARRIERS TO LOW CARBON BEHAVIOUR

OVERVIEW

- An Individual, Social, Material (ISM) framework is used in this chapter to identify common themes about what works in encouraging low carbon behaviours from across the case studies. The chapter identifies learning points for organisations to consider in choosing to implement low carbon initiatives.
- Low carbon initiatives are most extensive and sustained in their effects when they build on shared values between organisations and employees.
- Understanding staff motivations for taking part – the ‘what’s in it for me’ question - and communicating these benefits widely is important to engage as wide a range of employees as possible.
- Staff involvement is essential to success because employees are one of the best sources of new ideas for carbon reduction. More generally, organisations with a high involvement culture achieve better organisational performance.
- Senior managers and other key players need to demonstrate low carbon behaviours to the rest of the workforce. Formal or informal champions or teams who have benefited from engaging in low carbon projects are powerful role models for change
- Build a strong low-carbon or green image to help attract and retain customers and staff.
- Developing new policies are key drivers of change. Policies should be co-designed with staff wherever possible. They give backing to initiatives where employees may initially be reluctant to participate, such as limiting work-related travel by car or – for longer trips – by plane.
- Make it easy for staff to comply with policies by considering, for example, self-funding subsidies for public transport, and providing equipment for cycling.
- Sharing ways of cutting carbon emissions with clients and at networking events can spark inspiration and help solve problems and specialist advisory organisations also offer support.
- Moments of major change for organisations can provide opportunities to review and cut carbon emissions, whether this is through financial pressure, merger/acquisition, expansion or relocation.
- Low carbon technology can lead to considerable savings on fuel and energy costs through changing energy sources, lighting systems or providing technology to enable virtual working.

Introduction

5.1 The previous chapter outlined the type and scale of low carbon activity and organisational motivations for change. This chapter seeks to draw out the implications for organisations on what works in implementing these types of change. To do so, it uses an Individual, Social, Material (ISM) framework to identify common themes about what works in encouraging low carbon behaviours from across the case studies. The chapter identifies learning points for organisations to consider in choosing to implement low carbon initiatives. The chapter picks out key principles which organisations can adopt to make initiatives successful and refers to the case studies where more detail can be found. The major learning points are based on two key themes which are explored throughout the chapter:

- critical success factors that explain the relative impact of the initiatives
- blockages and barriers to the adoption, implementation and impact of initiatives to encourage low carbon behaviours and how organisations have overcome them

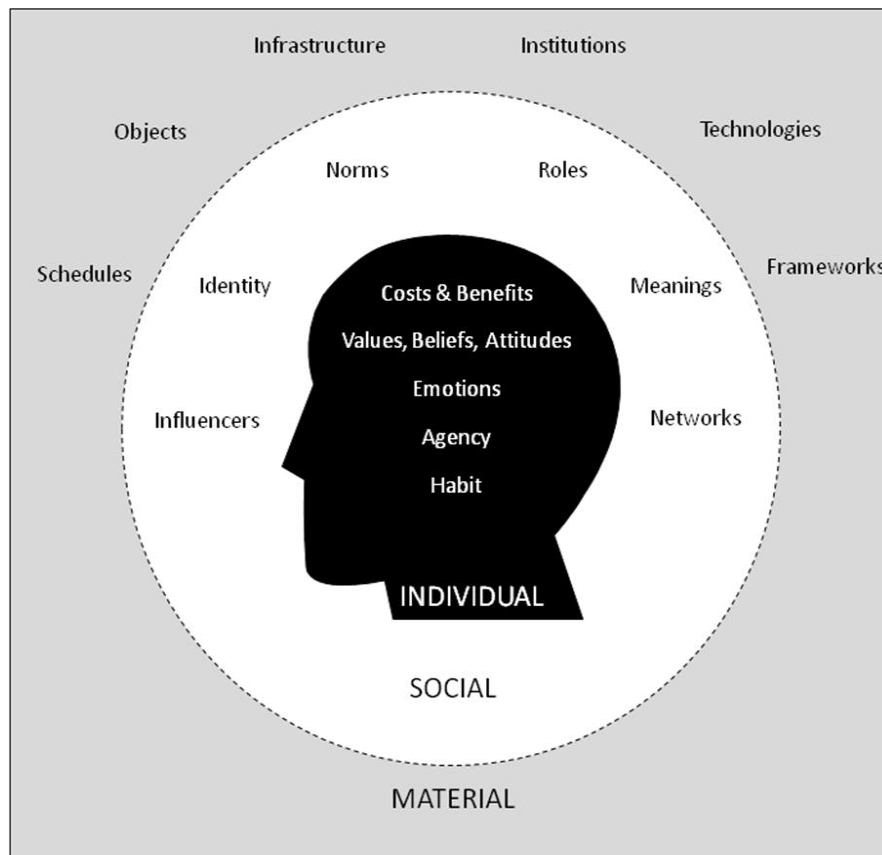
Theoretical framework

5.2 To help redress the shortage of suitable theoretical frameworks which have been applied to low carbon initiatives in the workplace, this report has developed a framework to help analyse the findings and present conclusions and learning points which are transferable to other organisations.

5.3 This classification of factors and influences on behaviour builds upon and extends the three-part typology developed by the Sustainable Practices Research Group (SPRG) in their *International Review of Behaviour Change Initiatives* for The Scottish Government²⁶. The typology – of Individual, Social, and Material contexts – is designed to present a rounded view of the factors influencing behaviour, drawing on multiple academic disciplines, and underlining that changes in all three dimensions are required for lasting behaviour change to occur.

5.4 A summary figure showing the three contexts and the factors and influences in each context is shown below.

Figure 5.1: Factors & Influences in Individual, Social and Material Contexts ('the ISM model')



5.5 The classification of factors and influences on behaviour focuses on three aspects:

- **Individual factors** tend to be internal to individuals, and to be consistent with an understanding of behaviour which highlights individual choice. The individual context includes factors concerned with how individuals think about and view the world, which consequently help shape their behaviours. These factors relate to motivations and calculations including perceived costs of action or inaction. The factors and influences included in this context are: Values, Beliefs, Attitudes, Emotions, Agency, Habit, Costs & Benefits; a glossary of definitions is provided in the table below. Most factors in the individual context derive from psychological theories which are primarily concerned with how individual citizens view the world.

Table 5.1: Glossary of terms relating to individual factors affecting behaviour change

Term	Definition
Values	Guiding principles that individuals use to judge situations and determine their courses of action. Values are at the root of all other motivations, including beliefs and attitudes.
Beliefs	General orientations towards or ‘worldviews’ about particular aspects of life (e.g. low carbon living). Beliefs sit between values and attitudes in the motivational system.
Attitudes	A positive, negative or neutral view of a specific subject, activity or behaviour (e.g. recycling).
Emotions or ‘affect’	Feelings in relation to a particular subject, activity or behaviour, which have a role alongside information or other calculations in determining how we respond.
Agency	A person’s level of confidence that they can undertake the behaviour in question, and see it through to completion; also a reflection of their perceived level of control over the behaviour in question.
Habit	Usually described as a factor driving behaviour, working alongside (or more often against) rational intentions; habitual behaviours tend to be those which we perform frequently, in the same context, and with little conscious thought.
Costs and Benefits	A rationalist approach to behaviour suggests that individuals’ choices are determined by calculating the relative costs and benefits of a given course of action. Costs and benefits can be measured in terms of money or other units like time. Behavioural economics has shown how these calculations tend to be imperfect, and can be influenced by how information is presented to individuals

- **Social factors** concern how individuals operate in groups, and include motivations, cultural conventions and social norms of behaviour shared with others. Also included here is the power of other individuals, and of networks themselves, to influence individuals and predetermine their behavioural options. The factors and influences included in this context are: Norms, Roles, Identity, Influencers, Networks, Meanings; a glossary of definitions is provided in the table below.

Table 5.2: Glossary of terms relating to social factors affecting behaviour change

Term	Definition
Norms	Perceptions that people have regarding how other people would regard their behaviour; in turn these perceptions have a strong influence on the behavioural decisions that people make.
Roles	Multiple identities or personae which an individual plays out in different social situations; these roles bring with them different repertoires of behaviours and attitudes.
Identity	An individual's fundamental sense of who they are, which shapes their attitudes and behaviours; note that this sense of self is also constructed in relation to how others are perceived.
Influencers	People who have power to shape the behaviour of others through defining social conventions; their power to influence may be derived from personal characteristics or status e.g. in an organisation.
Networks	Connections between individuals and organisations that predetermine the options and avenues available to people; as well as determining options, networks also define the limits or frontiers to areas of activity.
Meanings	Socially-constructed understandings including images, meanings, ideas and associations; these meanings effectively set the context for a behaviour or practice, and in so doing help to sustain it.

- **Material factors** primarily consist of visible or invisible structures patterning daily life which are to varying extents beyond the control of individuals. They include aspects of both hard infrastructure (e.g. objects, amenities) and soft infrastructure (e.g. institutions, organisational policies, and time-based schedules). The factors and influences included in this context are: Infrastructure, Objects, Technologies, Frameworks, and Schedules; a glossary of definitions is provided in Table 5.3.

Table 5.3: Glossary of terms relating to material factors affecting behaviour change

Term	Definition
Infrastructure	Hard infrastructure relates to the material barriers out there in the environments in which people live which determine the possibility of a behaviour occurring; such factors can often prevent even motivated people from undertaking the behaviour in question.
Objects	Moveable tangible pieces of equipment or physical artefacts which are used when a practice is undertaken (e.g. cycle racks, recycling bins).
Technologies	A particular class of (fast-evolving) objects, but also the associated skills and meanings that go with them e.g. videoconferencing, energy monitors, wind turbines.
Institutions	Formal structures and organisations (such as workplaces) but also the shared meanings and conventions which hold them together; institutions tend to be shaped by and for the practices they are engaged in.
Frameworks	Organisational policies and other arrangements providing rules, incentives or boundaries which can shape behaviour e.g. cycle to work schemes.
Schedules	Anchor practices at particular time points and locations e.g. the school day, bank opening hours; practices often occur because of the scheduling of other practices (e.g. commuting).

Critical success factors and ways of overcoming blockages and barriers

5.6 This section discusses factors identified from the individual, social and material categories in turn, to highlight their importance in making low carbon initiatives successful, with examples from the case study organisations of how these factors operate in practice.

Individual factors

5.7 Individual factors, as described in section 5.5, relate to how individuals think about and view the world, which consequently helps shape their behaviours. This section outlines some of the most common factors relating to individuals that were found in the case studies, followed by a discussion of those which were most important and successful.

5.8 Among individual factors:

- Creating positive perceptions of **costs and benefits** for employees was the *most common* factor identified as being critical to the success of initiatives.
- This was closely followed by the need to create positive perceptions of **agency** i.e. employee ability to influence outcomes.
- Embedding **shared values, beliefs and attitudes, habits** and the emotional impact or '**affect**' of initiatives were the next most important group of individual factors that influenced project success. However, across the case studies, there were almost as many examples of where these factors acted as barriers as where they were success factors. This suggests that organisations may need to pay attention to these factors.
- The *least common* individual factors which surfaced were some of the dimensions of costs and benefits including discounting, framing and mental accounting. Only Coca Cola was consciously working on framing and discounting. Mental accounting factors were not particularly common but also occurred solely as negative barriers to behavioural change, in cases where individuals regarded time spent on a low carbon activity as undesirable (see Section 5.18 for more discussion).

Embed values through enjoyable education

5.9 Organisations which engaged employees with the meaning and purpose of the low carbon initiatives appeared to experience the most successful results in terms of impact on employee behaviours and the overall development of a low carbon culture. Notably these firms engaged employees in the purpose of schemes by appealing to motivations beyond purely short-term instrumental goals such as cost saving. Some organisations succeeded notably in embedding the concept of environmental sustainability within the organisation's values and ensuring that these were meaningful to employees in the context of their everyday work. This was achieved through **broad-based educational activities to help employees appreciate the wider impact of good environmental management practices**.

Employees at the Commercial Group and Wiles Greenworld in particular had been engaged in ongoing education programmes which included diverse elements ranging from screenings of environmental documentaries to participatory events including quizzes and competitions held during team meetings or over a pizza in the office. Managers at Wiles Greenworld described how:

'We discuss topical issues and try to actually relate them to the bigger picture; how they affect us as a company; and what's happening in the world; what the UK is doing about it; and what we're doing about it within that. Education is absolutely key'.

