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Lean and Green

Leadership for the low-carbon future

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Foreword

In December this year, a major international summit meeting will be held in Copenhagen to establish a successor agreement to the Kyoto Protocol for combating climate change. It is, therefore, timely for us to ask what British management is doing to address this issue, which will have a profound effect on all our lives.

This report is the result of just such an investigation. The findings show that whilst most managers recognise the importance of the low carbon agenda, far too many of them are doing nothing about it. In particular, the failure to act stems from a lack of leadership at the top. Boardroom scepticism is a major hindrance to action.

The good news is that there are positive findings which can form the foundation for a more positive approach to carbon management by British business. Younger and more junior managers are enthusiastic about incorporating the green agenda into their everyday business activities. We found organisations which have taken carbon management seriously and, as a result, have made impressive progress.

Drawing on the research, we have set out a number of recommendations for action by business leaders, professional bodies and business schools, Government and environmental bodies.

This report points the way to a more sustainable future for British business.

Dr John Roberts CBE
Chair of the Research Steering Board
Chief Executive of United Utilities, 1999-2006

Introduction

As recently as a decade ago, the environmental agenda was still regarded by many organisations as at best a fringe issue. Our 1998 report concluded that "the business case for the environment is yet to be accepted by all organisations"[1], with many seeing it as a cost rather than an opportunity to add value. Relatively few UK executives would have cited environmentalism as a factor influencing their day-to-day decisions. Even fewer would have listed it as a core driver in delivering value to their business.

A decade on, how much has changed? This report suggests that while the importance of the green agenda is increasingly well-recognised, too few organisations are taking the urgent action needed to transform the UK economy for a low-carbon future. It identifies a failure of boardroom leadership as a significant block to reform. In conclusion, it calls for managers to do more to cut emissions by making green issues part of the mainstream of management activities.

This report aims to provide insights into organisations' current approach to the green agenda, but it is also intended to help improve the ability of managers to implement changes to achieve more sustainable energy policies and carbon management.

The objectives for the programme were:

- to explore the strategic drivers for decision-makers across organisations;
- to explore how measures to promote environmental sustainability can deliver business benefits;
- to identify and raise awareness of key environmental management practices of relevance to managers;
- to demonstrate the measurable impact of environmental "best practices", in terms of reductions achieved and of associated business benefits;
- to develop guidance for individual managers and organisations;
- to champion the outcomes across the management community.

About this report

This report presents full analysis of the research findings. It includes results from a UK-wide survey of 1,500 managers and ten case studies based on interviews conducted among a range of organisations in different sectors. It also provides key conclusions and recommendations, drawn from the research, to help individual managers and organisations adapt to the challenges they face.

This research has been led by the Chartered Management Institute in partnership with the Institution of Engineering and Technology (IET) and the UK Business Council for Sustainable Energy, supported by EDF Energy and the Association of Chief Police Officers, Cymru. The Centre for Environmental Strategy at the University of Surrey was the research partner.

[1] *A Green and Pleasant Land?* – Institute of Management (1998)

Key Messages

1. Managers recognise the importance of cutting carbon emissions but too few are taking action

- The need to cut carbon emissions is recognised by a majority of managers as an important business issue. Around two thirds (64 per cent) agree that carbon management will become more important over the next three years.
- However, most organisations currently fall short of achieving the urgent change needed for a low-carbon future. Only 26 per cent report that their organisations actively manage their carbon footprint, despite two-thirds (69 per cent) recognising that they could cut emissions.
- There is a clear need for a better understanding of how carbon emissions may be measured and managed. Just one third of managers feel that they have clear measures for calculating their carbon footprint.

2. Boardroom scepticism risks squandering widespread management enthusiasm

- This report shows that boardroom leadership on this agenda is too often lacking. Scepticism about environmental issues at work increases with management seniority and the management group most likely to be identified as 'climate change cynics' are directors (54 per cent of directors are identified as cynics). Perhaps as a result, a lack of resources is viewed as the main barrier to achieve change. Achieving radical change will need a far stronger lead from senior managers.
- However, there are encouraging signs of enthusiasm across UK management. Almost three-quarters of managers say they would not want to work for an organisation with a poor environmental record; yet fewer than half are proud of the environmental performance of their current employer.
- Most managers recognise the strong business drivers for environmental issues, for example cost reduction, new business opportunities or helping to attract customers. More junior and younger managers in particular tend to be more passionate about this agenda: organisations should draw on this enthusiasm to achieve the change required.

3. The challenge ahead: mainstreaming the environmental agenda

- This report recommends that managers urgently take active steps to integrate environmental issues into the mainstream of their business activities.
- To create more carbon-conscious cultures, chief executives need to show leadership by demonstrating commitment and communicating a clear sense of direction. Clear board-level responsibility and accountability for delivering specific projects is needed, while 'green teams' can help build engagement across organisations. Environment-related targets should be set at an organisational level but should also be included in performance management systems for individual managers, helping to drive change throughout companies.
- This report highlights examples of where businesses have developed substantial carbon-management programmes, outlining how significant successes have been accomplished. They range from large organisations such as Royal Mail, BT and Fujitsu, to a small business that achieved a 40 per cent cut in its energy bill by implementing green measures. The report offers recommendations to help managers – whatever the current performance of their organisation – rise to the challenge of adapting to the low-carbon economy.