- 5.10 Employees reported that these activities were fun. They also reported deriving a strong sense of company pride and satisfaction from living more sustainably and a perception that they were personally making a difference to the environment. Some employees, particularly those in low skilled roles, spoke about this with great enthusiasm, suggesting that it was a major source of job and life satisfaction e.g. at Wiles Greenworld and Commercial Group. One employee at Commercial Group described how the work of the Green Angels team generated interest among the rest of the staff:

'I'm always trying to listen in to what they're doing, just to find out, because you know it's going to be a really fun day and that once they've launched the scheme, it will carry on' (Employee, Commercial Group)

- 5.11 Other organisations had equally strong corporate commitment to environmental sustainability values, but in some organisations where less extensive education programmes were in place, these sometimes failed to translate meaningfully down to front line employees. Employees in case study organisations who showed relatively less commitment to organisational values such as the Hilton Edinburgh Grosvenor and Coca Cola tended to challenge the introduction of low carbon behaviours on the grounds that these were 'not part of their job'. In addition, where employees had adopted low carbon behaviours at work, sometimes in order to comply with company policies e.g. on recycling, they were less likely to report spillover effects of low carbon behaviours outside work. This challenge was more common in larger, multi-site organisations where it is typically more difficult to embed corporate values. These problems can arise for a number of reasons. Firstly, values are often expressed as abstract concepts and it can be difficult to translate these into behaviours for staff to adopt. Secondly, the process of embedding values sometimes relied on online or paper-based communication, which offers fewer opportunities for individuals to question and engage with the material. Thirdly, the sheer size of large organisations can make it more difficult for employees working in an individual workplace to identify with values that are promoted by a head office located elsewhere. Fourthly, it was not always clear how far organisational activities to embed values extended beyond corporate induction programmes. Fifthly, lower skilled workers may express less attachment to corporate values because they have less sense of personal identification with their employer compared to managerial staff. This

was evident at EAE, Hilton Edinburgh Grosvenor, Commercial and Coca Cola, where managers expressed a stronger connection to organisational values than employees. This variation in a dimension of organisational commitment is sometimes linked to individuals' perceptions and expectations about promotion prospects, so for staff who either do not aspire to career progression or see little opportunity for it within the organisation, their level of identification with company values may be lower.

- 5.12 Some organisations tried to overcome the challenges of embedding corporate values in large firms by working intensively to develop meaningful ways to express them for each workplace. BT and InterfaceFLOR recognised that they have particularly target-driven cultures, so **many of their staff respond well to values embodied in local level goals**. BT had worked to break down all its energy saving and carbon reduction targets and displayed these in each office. This served to make daunting corporate targets appear more realistic and relevant for staff by framing them within a local context. By using a smaller scale of measurement, the targets also appeared more achievable, increasing employee perceptions of agency and likelihood of reaching the goals set. InterfaceFLOR had successfully woven waste reduction and cost-saving targets together to support environmental sustainability values through careful design of incentive schemes which were important in the workplace culture. Other organisations tackled lack of engagement with low carbon initiatives and organisational values through processes of individual discussion with employees undertaken by staff in a range of roles including line managers, project managers of particular low carbon initiatives or environmental champions.

Make personal benefits clear to employees and seek to minimise costs

- 5.13 Staff who were being invited to participate in new low carbon initiatives often raised questions or concerns about the personal **costs and benefits** which they would experience from taking part.

The benefits of personal financial savings from reduced commuting costs through flexible working schemes, subsidised public travel and reduced car use and learning fuel efficient driving techniques were all attractive incentives which stimulated employee interest in the schemes. They helped to make initiatives successful at Halcrow, Aberdeenshire Council, BT, and the Commercial Group. Coca Cola provided a share of cost savings made from adopting fuel efficiency techniques to a team of its drivers. Interface FLOR had designed environmental waste saving targets into its incentive schemes for managers and workers. It stressed that competition between managers to avoid a low position in the various league tables of environmental performance and the financial rewards for workers were strong motivating factors for each group.

- 5.14 Some interviewees noted that the **benefits of reduced fuel costs from learning fuel efficient driving techniques were initially most appealing to employees when driving their own vehicles**, but once the techniques became habitual, individuals then adopted the behaviours with company

vehicles (Coca Cola, BT). Others used the information about cost savings to make changes in their private lives: a worker at Coca Cola bought a hybrid car for his own use when he learned of the reduced fuel costs and a member of staff at Wiles Greenworld purchased a vehicle with lower carbon emissions. Some organisations also provided incentives to stimulate initial participation and achievement; SSE offered iPods to a random selection of staff who tried out sustainable commuting methods for a week as part of its Green Commuter Challenge. This could help to build shared norms and may also imply that choice of commuting methods is regarded as a responsibility which organisations and workers share together, rather than a matter of individual choice.

- 5.15 For other organisations, incentives in the form of competition between teams and individuals, sometimes attached to an explicit monetary reward, could strengthen a sense of agency and personal control. This was the case with fuel efficient driving competitions at EAE, recycling races at Commercial Group and bonuses for fuel saving at Coca Cola.
- 5.16 Where individuals identified strongly with organisational goals of saving money at Aberdeenshire Council, Halcrow and BT, stressing cost savings of low carbon initiatives to the organisations was also helpful. Some staff who did not identify with corporate values in particular organisations, reportedly did not regard saving money for their employer as motivating. This tended to be more common where initiatives were introduced in a top-down fashion with less employee involvement. This illustrates a learning point often noted by managers and project leaders that it can be very **helpful to understand the values, beliefs and attitudes of workers in as much detail as possible before designing or implementing a low carbon initiative, especially where participation is voluntary**. This information can then be used to help tailor the key messages about benefits of participation to workers and may improve initial engagement with the project. It also suggests that employee involvement can be important to build shared norms and a low carbon culture in which employees are likely to be more receptive to making behavioural changes (see Sections 5.46 - 5.49).
- 5.17 Conversely, the most common barrier to implementation of low carbon initiatives that relates to non-financial personal cost/benefit calculations is perceptions of staff time costs. Many of the organisations made time available to participate in low carbon education or training activities within working hours including Wiles Greenworld, BT, Halcrow, and the Commercial Group. Staff concerns about personal time costs did not relate to time spent taking part in the low carbon project activities such as meetings, but instead focused on any increase in time needed to incorporate low carbon behaviours within their daily work. This could result in either increases to the pace at which they needed to work or the amount of time they would need to spend working. Time taken to follow recycling procedures was a particular concern at Hilton Edinburgh Grosvenor and Coca Cola and time taken for delivering goods using fuel efficient driving was also a concern at Coca Cola. In some cases, the additional time involved was a transitional rather than ongoing cost to the individual because once a new routine is learned, individuals could

perform it speedily and with less concentration needed. Where possible, it is **important for companies to reassure staff that additional costs may decrease or disappear quickly**, once they have learned the new behaviours. This is a particular challenge for work tasks which are frequent, repetitive and require little mental effort or concentration because they constitute habits which can require a conscious effort to break. Organisations can also make the most of opportunities to use infrastructure changes to help break habits as discussed in Section 5.63.

- 5.18 Employee concerns about time loss which are most difficult to challenge are ones where engaging in low carbon behaviour could reduce the amount of personal time available to them. These surfaced at Scottish and Southern Energy (SSE) in particular, where the restricted car parking scheme and walking to work initiatives were perceived by some staff to impinge unfairly on their personal time by increasing the length of their commute. The challenge here is likely to be that commuting may not generate positive feelings in its own right, and because it sits on an unclear boundary between work and personal time, there is no definitive agreement on how the costs and benefits should be distributed between the employer and employee. Staff may be using a form of mental accounting or allocating how they spend their day into different categories. If workers dislike commuting and the low carbon initiative is perceived to be increasing the amount of time engaged in an already unattractive activity, it creates negative perceptions of the experience. **Framing the experience of sustainable commuting methods as an opportunity to engage in pleasurable activities** could be important, especially where these cannot take place while driving, such as walking with friends or reading on public transport. This strategy might help to reposition the activity so that employees are less likely to regard it as a personal time cost. It is likely to be especially important if the organisation will not meet any of the actual cost of non-car commuting such as offering later starts for non-car drivers or subsidising alternative travel methods.
- 5.19 Learning points from this analysis are that it was not always clear that organisations provided personalised estimates of cost savings to employees before they took part in low carbon initiatives. **It could be helpful to produce customised information on costs and benefits to make it even more relevant and salient to each worker.** Some organisations undertook extensive staff surveys and analysed staff commuting patterns, particularly before implementing major change in transport policy (Halcrow) or work locations (Aberdeenshire) and the data gathered appears to be useful in understanding what are likely to be the key priorities for employees in designing and implementing change. In addition, it is important to note that **personal costs and benefits appeared to be a much greater concern at the start of low carbon initiatives.** Once projects were embedded, and new behaviours took on the character of norms and routines, staff concerns about costs faded. Most staff also denied the role of incentives in providing any motivation for engagement, although this could result from desire not to seem grasping. Instead they claimed that they achieved greater motivation from the sense of achievement or competition associated with the reward. This finding supports the evidence of the literature review that organisations do not need

to make heavy investments in incentives to persuade staff to engage in low carbon behaviours: it may be worth experimenting with token incentives that are self-funding or temporary.

Social factors

5.20 Social factors, as described in section 5.5, concern how individuals operate in groups, including motivations, cultural conventions and norms of behaviour shared with others.

5.21 Among social factors:

- **Influencers and networks** were the most common critical success factors identified. The number of multiple influencers needed is usually proportionate to the size of the organisation and therefore more important in larger companies.
- Establishing positive **norms** of behaviour and perceptions of low carbon behaviours as part of job **roles** was also helpful.
- Developing a sense of the **meanings** associated with being a low carbon workplace linked to personal and organisational identity was rather less common across the case study sites but had developed in some which had created a strong brand based on environmental management performance.

Use multiple influencers from key roles to engage staff and sustain behaviour change

5.22 The number and range of people acting as positive influencers to adopt low carbon behaviours to which employees are exposed was often linked to the level and scale of employee participation in low carbon projects. **Senior managers usually played a highly significant role in making an initial commitment to taking action to reduce carbon consumption in all the case studies.** Not all organisations required a huge number of people to engage staff. Notably in smaller organisations or smaller workplaces, the owner or a senior manager could be a sole major and positive force for change, which corroborates the findings of the literature review in Chapter Three. Examples of this are the Managing Director at EAE and the Chief Sustainability Officer at Wiles Greenworld.

5.23 However, in larger organisations, having a broad-based resource of additional influencers in a wide variety of job types is an important factor to explain greater success in engaging staff, especially where influencers have expertise that is relevant to the type of initiative being implemented. Examples of staff who were key influencers were those with facilities and/or office management responsibilities at Halcrow, Aberdeenshire and SSE, managers with environmental roles at Wiles Greenworld, Coca Cola and Commercial, heads of department at the Hilton Edinburgh Grosvenor, regional managers at Halcrow, internal travel agency staff at SSE, chefs with responsibilities for food purchasing and storage at Hilton Edinburgh Grosvenor and BT, and HR

staff at Aberdeenshire. In some cases, staff were selected because of the role they occupied and the influence they had over particular staff groups, rather than because they had particular interest or expertise in low carbon initiatives. This suggests that at management level, **being favourably disposed to low carbon management is not an essential prerequisite to playing a key role in a scheme, providing the individual is motivated to engage and learn about the principles.**

At the Hilton Edinburgh Grosvenor hotel, the hotel manager selected the executive chef to captain the Sustainability Team, partly due to the power of his role within the kitchen and partly because he has an engaging personality which would help to encourage other staff to participate. The chef has led all the kitchen based initiatives, such as local sourcing of food and the recycling of food waste, and takes charge of communications between the Sustainability Team and other staff. To encourage behaviour change in recycling and energy conservation in the kitchen the executive chef's approach was to keep awareness high. It's a matter of: '*constantly talking about it, constantly going around and switching off hobs, putting lids on things... constantly reminding people*'.

5.24 It is unsurprising to find **facilities managers and environmental managers playing a key role** because of their expertise. In contrast, it is somewhat surprising that the role of HR staff in most of the initiatives appears to be absent in larger firms. Given the focus of many of the projects on changing aspects of work routines, locations or travel and the need to persuade staff to embrace organisational values, alter behaviours or to implement policy changes which affect staff, **HR staff may be useful sources of influence and advice**. Organisations wishing to implement low carbon initiatives may benefit from involving their HR departments, and where cost savings for the organisation or a case for the value of HR staff can be made, providing support for low carbon initiatives is likely to be an attractive proposition for the HR function.

5.25 Table 5.4 below shows the types of communications methods used across the case sites. The most effective methods are shown in bold and all uses of training are shown in italics.

Table 5.4: Use of communication methods and training

	Aberdeenshire	BT	CCE	Commercial	EAE	Hilton Edinburgh Grosvenor	Halcrow	InterfaceFLOR	SSE	Wiles Greenworld
Transport	Dedicated website One to one advice – project teams Road show/presentation-Project team Early adopters used as ambassadors <i>E-learning</i>	<i>Eco-driver training</i>	<i>Eco-driver training</i>	Cycle to work launch day Word of mouth/peer-to-peer New staff induction	New staff induction <i>Eco-driver training</i> Eco-driver tips Reminders from managers		New staff induction One to one advice Green travel plan		Intranet Notice boards Promotion stands in reception areas Letter from senior manager at start of scheme	New staff induction E-mail Staff meeting green slot
Energy		E-mail Posters Staff (energy champions) Dedicated website for home workers <i>Training for senior managers</i>		E-mail (limited) Word of mouth/peer-to-peer Early adopters used as formal ambassadors (work to home scheme) New staff induction <i>Presentations, training & workshops</i>	New staff induction Monthly staff meetings Quarterly staff newsletter Reminders from managers Word of mouth/peer-to-peer Signs/Notice board	New staff induction Reminders from managers Word of mouth/peer-to-peer Signs/Notice board	New staff induction Reminders from managers Word of mouth/peer-to-peer E-mail Notice board Info sheet	Presentations Meetings Notice boards	Intranet Notice boards	New staff induction E-mail Staff meeting green slot
Waste			<i>Presentations, training & workshops</i> Face to face communication through line managers	Recycling game (Green angels project) Word of mouth/peer-to-peer New staff induction	New staff induction Monthly staff meetings Quarterly staff newsletter Reminders	New staff induction Reminders from managers Word of mouth/peer-to-peer	New staff induction Reminders from managers Word of mouth/peer-to-peer	Presentations Meetings Notice boards	Intranet Notice boards	New staff induction E-mail Staff meeting green slot

	Aberdeenshire	BT	CCE	Commercial	EAE	Hilton Edinburgh Grosvenor	Halcrow	InterfaceFLOR	SSE	Wiles Greenworld
					from managers Word of mouth/peer- to-peer Signs/Notice board	Signs/Notice board	E-mail Notice board Info sheet			
Food/other						Small group sessions with managers to devise new menus				
Use of teams and other awareness raising methods	Project team for WorkSmart	Carbon Clubs (employees) Energy Saving Champions (employees)		Film viewing (Inconvenient Truth) Green Ambassadors and Green Angels Teams (employees)		Environmental awareness e- learning Green team composed of Heads of Dept		Energy Saving Teams (mostly management staff)		Film viewing as part of induction Staff meeting green slot Displaying awards

5.26 The main pattern emerging is that communication methods tend to be similar across different initiatives within the same organisation and, furthermore, tend to match the broader management style within the organisation. There are some common methods across types of initiatives however. For example when attempting to influence behaviours such as switching off electrical appliances and recycling, communication methods usually involve face-to-face reminders from either managers or colleagues.

5.27 Three features stand out in **effective use of influencers** and communication methods.

- The first of these is the importance of **making face-to-face communication available especially where low carbon schemes are complicated and/or involve major change** to the nature and location of employees' work and travel. This offers employees the opportunity to voice any anxieties, have their concerns heard and to ask questions. This also enables influencers to reassure them and feed back any points of concern to influence scheme design if this has not already taken place.
- The second is the role of line managers. **Line managers are critical to embedding low carbon behaviours** because they commonly act as the closest senior role model to employees, have some degree of power over staff because they are usually responsible for assessing employee performance and may inspire greater confidence and trust than senior managers who may be less accessible and have a less close relationship with staff in larger organisations.
- The third is the use of supplementary information about schemes. **Information should be available in as many different forms as are relevant to the initiative and, crucially, stimulate two way communication and feedback.** Information sources could include web-based information, telephone helplines, roadshows, newsletters and noticeboards, personalised information such as individualised travel plans or explanation of impact on individual staff. Examples of two way communication could include presentations, workshops and drop-in sessions.

Wiles Greenworld uses multiple types of communication to engage employees and build their understanding of sustainability issues. It allocates a slot on environmental issues for every team meeting and the Chief Sustainability Officer is a key promoter of behaviour change. The firm also has a simple system of weekly emails or 'Green mails' to raise awareness of current environmental projects and sustainability issues which are in the wider media. Staff responded very positively to these:

'They're eye-catching. It looks very different and you want to see something different. You get normal emails every day, but when you get a newsletter that's bold and colourful you want to read it. If you don't want to read it there and then, take it home with you. Sometimes I just stick it on a USB stick and take it home and read it there.'

- 5.28 **Investing in attractive, clear and professional communications which are easy to use can help attract staff attention** and ensure sustained engagement. One form of communication which appears to have less impact is a mass mailshot letter from a senior manager because this can be perceived to be too remote to feel personal and can suggest a top down approach of enforced implementation, that can be counterproductive.

Use teams and champions to help broaden staff participation in larger firms

- 5.29 Approaches to the use of employee-led teams and/or individual employee champions for low carbon projects varied across the case studies. **Staff-led teams or champions** were used extensively at BT and the Commercial Group, while Halcrow had run annual time-bound team projects. Interface FLOR had also recently set up a Green Energy team.

The Commercial Group makes extensive use of 'Green Angels' teams to implement low carbon projects. The teams are set up every six months to undertake a project of their choice and having constant change in Green Angels team maintains enthusiasm and a flow of fresh ideas. Projects have full backing from senior managers and board members but are entirely controlled by the employees on the team. One team has focused on commitment to reduce waste to landfill to zero by expanding recycling in the company to include an additional two waste streams and encouraging staff participation in recycling. This included improving signage around recycling areas and running a day of workshops on recycling.

- 5.30 The learning points are that **established teams appear to have been highly effective in capturing staff imagination and attention, gaining and implementing staff suggestions** and generating social pressure to develop norms of low carbon behaviour. Team composition in these organisations tended to be refreshed on a regular basis every few months rather than consisting of a permanent group. This maximised the chances of gaining a regular flow of new ideas, helped to maintain enthusiasm and momentum and gave opportunities to extend involvement in low carbon initiatives to the widest possible number of staff.
- 5.31 Teams in other case studies were currently smaller or less successful. Management-based teams for low carbon initiatives were in place at Aberdeenshire and Hilton Edinburgh Grosvenor with a slightly stronger but intended focus on successful project management than on staff engagement. Hilton Edinburgh Grosvenor was seeking to expand its green team to include front line staff as members and Interface FLOR wanted to encourage greater participation among shop floor and junior administrative staff as opposed to managers, in order to generate more suggestions from workers closest to operations.
- 5.32 While the impact of staff-led teams was evident in some organisations, other firms had found this approach more difficult. SSE had experimented with sustainability champions but had discontinued them in all but one department,

due to difficulties in releasing time to participate in activities and Halcrow had decided not to run local team-based projects in 2011 due to costs. The numbers of participants in the Green Team at InterfaceFLOR had declined over the first few months of its existence. Some staff lacked confidence and developed low perceptions of their agency when they found they had limited understanding of the technical projects being undertaken by other team members.

- 5.33 Some organisations (e.g. Coca Cola) deliberately did not use champions, reasoning that this could lead to other staff thinking that paying attention to environmental management issues was not part of their job as well. Smaller organisations were more likely than large organisations to implement initiatives successfully without champions or teams (e.g. EAE and Wiles Greenworld), because there was sufficient direct contact between individual staff and the most senior influencer to motivate behaviour change. In addition, teams or groups can represent an additional layer of bureaucracy which is unattractive to small firms. At Wiles Greenworld though, the individual responsible for environmental issues recognised that his role as a figurehead could reduce the sense of agency and create apathy among staff because he played such a pivotal role in organising low carbon activities. He was seeking to find ways of gaining more suggestions for improvements from individual staff.
- 5.34 A number of organisations including those with and without teams or individual champions relied on **informal champions to promote the benefits of behaviour change** (Aberdeenshire, SSE, Halcrow, BT). These staff were usually early adopters or experimenters in low carbon projects, particularly where the change involved was particularly challenging and involved infrastructure changes such as transport methods or adoption of flexible working locations. This suggests that social factors are equally important as material factors in making these projects effective. Such employees, particularly those not naturally 'green and keen', were invaluable in providing 'war stories' of how the changes had benefited them and met what one manager described as the ideal function of acting as ambassadors for low carbon projects. Overall, **low carbon initiatives had most impact in organisations which gained support from a wide range of front line staff and advertised the benefits of the projects**. This also reinforces the importance of early staff engagement in low carbon initiatives, since the earlier staff can contribute to shaping the schemes, the more likely they are to act as positive advocates to the rest of the workforce.

Harness internal and external networks to provide advice and expertise on technical change or complicated projects

- 5.35 Gaining access to expertise, especially if low carbon management is a new area of organisational activity, can be critical, particularly in the early stages of deciding what to do and how to do it. The case studies benefited from advice from three different types of network: informal internal or external networks; external suppliers of services; and formal advisory bodies with expertise on specific issues.

- 5.36 Internal sources of expertise played an important role at two firms. Halcrow **drew on internal expertise from its technical staff** in designing its own carbon commuting calculator to support its sustainable transport policy and Hilton Edinburgh Grosvenor sought advice from corporate level environmental management experts to build management engagement.
- 5.37 **Informal external networks exerted influence through client meetings and conferences.** Aberdeenshire Council sought help on implementing flexible working from BT, perceived client pressures and demands for low carbon management were drivers of inspiration for all the initiatives of the Commercial Group and Hilton Edinburgh Grosvenor and interns provided new ideas for Wiles Greenworld.
- 5.38 **Firms in the supply chain were important to case study organisations** in enabling them to make changes by providing support services required.

One example of organisational collaboration was where SSE collaborated with another large local company to make a proposal to the local bus company for an additional public bus route for their staff. Both organisations postcode-plotted their employees' homes and worked out a suitable route, contributing £20,000 each, which along with £20,000 from the bus company funded the provision of the desired service. SSE also negotiated amended bus route times to enable staff to get to work in time for their shift patterns and also negotiated access for staff on the early shift to the first bus of the day which is normally reserved bus drivers themselves getting to work.

- 5.39 Hilton Edinburgh Grosvenor and Coca Cola gained useful advice on recycling from their service providers. The SAFED (safe and fuel efficient driver) training scheme and subsidy was used at Coca Cola and BT to make transport methods more efficient.
- 5.40 Three organisations had used external advisory organisations for specific support. The Carbon Trust advised Coca Cola in assessing its energy consumption, Aberdeenshire Council sought help on implementing flexible working from Nomad Scotland and Interface FLOR used Forum for the Future to provide some sustainability training.
- 5.41 Smaller organisations, including EAE, sometimes experienced frustration and scepticism in trying to identify good suppliers and sources of advice. There is admittedly a huge number of voluntary, third sector and private sector organisations operating which advise on different activities in the low carbon management field and navigating the range of sources of information available may be difficult for small organisations which are time–pressed.

Develop social norms to embed and sustain behaviour change linked to a strong culture and organisational brand

- 5.42 A common theme across all the organisations which had successfully embedded low carbon behaviours among their staff was the role that **social norms** played. They marked out behaviours as desirable and helped spread them across organisations. The major outcome resulting was sustained

changes in employee behaviours as repeated reminders eventually engrained new behaviours as habitual. Staff and managers commonly reported that employees ‘policed each other’ and pointed out any lapses in sustainable behaviours. Managers had an additional role here in organisational structures through reminding staff of the need for compliance with relevant policy frameworks. Staff then reported that they noticed that behaviours became habitual, for example the weekend power shutdown routine at Coca Cola. Some staff also noticed that they were taking those behaviours home, for example, by more intensive recycling or regularly turning off power sources that were not needed (BT, Commercial Group).

Developing social norms through peer pressure helps change staff habits, especially when linked to a strong culture and organisational brand. EAE has developed a strong culture to support its recycling policy. There is no formal or strict monitoring of employees, because the Managing Director did not want to create resentment if staff felt they were under constant surveillance. Managers are able to monitor outcomes like recycling and the use of light and heating by walking around the premises. They keep an eye on recycling bins and if they identify a problem of non-compliance this tends to be handled with a ‘quiet word’ to individuals or notes to all staff.

Staff and managers felt that working at EAE had changed their behaviours concerning carbon use compared to how they would if employed by another company. Warehouse staff believed that they would recycle less and use more of heating and lighting if they worked elsewhere and staff also reported changed behaviour outside the workplace:

‘There’s a knock-on effect when you go home. You don’t just put your banana skin in the bin; you’ll actually stop and think where’s my recycling tub?’

- 5.43 The most frequent example given of **peer monitoring** of low carbon behaviour was recycling, sometimes combined with reduction in energy use from turning off unwanted power sources (EAE, Halcrow, BT, Coca Cola, Commercial Group, Hilton Edinburgh Grosvenor). This is understandable because it is one of the most visible forms of low carbon behaviours and has some of the strongest social norms attached. It is more difficult practically to engage staff in monitoring each other’s commuting behaviours, although in SSE and Halcrow data on individual staff behaviours is accessible to managers through the restricted parking scheme and bus subsidy initiative. In some companies, other low carbon activities were starting to take on the aspirational characteristics of ‘in-group’ desired behaviour such as driving an electric vehicle (Wiles Greenworld and Commercial Group).
- 5.44 Some organisations had evolved a **strong culture** which increased the likelihood of behavioural conformity and tried to position their low carbon activities as part of the dominant culture. BT has a strong corporate culture and the data it provided from staff surveys suggested that a majority of staff believed in the importance of sustainable management practices. The Coca Cola site was known within the organisation for being an innovative and ambitious high performer so its zero waste to landfill goal was framed as part of the site’s culture.

5.45 Interestingly, two cases demonstrate how the adoption of low carbon management practices can contribute to the evolution of a strong culture and brand marked by a commitment to environmental sustainability. These are Wiles Greenworld and the Commercial Group. Wiles Greenworld formed from its two parent companies, only one of which was committed to low carbon management, but the merged company successfully spread the corporate commitment to sustainability across the whole organisation and integrated it as part of its marketing and consumer brand. The Commercial Group already had an open culture characterised by a commitment to staff involvement, but engaged in little low carbon activity before 2006. As a result of its efforts, the company has used its environmental sustainability activities as a key part of its brand and marketing. Organisations which developed such a reputation reported finding that their brand subsequently strengthened; they learned from recruitment exercises that many job applicants with a commitment to environmental sustainability were applying for their vacancies (Commercial Group, Wiles Greenworld, EAE). As a proportion of those applicants are then hired, they increase the numbers of staff with a strong pre-existing commitment to environmentally sustainable work practices, and consequently reinforce low carbon behaviours and culture. This illustrates how businesses reproduce themselves and the power of staff turnover in changing values, beliefs and attitudes.

Build a culture of staff involvement to increase employee perceptions of influence and agency and motivate individual engagement

5.46 Several organisations pointed to the importance of involving staff in low carbon initiatives, in particular through seeking and implementing employee suggestions. Staff involvement had multiple purposes. Firstly, **consulting staff in advance of change helped to secure staff support for initiatives** by offering all colleagues a stake in the project and reducing the likelihood of opposition. Secondly, **staff involvement** had a substantive function in **generating ideas** for making proposed initiatives successful and gathering suggestions for new ones. Thirdly, responding to suggestions by explaining reasons for (not) implementing them and their impact on environmental performance helped to prove that individual staff contributions were valued and had an impact, raising employee perceptions of **agency** (Commercial Group, Wiles Greenworld, BT, Halcrow, Aberdeenshire Council, EAE, Interface FLOR).

At InterfaceFLOR, staff can make waste reduction suggestions verbally to their shift leader or on green environmental cards dotted around the shop floor which production workers can fill out and leave on their shift leader's desk for discussion at the next shift team meeting. The individual who makes a suggestion is often appointed leader of the initiative, which instils a sense of achievement, ownership and encourages them to make the suggestion successful through achieving cost savings. The factory also keeps an 'Opportunity Database' in which suggestions are logged and acted upon. One suggestion made by staff identified a method for reducing carpet wastage by minimising end of roll offcuts, which has made significant cost savings. Waste reduction achievements are rewarded through the staff bonus scheme.

- 5.47 There are several further examples of how organisations used staff suggestions. Aberdeenshire used the results of its surveys to identify additional training needs and Halcrow's car parking restriction policy came from an employee suggestion. This subsequently proved particularly useful in justifying the policy to other staff. The Commercial Group implemented default double sided printing, a bike to work scheme, junk fax filtering and avoiding use of disposable paper drinking vessels as a result of staff suggestions.
- 5.48 The learning point from these organisations is to **use multiple methods to make it as easy as possible for staff to make suggestions**. Techniques available include online suggestion schemes, line managers seeking suggestions in team meetings, employee surveys, suggestion cards scattered round the workplace and individual teams and champions generating ideas. BT stressed that they found it important for all their environmental action teams to run as autonomously as possible to maximise staff involvement and sense of control, with minimal input from managers. This suggests that for large organisations, permitting micro-cultures to develop among different groups of staff engaged in low carbon initiatives is not detrimental. Surveying staff seems both particularly important and effective when attempting large scale and complicated change such as transport restrictions or alterations to work locations; all staff are likely to have an individual opinion about the personal impact of such change and are therefore more likely to be motivated to respond, in contrast to surveys which ask for unprompted suggestions for organisational improvements.
- 5.49 Organisations also found it important to **provide feedback both on the impact of staff suggestions and of low carbon activities on performance indicators**, echoing a success factor identified in the literature review of Chapter 3. Staff reported that this feedback made them feel that their actions made a difference. In terms of individual factors, it supported their perceptions of salience, agency and provided data needed by employees to make positive cost/benefit calculations about participation. Staff recognised the impact both on their employer's performance measures, but in organisations which had undertaken broader environmental education techniques with their workforces, staff pointed out the positive impact on the environment more generally. The techniques used to share performance feedback varied from electronic displays at the entrance to buildings (BT), charts and performance indicator reports circulated to managers of buildings or workspaces (SSE), display of energy meter readings (EAE), newsletters and regular email updates (Halcrow, Commercial Group and Wiles Greenworld), and noticeboards (Interface FLOR). Organisations noted learning points in trying to make information presented as attractive and meaningful as possible to staff depending on its purpose. This could involve attractive graphics and display of data or appropriate choice of units of measurement. For example, Coca Cola stressed the need to use domestic measures of energy consumption when explaining costs and consequences of energy use to staff, illustrating how much power a weekend's worth of energy use would provide for an average house. At SSE, a manager

explained how they were using data on energy use to encourage employees to think about how to reduce it:

'we produce energy reports and give it to the people who can actually influence energy consumption at the buildings. One of the shop managers got all of the staff together to look at the pattern of energy use and why it would be higher at certain times. It seems to have been a fairly effective means of bringing energy consumption more to people's attention at least, which is the starting point on the road to behaviour change' (Manager, SSE)

Material factors

5.50 Material factors, as described in section 5.5, primarily consist of objects and visible or invisible structures which can be beyond the control of individuals. They include aspects of both hard infrastructure (e.g. equipment, amenities) and soft infrastructure (e.g. institutions, organisational policies, and common time schedules).

5.51 Among material factors:

- Use of **frameworks**, **technology** and **equipment** was very common and appeared to be universally positive factors encouraging change. However, frameworks may need to be supported by social factors.
- Flexibility in **schedules** was particularly important for transport initiatives and integrating low carbon activity into work routines
- Major **infrastructure** changes provided opportunities for transformative moments of change, usually through relocation, although posed barriers when external constraints relating to the built environment inhibited change

Establish frameworks of organisational policies to shape behaviours which are difficult to change

5.52 The case study organisations had made extensive use of organisational policies to frame and secure employee engagement with low carbon initiatives. The most common use of policies concerned travel and work location.

Halcrow set up an innovative scheme at its Glasgow office to reduce carbon emissions from commuting. The company has arrangements with local bus companies to provide its staff with subsidised fares. These are self-funded by income generated from charging staff £5 per week to use the company car park. The company spent considerable time designing their criteria for allocating daily car parking restrictions to maximise staff perceptions of fairness and the criteria include factors like distance travelled to work and whether workers car share. This helped the scheme gain acceptance, in that even if staff did not like the result of the allocation decisions, they understood

the reasons behind them. Staff are also provided with information about public transport routes and resources to encourage sustainable travel such as bike racks, lockers and bike maintenance services.

- 5.53 Further examples include car parking restrictions (SSE), home or flexible work location policies (Wiles Greenworld, Aberdeenshire Council), fuel efficient driving policies (Coca Cola, EAE, BT) and business travel policies (SSE, Halcrow, Aberdeenshire). Other organisations formed policies on recycling (EAE, Wiles Greenworld, Halcrow, Commercial Group, Coca Cola). Some of these policies can be positioned as negative restrictions which inhibited staff from engaging in particular behaviours e.g. car parking (Halcrow and SSE), no air travel policy (SSE). Others can be framed as permissive e.g. flexible working times and locations (Aberdeenshire). A third set of policies prescribes the substitution of one behaviour for another. For example, fuel efficient driving and recycling involve a restriction on one type of behaviour but specify a desired positive behaviour instead.
- 5.54 The evidence discussed in Section 5.18 shows that overall, framing policies in positive terms which stress the benefits to employees and minimise costs of engagement is helpful in engaging initial interest. Nevertheless, the case study examples show that **applying restrictive policies can be effective where they are needed to tackle behaviours which employees are least likely to change voluntarily**, particularly travel behaviours. It is notable that travel behaviours are influenced by all three types of factors from the ISM framework, ranging from individual perceptions of affect, costs and benefits, habits, to norms, infrastructure and scheduling. The influences have a strong mutually reinforcing effect which accounts for the challenge of changing behaviours in this domain.
- 5.55 To address these behaviours, **tough policies require careful planning to anticipate and address staff concerns and objections**. The first learning point is that attention to detail is important in work location or transport policy design which has differential effects on staff depending on their personal circumstances.
- 5.56 Using a 'stick' rather than 'carrot' approach to behaviour change requires that organisations should consider what of kind of surveillance and enforcement techniques to use. Organisations varied in the methods they used to enforce policies and how strictly the policies were applied. SSE found that it needed to monitor their car parking entrance strictly. Halcrow introduced a £5 weekly car parking charge to encourage staff to use sustainable transport instead. Policing of compliance with recycling policies usually involved managers observing staff behaviours and speaking to individual staff members where needed, augmented by peer pressure as discussed in Section 5.42. Managers mostly adopted a tactful approach of having a 'quiet word' rather than a 'name and shame' approach and some organisations felt the latter would be counter-productive (Coca Cola). In organisations where non-compliance was a disciplinary offence (e.g. EAE), managers had never had to resort to the policy.

- 5.57 Secondly, case study organisations made significant efforts to **make alternative travel options and recycling as appealing as possible**. For travel this included provision of information, advice and guidance, subsidies and negotiation of convenient or additional services by public transport providers (SSE and Halcrow). **Providing infrastructure and equipment also play an important role** in all the case study organisations which encouraged sustainable travel. Examples include bike racks (Commercial Group, Halcrow), bike shelters and hair dryers (SSE), bike maintenance services (Halcrow), lockers for cyclists (Halcrow) and showers (Commercial Group). A number of case studies provided recycling bins either in communal areas or for individual staff (Commercial, Wiles Greenworld, Hilton Edinburgh Grosvenor, Coca Cola, EAE, Halcrow) but managers also observed how location of the bins affected their use and installed additional bins to encourage compliance or arranged more frequent emptying if they filled up quickly. Some case study organisations also removed personal bins to force individual choices (Halcrow, EAE, Wiles Greenworld).
- 5.58 Overall, it is likely that **approaches which combine education with policy enforcement are most likely to be effective**. Restrictive policies can be effective within the limits of the subject matter in that they can achieve behaviour change through requiring compliance to meet the terms of the employment contract. However, there is an important message about balancing ‘carrot and stick’ approaches in the overall order of change when implementing low carbon initiatives. **Where organisations have begun the change process with ‘sticks’, the evidence suggests that staff may be less likely to engage in voluntary activities subsequently**. This could be due to staff forming perceptions that low carbon initiatives sit within a solely negative frame which restricts personal choices. Organisations may therefore need to work quite hard to reframe ‘tarnished’ low carbon management approaches so that employees are not negatively predisposed towards the subject.

Explain new technologies to staff to illustrate organisational commitment to environmental management

- 5.59 Several case study organisations had invested in a variety of technologies to support low carbon initiatives. Some of these had an instrumental function in reducing carbon emissions or saving energy and some played a supporting role in helping staff to engage in low carbon behaviours. These technologies are shown in Table 5.5 below.

Table 5.5: Types of technology used in each case study organisation

Technology with direct effect on carbon emissions	Organisation
Motion sensitive lighting	Commercial Group, Coca Cola Enterprises, Halcrow, Hilton Edinburgh Grosvenor
Alternative fuel sources – biodiesel pump	Commercial Group
Alternative fuel sources – electric car charging point	Wiles Greenworld, SSE
Alternative fuel sources – wind turbine	EAE
Lower emission vehicles - electric vans	EAE, BT
Lower emission vehicles – new fork lift truck	Coca Cola
New air conditioning system	Hilton Edinburgh Grosvenor
Cloud computer service replaces hardware servers for IT systems	Wiles Greenworld
Technology with enabling effect on carbon emissions	
Energy use monitoring	Coca Cola, EAE, BT, SSE, Hilton Edinburgh Grosvenor, Interface FLOR
Virtual working technologies e.g. Instant Messaging, common electronic filing systems, laptops, web conferencing systems and web cameras to support remote working, telepresence videoconferencing system to reduce business travel	Aberdeenshire Council, SSE
New cardboard baler – reduces storage space required so enables more recycling	Hilton Edinburgh Grosvenor
Customised sat nav system to help maintenance staff find electricity poles more quickly	SSE
GPS and fuel efficiency monitoring software	EAE
Power bars at desk level rather than floor level power sockets	Halcrow
Online training systems for low carbon projects	BT, Hilton Edinburgh Grosvenor

- 5.60 The table above illustrates that technologies with direct and enabling effects on carbon emissions relate mostly to transport and energy use. Online training systems have potential to improve behaviour in any domain, but the evidence reported in Section 5.27 illustrates the importance that face-to-face interaction takes place.
- 5.61 The first learning point from the case studies is that the cheapest and possibly most **useful piece of technology is energy use monitoring systems**. These function to gain baseline information on energy consumption and can be used to help identify the highest sources of power use and/or those which have the most potential for reduction. Data from this equipment is also useful for monitoring performance and can be drawn on to provide feedback to staff about the impact of their behaviour changes, which is important in sustaining momentum. Some organisations chose extensive technological changes as the primary method of reducing their carbon footprint, either because they perceived these to be easiest or because the relative impact of the changes is greater than from changing staff behaviours.

BT has recognised the importance of communicating feedback on energy consumption. In addition to a weekly newsletter sent out via email by the corporate communications team and information placed on the BT news website, a dashboard of measures is displayed within BT buildings which show carbon reduction achievements. Campaign posters are also used in buildings due to the large engineering workforce who may work from exchanges rather than main office sites.

- 5.62 One learning point is that because some of these technologies require no interaction with staff, there is a risk that organisations do not make the most of communicating their function and contribution to reducing carbon emissions. There is an **opportunity for organisations which choose to embark on technological change to involve staff by explaining the purpose and function of the new technology**, because this can help raise initial awareness of low carbon management approaches and prepare staff for any subsequent initiatives with more emphasis on behaviour change. Organisations which invested heavily in technology emphasised that **technology can act as a physical and sometimes visually engaging reminder to staff of the company's commitment to low carbon management**. Talking to staff about it helped to show the degree of an employer's commitment to good environmental management practices. If organisations do not discuss technical change with staff, the potential to enable social and cultural change from it is ignored. It runs the risk that material and individual aspects of low carbon management operate in isolation and systemic change to a whole organisation does not emerge.

EAE found that installing a wind turbine on the premises has, in addition to providing energy, served as a clear symbol of the company's commitment to sustainability, described as a 'tipping point' in the company's sustainability initiatives by one manager. It has also been a focus for engaging staff in thinking about the company's carbon emissions. Employees are made aware of the amount of electricity generated by 'Windy Boy' (as it has been named by staff) which has helped both to encourage a sense of ownership of the turbine and to generate enthusiasm for further green activity in the company. Managers reported that when the turbine was erected, 'the staff were genuinely proud. You could see it.'

Make the most of infrastructure changes to transform carbon consumption and emissions

- 5.63 Several organisations had faced significant changes to their infrastructure which prompted them to review energy consumption and impact of the changes on carbon consumption. These acted as windows of opportunity for institutional change and had the potential to engage a range of factors from across the ISM framework. The changes involved creation of new infrastructure, meanings, social groups, norms and costs/benefits.

Halcrow used an office move to identify major changes it could make to minimise energy use and improve recycling. It chose energy efficient power supplies, positioned power sockets at desk height to make it easier to turn off IT systems and designed the layout of recycling facilities. The office move provided an opportunity to break the usual habits of staff and sell the benefits of low carbon initiatives to them as part of a bigger programme of organisational change.

- 5.64 Difficulties in making changes to infrastructure were some of the most intractable obstacles that the case study organisations faced. The first set of challenges concerned the premises in which the case organisations were located and the second set concerned aspects of the external environment that were controlled by other organisations. The design of older buildings in Edinburgh limited the amount of change that Hilton Edinburgh Grosvenor could make in improving energy efficient office space. Because the Hilton Edinburgh Grosvenor hotel is a listed building, it had to gain planning permission and use a specified design for its new windows. Hilton Edinburgh Grosvenor also faced problems with organising recycling activity by housekeepers when cleaning bedrooms due to narrow corridors. This created safety risks if multiple receptacles for recycling were required on every floor. The alternative of locating different recycling collection points on each floor was considered but found too time-consuming for housekeepers to run up and down stairs.
- 5.65 Limitations for other organisations concerned transport infrastructure. EAE was keen to encourage cycling to work but staff interviewed reported widespread incidence of road accidents involving cyclists on the major road to their premises deterred them. Halcrow wanted to subsidise rail travel commuting as well as bus travel for its staff but was unable to reach a suitable

agreement with the train company. The learning point here may lie in being creative to **develop links with other local organisations to lobby transport companies and local councils responsible for road layouts for change**. SSE had successfully negotiated changes to bus services for one of its sites by teaming up with another local organisation to make the economic case for change to the bus company.

Adapt and accommodate low carbon initiatives within time use schedules, although some schedules are difficult to influence

- 5.66 Examples were found within the case studies of schedules acting both as a support and as a barrier to implementing low carbon initiatives. Several organisations had established flexibility in different types of schedules to support low carbon projects. These included an internal schedule change via a flexible working time policy (Aberdeenshire) and an external schedule via a change to timetables negotiated with the service provider (SSE). Halcrow's office relocation had the effect of altering schedules for many of its staff.
- 5.67 Case studies allocated variable amounts of time to low carbon activities. The learning point here is that **even simple changes to schedules can be useful**.

Two organisations were able to embed low carbon activities within daily work tasks with minimal time impact. Hilton Edinburgh Grosvenor had included turning off power before cleaning guest rooms as the first priority for housekeepers and Coca Cola redesigned its weekend shutdown routine to include power minimisation and promoted this to staff as a key part of the process before finishing work on a Friday evening.

- 5.68 Other **case studies altered schedules to allocate time for workers to participate in low carbon projects during the normal working day**. Green Angels at Commercial Group and Green Energy Teams at Interface FLOR had some paid working time allocated for meetings and participating in external events such as conferences. At Wiles Greenworld, time within staff meetings was allocated for low carbon projects. Other organisations had found allocating time for participation in projects more difficult due to economic pressures. At SSE lack of staff time to act as Sustainability Champions was the main reason for discontinuing the scheme. Halcrow had abandoned its environmental project week in 2011. The key learning point for organisations is that **making some paid time available for champions of environmental projects is critical to sustain their activities and being clear about the costs and benefits is important to justify the time allocated**. This helps to change the balance of costs and benefits as seen from the individual's perspective and reframes the activity as a shared endeavour, where the individual contributes their personal effort and the organisation provides the opportunity for staff to collaborate.
- 5.69 Two organisations recognised the need to accommodate the effects of seasonal shifts in weather when refining their campaigns on sustainability. BT had timed its campaign on energy saving with seasonal effects of decreasing temperatures in autumn when energy use is most likely to increase. This has

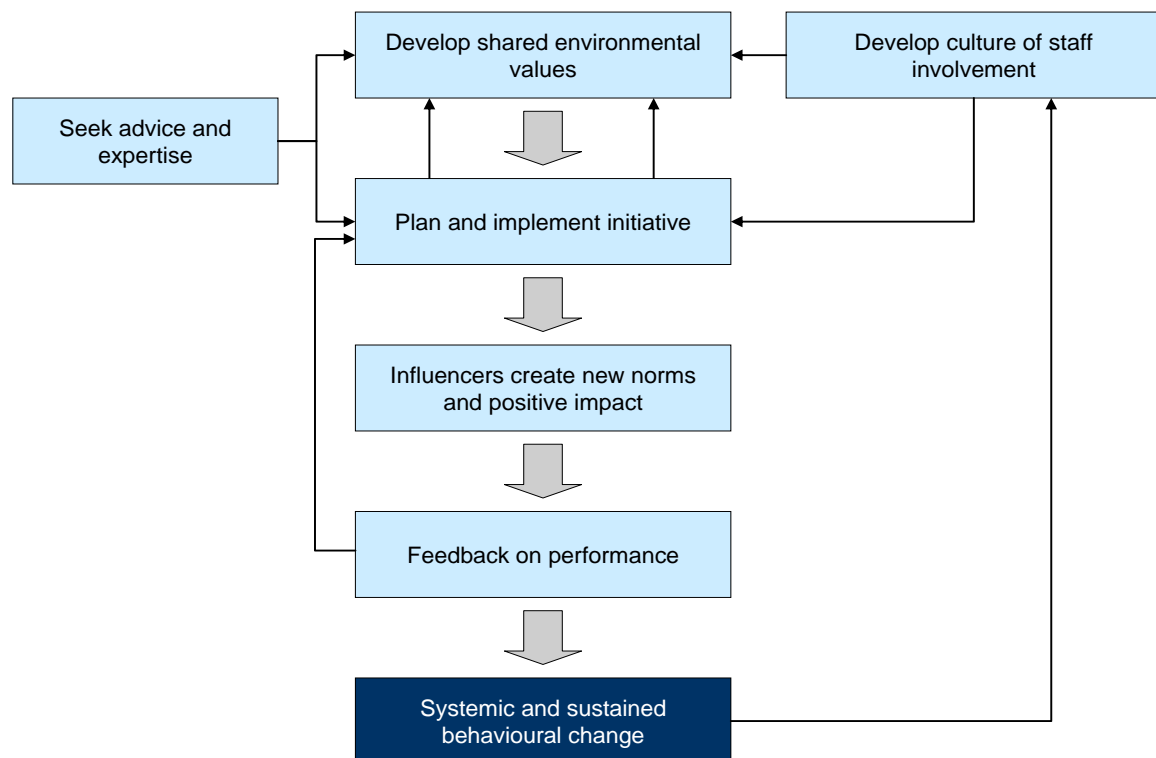
the potential to tap into individual factors of salience and cost/benefit perceptions of employees. SSE recognised the challenges of trying to persuade staff to use sustainable transport which requires exposure to bad weather in the winter and promoted lift sharing more strongly in winter months. This helps to tackle the negative impact on the physical experience of a wintry commute to work.

- 5.70 **For some organisations, time efficiencies in scheduling were key factors in making low carbon initiatives successful**, usually linked to cost-benefit perceptions for both the firm and staff. For example, efficient routing of drivers at SSE, Coca Cola and BT created time savings for the firms and their staff. Use of telepresence facilities instead of meetings at SSE also helped create greater organisational time efficiencies.
- 5.71 **Other schedules acted as obstacles to change**. Staff living a considerable distance from their workplace who had to take children to school found that they could not make use of public transport options for commuting (Commercial Group). Staff at SSE noted that greater flexibility in the working from home policy would help ease the effects of the car parking restriction policy. At Interface FLOR, the schedule of shift work and organisation of work on the production line meant that production workers were not able to attend Green Team meetings which took place during a shift.

Summary

- 5.72 The diagram below illustrates the main points of our analysis and shows how some of the key success factors relate to each other in a loose sequence. This may be helpful for organisations to consider when they are seeking to identify where to start in implementing low carbon initiatives. Managers should recognise though, that the level of detail given to each of the elements needs to vary in proportion to the scale of the change. A simple recycling scheme will require considerably less planning and policy development than a sustainable transport initiative.

Figure 5.2. Process model for sustaining adoption of low carbon behaviour



5.73 The above model illustrates that the most important principles for implementing low carbon management approaches are as follows:

- a) **Build a culture of staff involvement** to develop shared individual and organisational pro-environmental values. This can take place alongside the identification of priority areas for action and development of organisational policy frameworks. It does not however, preclude an action-based approach where implementing simple initiatives or ‘quick wins’ and involving employees in the projects starts to reform attitudes and values. Together these processes can help to shape individual knowledge and beliefs about low carbon behaviours and provide a sound starting point for ongoing change. **Using multiple forms of communication and engaging staff** is likely to help planning processes, generate ideas and commitment to sustained behavioural change..
- b) Three further processes need to take place on an ongoing basis to make low carbon initiatives successful. Firstly, **assessing and tracking performance can help identify areas for initial activity** where greatest impact on environmental performance and cost savings can be made. Secondly, it is extremely important to **provide feedback to staff on performance** as this helps generate momentum to sustain low carbon behaviours, enables learning among individuals and the organisation as a whole, and helps identify new areas for activity. Thirdly, organisations should **take advice from peers who have experience of implementing such activities, as well as internal and external experts**, at any stage of developing low carbon initiatives.

6 CONCLUSIONS AND RECOMMENDATIONS

OVERVIEW

- Organisation size should not be regarded as a barrier to low carbon management and encouraging staff participation in low carbon initiatives. The case studies undertaken in small firms show that they are capable of implementing far-reaching change by taking a pragmatic approach to implementation.
- There is a need to achieve a balance between the individual, social and material factors to support low carbon initiatives, as all three are mutually reinforcing.
- The research indicates however that there is a bias towards individual-level factors, which leads organisations to rely on information-giving and some incentives to make the case for behaviour change in a rational way.
- The case study evidence suggests that the most important factors in making low carbon initiatives successful are building shared individual and organisational values through individual and group-based staff involvement combined with senior management commitment.
- The most successful projects involved an effort to join up different kinds of low carbon activities. They also made an effort to build staff involvement into the process of change at the earliest possible stage.
- Specific circumstances can act as ‘windows of opportunity’ for major transformational change in organisations. These include office relocations, merger/acquisition, expansion into new products/services, review of organisational strategy, any points of major investment, recruitment of new senior staff, and financial challenges.

Introduction

- 6.1 This study has reviewed the types of initiatives undertaken by organisations to promote low carbon behaviours among their staff and analysed the factors that help schemes to succeed, as well as offering suggestions for how barriers might be overcome. This chapter presents an overview of the findings from the research.
- 6.2 The literature review and expert interviews confirmed that the current emphasis in available guidance and advice for businesses relates mostly to infrastructural changes, technology investment, and supply chain efficiencies. This appears to reflect the balance of activity in workplaces; in seeking suitable case study organisations, a number of those which were highlighted as sites of good practice had not undertaken activities which focused on staff behaviours. However, case studies we selected were relatively advanced in

their low carbon activities and some had been developing environmental management strategies over a number of years.

Types of activity undertaken

6.3 Common initiatives pursued by organisations relate to the subjects of recycling/waste reduction and reducing energy consumption. Projects to alter transport behaviours and food consumption are less common because transport behaviours are more difficult to change and many workplaces do not provide significant catering services for their staff. Wider evidence suggests that much organisational activity shows a focus on reducing the impacts of negative behaviours rather than stopping them entirely, but the case studies show some examples of workplaces which have sought to discourage and prohibit negative behaviours through tough policies including mandatory recycling and restrictions on travel methods.

Why organisations engage in low carbon initiatives

6.4 Senior managers have significant influence in deciding whether to adopt low carbon initiatives and are crucial to mobilising resources to support initiatives. The main factors that motivate them include a mixture of:

- pressures for better environmental management from customers,
- competitors already taking action,
- an adverse economic climate creating concerns about costs of energy and building maintenance, and
- personal beliefs and values about the importance of reducing carbon emissions.

6.5 Pressures that influence the type of activity or initiatives being adopted vary between sectors according to customer perceptions of how energy-intensive a sector is and its main sources of carbon emissions. Organisation size should not be regarded as a barrier to low carbon management and encouraging staff participation in low carbon initiatives. The case studies undertaken in small firms show that they are capable of implementing far-reaching change by taking a pragmatic approach to implementation. This involves some resource investment, but it need not be extensive. Dual motivations were found in some organisations where pragmatic motivations for cost reduction sat comfortably alongside pro-environmental objectives.

What works and doesn't work (and why)

6.6 The literature reviewed for this report identified the limited nature of the evidence base on pro-environmental behaviour in a specific workplace context. As the evidence lacked a sound and consistent underpinning theoretical framework to enable comparisons between initiatives, the report has made steps to fill that space by developing a framework based on

individual, social and material factors affecting the success of low carbon initiatives. Analysing the initiatives through the lens of this framework shows a number of key learning points. The most significant of these includes the need to **achieve a balance between the individual, social and material factors to support low carbon initiatives, as all three are mutually reinforcing**

- 6.7 The case study evidence suggests that the most important factors in making low carbon initiatives successful are **building shared individual and organisational values** through individual and group-based staff involvement combined with senior management commitment. An array of factors are helpful in implementing change including using key influencers to lead behaviour change by example, providing regular feedback on the impact of schemes, making the most of technology as a visual symbol of change, using key moments of change to review organisational practices, and creating flexibility in schedules and routines to enable staff to contribute.
- 6.8 The application of the Individual/ Social/ Material framework in this study has shown that different factors are relevant for different behaviours – and this may also explain why some behaviours are more commonly tackled than others. Thus recycling is easy to attempt as the simple provision of recycling bins ('Materials') tends to achieve quick results. Energy tends to involve more 'Social' approaches, grounded in awareness raising and the activation of positive norms, and group dynamics. By contrast, transport behaviours seem to require action on all three levels at once: changing the infrastructure, building new norms, and providing incentives or penalties, alongside more flexibility to shift the cost/benefit calculations people have made in their travel choices. Finally, transport behaviours are often deeply embedded in wider societal routines such as those for childcare arrangements, and such 'travel habits' can be hard to alter.
- 6.9 Having identified these differences by type of behaviour, it is notable that most of the case study projects involve attempts to influence employees using all three types of factor. **Those activities that work best arguably involve more balanced attention across all three factors (individual, social and material).** Some examples include the approach adopted by the Commercial Group, Wiles Greenworld and Halcrow which are holistic programmes of change encompassing a range of subject areas and techniques to achieve behaviour change. In general, there is still a bias towards individual-level factors, which leads organisations to rely on information-giving and some incentives to make the case for behaviour change in a rational way. This is perhaps unsurprising in projects which have been selected precisely because they focus on the role of employees as individuals. But it is also notable that approaches which engage staff in groups, and make use of champions, thus working through 'Social' factors, are particularly prevalent among the case studies.
- 6.10 Beyond incorporating multiple factors, the most successful projects involved an effort to **join up different kinds of activity in workplaces**, mainly by communicating plans early and engaging staff in all preparations and changes, even those which primarily involve changes at the 'Material' level.

Employee engagement through developing shared values and processes of employee involvement is the most dominant critical success factor identified in this study. Employee involvement is vital for overcoming sources of potential resistance, for instance in terms of gaining support for new policies among staff and managers e.g. when changing work locations or transport policies. But it also has a positive function in spreading new norms around the organisation and generating further ideas for change, as is often the work of champions in large organisations. Without involving staff, there is a risk that low carbon initiatives are confined to 'islands of excellence' within organisations, or run the risk of not being understood and accepted. This report, therefore, recommends that **organisations build staff involvement mechanisms as early as possible into their process of adopting low carbon management principles**. This finding is particularly important for the majority of organisations who have so far only made infrastructure or technological changes. In some organisations, it was challenging to make connections between higher level corporate strategies which contained a commitment to principles of sustainability or environmental management, and employee understanding of how values played out and affected their daily work and experience of the organisation. Making these links and translating broad principles, such as what it means to be a low carbon organisation for employees, is essential for organisations that wish to make the most sustained and profound changes.

- 6.11 Staff engagement does not merely serve the purpose of communicating the decisions and actions agreed by managers. Another key success factor involves '**education and fun**'. If staff are engaged early, and given the chance to develop their ideas, and to own the low carbon agenda, then the potential for diverse and lasting activities is greater. Several case study organisations include mechanisms for assembling staff into 'green teams', giving them the chance to devise and implement activities, and to learn from the results. Such approaches are consistent with the literature on organisational change, particularly that relating to organisations as learning systems. This work shows that until staff come together, discuss actions and implement them, the underlying assumptions on which they operate in the workplace will not be revealed. Without such a process, the dominant organisational culture will not be understood, and cannot be changed.
- 6.12 This report argues that **culture change should be the ultimate aim for low carbon activity in the workplace**, as without it, only incremental improvements to current practice can be achieved. The most advanced practice is dependent on transformational change which permeates the entire organisation, its vision/mission and internal and external brand. Some organisations tend to run their low carbon activities as separate schemes or projects depending on subject areas. In some ways this is helpful because the initiatives may require specialist leadership or expertise from staff in particular roles. Additionally, groups led by staff should have as much influence as possible over the subject matter and scope of opportunity for innovation. However, there are big opportunities for organisations to integrate their projects and create a greater sense of the cumulative impact of their

initiatives to help develop a broader sense of meaning and identity about what it is to be a low carbon workplace.

- 6.13 There are examples among the case study projects of organisations where low carbon activity is associated with transformational change. In these projects, there is a combination of balanced emphasis on all three sets of individual, social and material factors, and also high levels of staff involvement, leading to staff engagement. However, **specific circumstances are also highlighted as ‘windows of opportunity’ for transformational change**. These might include office relocations, merger/acquisition, expansion into new products/services, review of organisational strategy, any points of major investment, recruitment of new senior staff, and financial challenges. At such moments, factors and influences at all three levels are subject to change, and reconfiguration of a wide range of arrangements is possible. For instance, when all staff have new journeys to work, new routines can be developed. Such examples provide lessons on how to change habits in fields where the impacts on carbon emissions can be most extensive, and also illustrate the focus on commuting as what could be called a boundary case. Commuting can be regarded as a private, or individual lifestyle, behaviour – not an organisational one. But moving offices draws attention to the pivotal role of the business in dictating the place of work; sharing responsibility for the journey, including its carbon impacts, seems both appropriate and fair. In rearranging the practice of commuting, the boundaries between ‘at home’ and ‘at work’ behaviours are blurred, and present an opportunity for changing practices and reducing carbon emissions. This provides a good example of significant transformational change. Incremental changes, such as fuel efficient driving or recycling, are often on a smaller scale, and operate within existing arrangements. They do not necessarily involve extensive material changes and can take place without attitudinal change on the part of staff, especially if they are based more on a cost saving rationale than on reducing carbon emissions.
- 6.14 The most profound aspect of change thrown up by the case studies is the practice of home- or flexi-working. Four new ‘profiles’ for different working styles of fixed, home, flexible and mobile were implemented in the case of Aberdeenshire Council. While the scheme was triggered by the need to rationalise office buildings and to cut costs, it has resulted in substantial carbon savings. Success factors across all three levels are involved; in some cases, the entire experience of work is rearranged including location(s), hours, relationships with colleagues and managers and ICT systems. This amounts to deep change for individuals and the institution involved. This in turn presents a huge opportunity for low carbon management, as low carbon principles can be built into these new arrangements from the start, not bolted on. This is not simply a case of removing barriers to change from longstanding arrangements (e.g. the inefficiency or location of buildings), but the positive opportunity to build new institutions and arrangements, with resource efficiencies and carbon efficiencies at the middle. As flexible working becomes more widespread, there are opportunities to link it to low carbon management more explicitly and to build partnerships to exploit these opportunities.

Final thoughts

- 6.15 After presenting the research evidence, there is an opportunity to reflect on the importance of workplace-based low carbon activity for meeting national carbon targets and objectives. Opportunities illustrated in the case studies enable us to be optimistic about the possibilities for widespread and lasting change in workplace behaviours. **Those workplaces which adopt a ‘whole organisation approach’ to reducing carbon are best placed to make big savings: these are the ones which work at the individual, social and material level, and which integrate the activities by leading with staff engagement.** These also have the potential to influence behaviour beyond the workplace, and this is most potent where organisations have engaged employees in value-based change. In addition some organisations present examples of activities and circumstances which disrupt current working arrangements, and begin to blur the boundaries between home and work. While this may present a challenge to current lifestyles in terms of achieving a positive ‘work-life balance’ for employees, so it also represents an opportunity for those who are interested in reducing individuals’ environmental impacts. Such deep change provides a shortcut around a hearts and minds, behaviour by behaviour approach and offers the possibility for workplaces leading the agenda in supporting people to live more sustainable lifestyles.

BIBLIOGRAPHY

- A.E.A. (2009) *Business Resource Efficiency: Final Workstream Support*, Sustainable Development Research Network
- Ajzen, I. (1991), 'The Theory of Planned Behavior', *Organizational Behavior and Human Decision Processes*, 50, 179-211 (1991)
- Anderton, K., and Jack, K. (2011) *Green behaviour change: A case study of Eco Concierge*, in *Going Green: The Psychology of Sustainability in the Workplace*, Eds. Bartlett, D., The British Psychological Society
- Bandura, A. (1977), 'Self-efficacy: toward a unifying theory of behavioral change', *Psychological Review*, Vol 84(2), 191-215
- Bartlett, D. (2011) *Going Green: The Psychology of Sustainability in the Workplace*, The British Psychological Society
- Bronfenbrenner, U. (1979), *The Ecology of Human Development: Experiments by Nature and Design*. Cambridge, MA: Harvard University Press
- Carrico, M., and Riemer, M. (2011) 'Motivating energy conservation in the workplace: An evaluation of the use of group-level feedback and peer education', *Journal of Environmental Psychology*, Volume 31, p 1-13
- Carrico, A., Vandenberg, M.P., Stern, P.C., Gardner, G.T., Dietz, T. and Gilligan, J. (2010), 'Energy and Climate Change: Key Lessons for Implementing the Behavioral Wedge', *Journal of Energy & Environmental Law*, Vol. 1, 2010. Vanderbilt Public Law Research Paper No. 10-24
- Centre for Sustainable Energy (2009) *Our Big Energy Challenge: A Final Review*, Centre for Sustainable Energy
- Chartered Management Institute (2011) *Lean and Green: Leadership for a Low Carbon Future*, Chartered Management Institute
- Christmas, S. (2010), *Nine Big Questions about Behaviour Change*. DfT, 2010
- Darnton, A. (2011) *NUS Degrees Cooler – Lay Person's Report*, AD Research and Analysis for NUS Services Ltd. [forthcoming]
- Darnton, A. (2007). *Energy, Schools and Communities*. Energy Saving Trust
- Davies, M., and Challenger, R. (2009) Time to step up to the challenge, *The Psychologist*, Vol. 22, No. 2
- Dolan, P., Hallsworth, M., Halpern, D., King, D. and Vlaev, I. (2010), *MindSpace the Practical Guide: Influencing behaviour through public policy*. Institute for the Government report.
- Feasby, J., and Wells, K. (2011) *Greening your organisation: The case of the Environment Agency*, in *Going Green: The Psychology of Sustainability in the Workplace*, Eds. Bartlett, D., The British Psychological Society

GROW (2001) Greening Organizations & Work (GROW) World Universities Network, The University of Leeds

IPPR (2009) *Consumer Power: How the public thinks lower-carbon behaviour could be made mainstream*, Institute for Public Policy Research

Jackson, T. (2005), *Motivating Sustainable Consumption: a review of evidence on consumer behaviour and behavioural change*. A report to the Sustainable Development Research Network

Kane, A. (2011) 'Green recruitment, development and engagement', in *Going Green: The Psychology of Sustainability in the Workplace*, Eds. Bartlett, D, The British Psychological Society

McMichael, A.J. (2007), 'Will considerations of environmental sustainability revitalise the policy links between the urban environment and health?', *N S W Public Health Bulletin*, 2007 Mar-Apr;18(3-4):41-5.

Parker, R. (2011) *Green organisational performance: Behavioural change interventions based on the theory of planned behaviour*, in *Going Green: The Psychology of Sustainability in the Workplace*, Eds. Bartlett, D, The British Psychological Society

Plank, R. (2011) *Green behaviour: Barriers, facilitators and the role of attributions*, in *Going Green: The Psychology of Sustainability in the Workplace*, Eds. Bartlett, D., The British Psychological Society

Putnam, R. D. (2000), *Bowling Alone. The collapse and revival of American community*, New York: Simon and Schuster

Ramus, C., and Kilmer, A. (2007) 'Corporate greening Through Prosocial Extrarole Behaviours – A Conceptual Framework for Employee Motivation', *Business Strategy and the Environment*, Volume 16, 554–570

Shove, E. (2011) On the difference between chalk and cheese - a response to Whitmarsh et al's comments on 'Beyond the ABC: climate change policy and theories of social change'. *Environment and Planning A*, 43, 262-264.

Simpson, A. (2011) Winning the Persuasion Game, *Green Futures Magazine*, May 2011

Southerton, D., McMeekin, A., Evans, D. (2011) *International Review of Behaviour Change Initiatives*, Scottish Government Social Research

Step Ahead Research (2008) *Climate Change and Small Business: How directors are responding to the challenge of climate change*, Climate South East

Swinburn, B., and Egger, G. (2002), 'Preventive strategies against weight gain and obesity'. *Obesity Reviews*, Vol. 3, Iss. 4, 289-301, November 2002

Thaler, R. (1985), 'Mental Accounting and Consumer Choice'. *Marketing Science*, Vol. 4, No. 3, 199-214

Thaler, R. and Sustein, C. (2008), *Nudge: Improving decisions about health, wealth and happiness*, Yale University Press

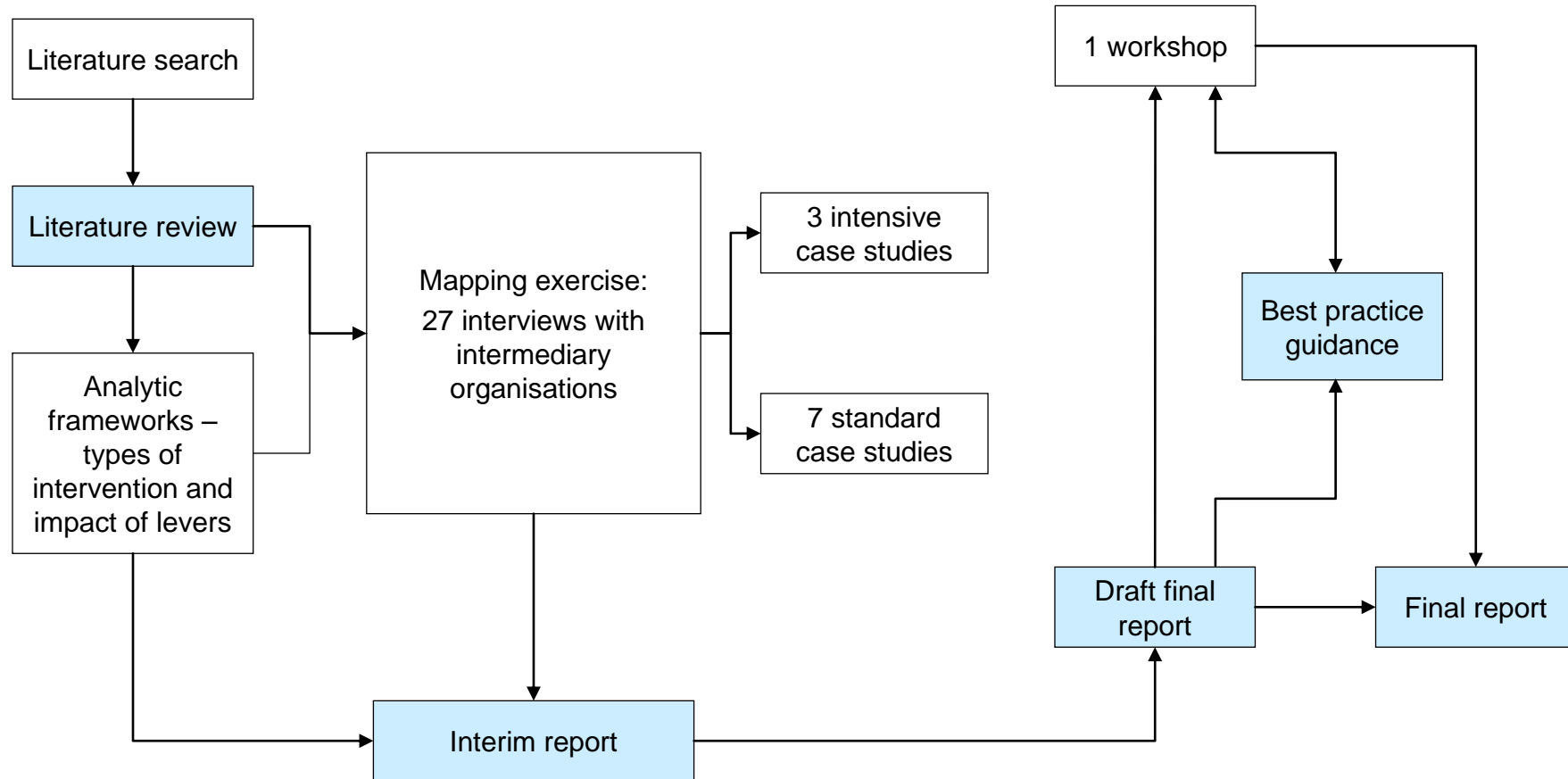
Vickers, I., Vaze, P., Corr, L., Kasparova, E., Lyon, F. (2009) *SMEs in a Low Carbon Economy*, Middlesex University Centre for Enterprise and Economic Development Research

Whitmarsh, L. (2009) 'Behavioural responses to climate change: Asymmetry of intentions and impacts', *Journal of Environmental Psychology*, Vol 29., p13-23

WRAP (2008) *Evaluation of recycling feasibility trials to develop recycling services for SMEs*, WRAP

Zibarras, L., and Ballinger, C. (2010) *Promoting Environmental Behaviour in the Workplace: A Survey of UK Organisations*, Division of Occupational Psychology City of London University

ANNEX 1 MODEL OF THE RESEARCH PROCESS



ANNEX 2 LITERATURE REVIEW

The literature review took the form of a rapid evidence assessment. Nine academic databases were searched for relevant literature³² and searches were restricted to papers published within the past ten years because behaviour change is a relatively new field. A range of search terms were used that focused on identifying workplace behaviour change literature (see Table A2.1 for a list of search terms).

The academic searches were supplemented by searches of the websites of relevant organisations. These included Prince's Mayday Network, Sustrans and Carbon Trust (see Table A2.2 below for a full list). In addition, interviewees from intermediary organisations were asked for recommendations of any relevant published or unpublished literature.

Academic articles were screened on title and those that were deemed relevant were then screened on the basis of their abstract for relevance to the research questions. The focused on extracting findings that are in a workplace setting and relate to the behaviour of employees. In total 22 research and evaluation papers were reviewed in depth. This was supplemented with twelve sets of guidance aimed at employers outlining how to encourage low carbon workplace behaviours.

Table A2.1: Database search terms

	AND/OR	
Environment*		Behaviour change
Carbon		Organisation
Dietary		Champions
Transport		Ambassador
Food		Engagement
Energy		Employer
Incentives		Workplace
Corporate social responsibility		Work
Sustainability		Employee
Green		
Sustainable development		

Source: IES, 2011

³² The databases were Applied Social Sciences Index and Abstracts; Emerald; International Bibliography of Social Sciences; IngentaConnect; JSTOR; Greenfile; PsychINFO; ZETOC; Google Scholar

Table A2.2: Organisations whose websites were searched for literature

Organisation
10:10
2020 Climate Group
Business in the Environment
Carbon Trust
Centre for Sustainable Energy
Changeworks
Confederation of British Industry
DEFRA
EcoConcierge
ENWORKS
Federation of Small Businesses
Force for good
Forum for the Future
Forward Scotland
Global Action Plan
Green Alliance
IEMA
London Sustainability Exchange
NUS (Services Ltd)
Prince's Mayday Network
Scottish Business in the Community
Scottish Council for Voluntary Organisations
Scottish Trades Union Congress
Sustain
Sustainable Scotland Network
Sustrans
The Scottish Government
Transport for London
WRAP
WSP UK
WWF
Zero Waste Scotland

Source: IES, 2011

ANNEX 3 INTERMEDIARY INTERVIEWS

Interviews were carried out with representatives from the following organisations:

Organisation
2020 Climate Group
Scottish Business in the Community
Sustainable Scotland Network
Scottish Trades Union Congress
Carbon Trust
Sustrans
WRAP
Global Action Plan
EcoConcierge
Forum for the Future
Centre for Sustainable Energy
London Sustainability Exchange
Forward Scotland (now 'Future Balance')
Zero Waste Scotland
WSP UK
NUS (Services Ltd)
Vibes Awards Scheme
Green Business Partnership
Greening Organizations and Work (GROW)
Sustain
10:10
Energy Saving Scotland
IEMA

ANNEX 4 CASE STUDIES

Aberdeenshire Council

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Local authority governance and services <p>Location:</p> <ul style="list-style-type: none"> North East Scotland (Council area covers 2500 sq. miles) <p>Scale:</p> <ul style="list-style-type: none"> Employs 14,500 staff Revenue budget for 2010/11 was £550 million 	<p style="text-align: center;"><i>Transport</i></p> <hr/> <p>Worksmart programme – a flexible working initiative to reduce the number of commuting miles. Staff can choose between:</p> <ul style="list-style-type: none"> <i>Fixed working</i> (at a single base) <i>Flexible working</i> (splitting time between a fixed base and home, with the majority of time spent at the base) <i>Mobile working</i> (splitting time between a fixed base and remote working, with the majority of time spent working remotely/from home), or <i>Home working</i> (with around 90% of the time working from home). <p>These working patterns are supported by providing staff with technology to aid remote working (e.g. laptops, electronic organisers).</p> <hr/> <p style="text-align: center;"><i>Energy reduction</i></p> <hr/> <p>WorkSPACE programme – an office rationalisation initiative aiming to reduce the number of small offices run by the council to deliver both cost and energy savings.</p>	<p>Over 1,000 staff are now participating in Worksmart.</p> <p>Based on 722 employees' travel claims for first half of 2011/12, value of reduction in business mileage from previous year was £46,632.</p> <p>The council has estimated that they have achieved a saving of 136,588 commuting miles and 33,995 CO₂ g/km emissions over the period from April to September 2011.</p>

BT

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> • Telecommunications infrastructure and services provision <p>Location:</p> <ul style="list-style-type: none"> • Nationwide • London HQ <p>Scale:</p> <ul style="list-style-type: none"> • 3,000 staff at HQ • 60,000 overall • Premises include 7,000 buildings and data exchanges 	<p style="text-align: center;"><i>Energy reduction</i></p> <hr/> <p>Energy Saving Campaign – an initiative focused on staff engagement to reduce energy usage. Incorporated:</p> <ul style="list-style-type: none"> • Recruiting 92 Energy Champions to raise awareness and reduce energy usage by reporting energy faults, conducting energy audits of their buildings and networking to share ideas. • BT Carbon Clubs, through which staff have access to online checklists on how to perform an energy audit in their area as well as general campaign materials such as posters. • Staff suggestions for initiatives are encouraged through the BT new ideas system. • Introduction of energy efficient lighting, optimising heating and air conditioning, and reducing energy wasted in unused spaces and from equipment when not in use were also commitments of the campaign. <hr/> <p style="text-align: center;">Transport</p> <hr/> <p>Fuel efficient driving initiative – this is aimed at reducing the carbon footprint of BT’s Openreach division (which employs 20,000 engineers using BT vehicles to maintain the BT network) through:</p> <ul style="list-style-type: none"> • SAFED training in fuel-efficient driving techniques for drivers • Reducing and avoiding journeys (e.g. by finding ways to solve problems through electronic means) • Choice of vehicles and awareness of vehicle loads 	<p>Achieved energy savings in 2010 worth £18 million</p> <p>Saved 1,130 tonnes of CO2 in first three months from Energy Saving Campaign at Head Quarters, equating to reduction of 17% of usual energy consumption and a cost saving of £200,000. Similar exercises in the 25 other BT buildings yielded annualised savings of £873,649</p> <p>In 2010 54% of staff said they had taken personal action to reduce energy consumption</p>

Coca Cola Enterprises (CCE)

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Soft drink manufacturing, sales, and distribution <p>Location:</p> <ul style="list-style-type: none"> Plant located in East Kilbride <p>Scale:</p> <ul style="list-style-type: none"> 181 staff employed at site 	<p style="text-align: center;"><i>Recycling and waste reduction</i></p> <hr/> <p>Zero Waste to Landfill Policy – encouraging recycling and reducing waste production by:</p> <ul style="list-style-type: none"> Educating and training employees to separate out materials for recycling (including production line waste) Engaging staff in discussions about problems and barriers to recycling and developing solutions Measures to make it easier for staff to recycle than to dispose of waste through landfill <hr/> <p style="text-align: center;"><i>Energy reduction</i></p> <hr/> <p>Reductions in energy usage have been encouraged through:</p> <ul style="list-style-type: none"> Routinising weekend shut-downs of machinery The introduction of energy monitors allowing managers to identify machinery left on <p>Low carbon infrastructure – motion sensor controlled lighting, LED lighting, and voltage optimisation (reducing incoming voltage to minimise wasted energy in running the production line) have also been introduced.</p> <hr/> <p style="text-align: center;"><i>Transport</i></p> <hr/> <p>Fuel-efficient driving training – HGV and sales team drivers have undertaken SAFED training in fuel efficient driving techniques. Sales staff receive a bonus for fuel efficient driving.</p> <p>Goods transport – CCE uses rail rather than road vehicles to transport products where possible, and also operates a backhauling system where drivers from other companies pick up orders when passing the site.</p>	<p>Zero waste to landfill target achieved in 2011, reduced from 200 tonnes in 2006</p> <p>Projected to use 2 million fewer kilowatts of electricity in 2012 compared to 2011</p> <p>HGV drivers made 4.8% reduction in normal fuel consumption in 2011</p>

Commercial Group

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Office supplies distribution <p>Location:</p> <ul style="list-style-type: none"> Cheltenham, Gloucestershire <p>Scale:</p> <ul style="list-style-type: none"> Employs around 170 staff 	<p>Green Angels project – a small team of employees are given time and resources to develop a project of their choice to contribute to one of the organisation’s environmental and social commitments e.g. projects to improve progress towards the organisation’s ‘Zero waste to landfill’ commitment. A new Green Angels team is selected every 6 months.</p> <hr/> <p><i>Recycling and waste reduction</i></p> <hr/> <p>Facilities for recycling are prevalent throughout Commercial’s premises and there are active efforts to re-use cardboard packaging wherever possible, for example only delivering products in new packaging where this has specifically been requested by the customer.</p> <hr/> <p><i>Energy reduction</i></p> <hr/> <p>Green Ambassadors – prior to the Green Angels project the organisation ran this voluntary scheme aimed at helping staff to reduce their personal energy use (at work and home) through information, advice and monitoring.</p> <p>Low carbon infrastructure – lighting systems which respond to movement and external light levels have been installed.</p> <hr/> <p><i>Transport</i></p> <hr/> <p>Cycle scheme – Commercial offers employees loans towards bikes and cycling gear. To facilitate this a bike rack was also installed at the site.</p> <p>Public transport policy – Staff are also encouraged to use public transport, for example when sales staff visit customers. There is a formal requirement for staff to use public transport where this is feasible, but this followed widespread voluntary take-up by staff.</p> <p>Low carbon infrastructure – a bio-diesel pump has been installed for both commercial and private use.</p>	<p>Carbon emissions reduced from 63.42 kg per million pounds of revenue to 16.02 kg, 2006-2010</p> <p>On average Green Ambassadors reduced electricity consumption by 16% and gas consumption by 27%.</p> <p>18% of staff regularly cycle to work (with an estimated 27% reduction in emissions)</p>

EAE

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Leaflet delivery and distribution <p>Location:</p> <ul style="list-style-type: none"> Loanhead, near Edinburgh <p>Scale:</p> <ul style="list-style-type: none"> Employs around 47 staff (with seasonal variations) 	<p style="text-align: center;"><i>Energy reduction</i></p> <hr/> <p>Energy use has been tackled by:</p> <ul style="list-style-type: none"> Enforcing norms of switching off lighting and heating equipment when it is not needed – largely done on a mutual peer-to-peer basis. Investment in a wind turbine, dubbed “Windy Boy” by staff, to reduce the energy the organisation draws from the grid. Its impact on the organisation’s energy bills is regularly reported to staff. <p style="text-align: center;"><i>Recycling and waste reduction</i></p> <hr/> <p>Recycling measures include:</p> <ul style="list-style-type: none"> Provision of recycling bins for work related waste, general waste (drinks bottles etc.) and compostable material. Encouraging staff to bring material for recycling in from home. For example, battery recycling facilities were provided before the legal requirement to provide such facilities was placed on battery retailers. Changing the distribution of recycling and waste bins to make sure recycling is the easiest option. <p style="text-align: center;"><i>Transport</i></p> <hr/> <p>To reduce carbon emissions from its fleet EAE has:</p> <p>Provided fuel efficient driver training to all drivers. The performance of drivers can be monitored electronically from the office.</p> <p>The firm has also invested in low carbon vehicles including an electric van and bio-diesel vehicles.</p> <p>Cycle scheme – EAE also offers £50 towards cycling equipment and has shower facilities onsite for cyclists’ use. However, this has been among the least successful of EAE’s schemes due to perceptions of dangerous cycling conditions between Edinburgh and Loanhead.</p>	<p>70% reduction in carbon footprint.</p> <p>Increased recycling and use of cardboard/plastics baler decreased general waste costs from £6,128 to £644 per annum. Revenue gained for baled cardboard and plastic is £15/tonne and £20/tonne respectively.</p> <p>Gas and electricity savings of almost £4,000 in one year from improved efficiency in lighting, heating, ‘switch off’ policy, and installing wind turbine</p>

Halcrow

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Multinational engineering firm <p>Location:</p> <ul style="list-style-type: none"> Glasgow <p>Scale:</p> <ul style="list-style-type: none"> Employs around 6,000 staff across 98 offices worldwide Around 350 staff employed at Glasgow site 	<p>The majority of low carbon initiatives at Halcrow's Glasgow office were adopted after moving to their current premises 5 years ago.</p> <hr/> <p style="text-align: center;"><i>Transport</i></p> <hr/> <p>Combined parking and public transport promotion scheme – Staff driving their car to work are charged £5 a week and car parking spaces are allocated according to a range of criteria with those who car share or travel longer distances given higher priority. The money generated from this policy is then used to subsidise bus travel for other employees. In addition staff are provided with information on public transport options.</p> <p>Cycle scheme – loans are offered for the purchase of bikes, and facilities such as bike racks, showers and lockers have been provided. The company also pays for employees' bikes to be serviced on an annual basis.</p> <p>Business travel policy – Employees are required to consider whether travel is strictly necessary and, in particular, the need for air travel. All business travel must be signed off by a manager. Halcrow provide a number of facilities to provide alternatives to travelling. Two video conferencing suites are available in the Glasgow office and at a wider corporate level the firm is developing IT facilities and systems to allow employees located across Halcrow's global locations to work as 'virtual teams'. Finally, for travel within Glasgow, the company provides bikes that can be borrowed as an alternative to taking a taxi.</p> <hr/> <p style="text-align: center;"><i>Energy reduction</i></p> <hr/> <p>Energy reduction measures include:</p> <ul style="list-style-type: none"> Encouraging staff to switch off their monitors when not in use and this is monitored by the office manager. To make switching off equipment easier the company has installed 'powerbar' sockets on each desk which are easier to reach than those on the floor. Low carbon infrastructure – Motion sensor operated lights have been 	<p>Estimated annual reductions in CO2 (2010 compared to 2009) - business travel emissions reduced by 40 tonnes of CO2 and commuting emissions by 63 tonnes of CO2.</p> <p>Between 2007-2010 there was a 200% increase in video conferencing use (estimated saving of 127 tonnes CO2)</p> <p>In 2009 12,300 subsidised bus journeys made (with estimated saving of 6.4 tonnes CO2)</p> <p>20 staff regularly cycle to work.</p>

	<p>introduced.</p> <hr/> <p><i>Recycling and waste reduction</i></p> <hr/> <p>Measures include:</p> <ul style="list-style-type: none"> • A large number of general recycling bins have been introduced. • Individual waste bins have been removed from desks. • A “treehugger” (a small box bin for scraps of recyclable material) is placed at each desk . 	
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Hilton Edinburgh Grosvenor Hotel

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Hospitality - 4 star hotel <p>Location:</p> <ul style="list-style-type: none"> Edinburgh's West End <p>Scale:</p> <ul style="list-style-type: none"> Hilton Worldwide employs over 130,000 staff in over 4,000 hotels worldwide 135 at Hilton Edinburgh Grosvenor 	<p>At a corporate level the Sustainability team promotes environmental awareness training and provides advice to individual hotels. Within the hotel there is a Green team consisting of the heads of the three main departments (kitchen, housekeeping and maintenance) and the manager's personal assistant. This team organises and implements green initiatives within the hotel and is captained by the Executive Head Chef. Front line staff have recently been included in the green team to help expand the scale of their initiatives.</p> <hr/> <p style="text-align: center;"><i>Energy reduction</i></p> <hr/> <p>'LightStay' tool – Information on the carbon output, energy and water use of each hotel is collected at a corporate level via this monitoring system.</p> <p>Kitchen initiatives – Energy measures include encouraging staff to use pot lids and turn off gas rings and grills when not in use, to save energy. Frequent reminders from the Head Chef, and staff reminding each other, has meant this has become the norm.</p> <p>House-keeping initiatives – The procedure for cleaning rooms has been adapted so that housekeepers now do an initial sweep of empty rooms to switch off any electrical appliances left on by guests.</p> <p>Low carbon infrastructure – The hotel has also invested in low carbon fixtures such as lower voltage lighting and motion sensors attached to lights in meeting rooms.</p> <hr/> <p style="text-align: center;"><i>Recycling and waste reduction</i></p> <hr/> <p>Kitchen-based initiatives include:</p> <ul style="list-style-type: none"> Introduction of food waste recycling, using a service provided by an external company. Investment in a cardboard baler to improve the speed and ease of cardboard recycling. Encouraging re-use of leftovers and scraps from food preparation. 	<p>22.4% reduction in energy use</p> <p>13% decrease in carbon output</p> <p>40% of waste is now recycled</p>

	<p>House-keeping initiatives – There have been efforts to integrate recycling into the process of cleaning rooms by getting housekeepers to separate out waste and recyclable materials. However the layout of the hotel makes it difficult to store separated waste while rooms are being cleaned.</p> <hr/> <p style="text-align: center;"><i>Food</i></p> <hr/> <p>Low carbon menu – A menu has been developed using locally sourced food. This required securing an exemption from corporate set menus which require hotels to use set providers, often some distance from the hotel.</p> <p>Food waste initiatives – The hotel has taken measures to reduce food waste, detailed above.</p>	
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Interface FLOR

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Flooring manufacturing, sales and distribution <p>Location:</p> <ul style="list-style-type: none"> Manufacturing facilities in Shelf (Halifax, West Yorkshire) and Craigavon (Northern Ireland). Showroom in London <p>Scale:</p> <ul style="list-style-type: none"> 400 employees in UK, of which 204 work at the Shelf factory 	<p style="text-align: center;"><i>Waste, Energy & Transport</i></p> <hr/> <p>QUEST programme – Staff suggestion and bonus scheme to identify suggestions for changes to factory work practices that reduce energy usage and waste. A bonus of £800 is available for those achieving 10% savings.</p> <p>EcoSense – Programme aimed at encouraging staff to take part in low-carbon projects. Points are awarded to factories on the basis of successful projects. Projects have included car pooling schemes and the purchase of fuel efficient lorries.</p> <p>Sustainability training – Three stage training programme aimed at encouraging low carbon behaviour. First stage is compulsory for all staff, second and third stages voluntary. The third stage is run by an external organisation. Completion of all three stages gives the participant the status of green ambassador.</p> <p>Green Energy Team – Initiative at Shelf factory, a voluntary team with 12 regular members. Aims to keep staff informed about what is taking place at the factory and to help gather suggestions for new low carbon initiatives</p>	<p>80% reduction in manufacturing waste sent to landfill per unit of production since 1996, saving \$433 million in cumulative avoided waste costs.</p> <p>In workplace visited, using more efficient air conditioning and reducing temperature from 22C to 18C estimated to cut energy consumption by around 48%.</p> <p>Reducing voltage for lighting systems cut energy use by 20-30%.</p>

SSE (Scottish and Southern Energy)

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Energy generation and supply <p>Location:</p> <ul style="list-style-type: none"> UK-wide Headquarters in Perth <p>Scale:</p> <ul style="list-style-type: none"> Employs 20,250 staff FTSE 100 company £11.9 bn market capitalisation 	<p style="text-align: center;"><i>Transport</i></p> <hr/> <p>Restricted car parking – Car parking spaces have been reduced and permits have been introduced which only allow staff to park onsite for four days per week.</p> <p>Promoting car sharing – Car sharers are allowed to use the car park every day and have access to preferential spaces. Car sharing is also encouraged via links to a website that allows staff to find other people who are looking for lift shares.</p> <p>Dedicated bus service – Public transport use is encouraged at one site through a dedicated bus service funded by SSE and another large company based in the area.</p> <p>‘Big Green Commuter Challenge’ – Each year the company runs this week-long event where staff are encouraged to use alternative means of travel for the week. Participants can receive individual prizes such as iPods.</p> <p>Business travel policy – restrictions are placed on business travel, specifically:</p> <ul style="list-style-type: none"> Staff are required to take at least one rail journey for each 4 flights they take Two months of the year (August and December) are designated no-fly months. The company has been trialling an annual 12-week no-fly period. SSE has introduced their Telepresence videoconferencing system as an alternative to travelling for business. <p>Low carbon vehicles – SSE has invested in low carbon vehicles for both its commercial fleet and company cars.</p> <hr/> <p style="text-align: center;"><i>Energy reduction</i></p> <hr/> <p>Reductions in energy consumption have been encouraged through:</p> <ul style="list-style-type: none"> Financial incentives – prizes based on energy savings for retail shops Monitoring and information – Energy data and league tables comparing consumption across different sites are provided to staff. Training – Staff with responsibility for the energy consumption of buildings (such as 	<p>Avoided 847,500 miles of business travel in 2010.</p> <p>Liftsharers have undertaken 3,455,313 miles of travel since 2009.</p> <p>Big Green Commuter Challenge saved 96,281 miles of travel since 2010.</p> <p>CO2 emissions from energy consumption have decreased by 3% in 2010/11.</p> <p>£12, 000 of energy savings allocated to charity.</p> <p>Since Jan 2009 company has saved £918,908 in costs of parking provision.</p>

	<p>facilities managers) are given training on how to achieve energy reduction and its practical implications.</p> <ul style="list-style-type: none">• Low carbon infrastructure – SSE has also made considerable investments in infrastructure aimed at reducing energy usage.	
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Wiles Greenworld

Organisation profile	Low carbon initiatives	Impacts
<p>Primary activities:</p> <ul style="list-style-type: none"> Office supplies distribution <p>Location:</p> <ul style="list-style-type: none"> West London <p>Scale:</p> <ul style="list-style-type: none"> Employs around 50 staff 	<p>Wiles Greenworld puts particular emphasis on environmental education through staff training and induction. New staff receive a half day induction from the Chief Sustainability Officer during which they watch films including 'An Inconvenient Truth' and 'Crude'. Additionally monthly departmental meetings feature a "green slot" in which films are shown with a message about environmental sustainability. It also runs an internship programme which has been a key source of new ideas for green initiatives.</p> <hr/> <p style="text-align: center;"><i>Recycling and waste reduction</i></p> <hr/> <p>Measures to reduce waste include:</p> <ul style="list-style-type: none"> Practical uses of "nudge economics", such as putting lids on waste bins but not on recycling bins which makes recycling easier Removing waste bins at desks Choosing recyclable or reusable materials where possible Providing recycling services to their customers <hr/> <p style="text-align: center;"><i>Transport</i></p> <hr/> <p>Fuel efficient driver training and incentives – Company drivers are provided with training in fuel efficient driving and also offers a bonus of around £50 twice a year to fuel efficient drivers.</p> <p>Home working is encouraged. The entire sales team works from home, only attending the office for monthly staff meetings. Home working has been facilitated by cloud computing, which saves energy on conventional hardware IT systems.</p>	<p>32% decrease in carbon footprint since 2008.</p> <p>Delivers 52% more services per tonne of carbon than in 2008.</p>

Social Research series
ISSN 2045-6964
ISBN 978-1-78045-758-1

web only publication
www.scotland.gov.uk/socialresearch

APS Group Scotland
DPPAS12807 (03/12)