Summary of Findings

The survey conducted for this report examined a range of areas associated with managers' current environmental activities including:

- drivers of environmental practice
- steps being taken to improve environmental performance
- the extent of carbon management activities
- the link to innovation
- the role of regulation
- managers' personal attitudes to climate change and the green agenda.

The following pages present key findings from the survey with short extracts from the ten case-study interviews.

Drivers of green management

Senior management commitment is the most important driver of environmental management practices, regarded as important or very important by 82 per cent of respondents. Other key factors driving organisations to examine this agenda include cost savings (78 per cent) and regulatory compliance (75 per cent).

The case studies showed that businesses have made substantial cost savings through their environmental programmes. Examples include:

- Arora International Group: this hotel chain reported cost savings of around 15 per cent thanks to a green programme that was implemented at minimal expense.
- Derek Pitcher Ltd: this small business in the electric service sector, based in the North-East of England, was able to reduce its overall energy costs by 40 per cent thanks to an energy-saving programme.

Pressure from existing or potential customers is important or very important for 59 and 62 per cent of managers respectively, while the impact on the consumer brand and employer brand is key for 48 and 42 per cent respectively. Ethical responsibility is regarded as a leading driver by 67 per cent.

Among potentially influential external groups, the media were the highest-ranking non-direct stakeholder (48 per cent). It was striking that investors and shareholders or funding bodies were ranked more lowly.

Basic practice – lean, green organisations?

Organisations looking to reduce their carbon impact can take a number of practical steps. Table 1, below, outlines which steps have been taken at present and which are likely to be introduced within the next three years. It suggests that efforts are focused on energy usage and are largely cost-driven. Priorities are commonly tailored to the prevailing context for the organisation.

	Introduced already %	Within 3 years %	Would not consider %	Don't know %
Recycling of waste materials	85	8	2	6
An environmental policy	72	14	3	12
Lights-out' policy	68	15	4	13
Encourage employees to be more environmentally friendly	64	20	5	12
Energy efficient light bulbs	51	22	4	23
More remote working	51	23	12	15
Greater use of video conferencing	51	28	6	16
Greater use of public transport	45	16	17	22
Less international travel	42	18	18	24
Change in product / service specification	36	27	9	28
Energy efficient IT	33	28	5	34
Changed process policy or process modifications	33	28	7	32
Fuel efficiency measures for car fleet	29	29	9	33
Energy efficient air conditioning	25	26	9	40
Replacement of high energy-consuming equipment	21	35	8	36
Switching to renewable energy	15	25	11	49

Table 1: adoption of measures to reduce energy usage

The most common 'green' initiative is recycling, which 85 per cent of organisations have introduced – with a further 8 per cent likely to introduce it within the next three years. By comparison, just half (51 per cent) have introduced energy efficient light bulbs at work, while fewer still have introduced energy-efficient IT.

Over the next three years however, many managers expect to introduce more efficient technologies, including replacing high energy-consuming equipment or introducing energy-efficient IT. Other changes will require modifications in business activities, with more video-conferencing, more remote working, and less international travel.

The survey suggests that managers distinguish between factors that are most immediate and directly related to costs – rather than the more abstract measure of carbon emissions. Energy usage and vehicle fuel usage are viewed as very important by 56 and 40 per cent respectively. These factors constitute a substantial part of overall carbon dioxide emissions for many organisations – yet managers are much less likely to regard the specific issue of carbon dioxide emissions as very important (31 per cent).

The survey also explored how managers source advice on green measures. It found that managers primarily use sources they know and trust, especially internal sources and professional bodies. This implies that such trusted sources, including professional bodies, have a responsibility to help managers make sense of the environmental challenges they face.

Measures being taken by companies profiled in the case studies include:

- EDF Energy: EDF's most successful internal environmental initiatives have been focused on energy usage in buildings and transport emissions
- Royal Mail: the 33,000 vehicles operated by Royal Mail travel a total daily distance roughly equivalent to the distance of travelling to Jupiter and back. Hence, the biggest environmental challenge they face is operating a more sustainable vehicle fleet – a challenge that offers significant cost savings in light of rising fuel prices.

Carbon management

The survey shows that many UK managers are clear that carbon management is a business issue of genuine importance. However, it is a story of only partial progress. Demonstrating the benefits in terms of the bottom line will be critical to achieving a wider up-take of these activities. As such, higher energy and carbon prices may well prompt rapid change in the future.

Almost two thirds of respondents (64 per cent) agree or agree strongly that carbon management will become more important in the next three years. A majority of managers (69 per cent) reject the idea that there is little that their organisation can do to reduce its carbon footprint. Managers also reject the idea that carbon management is little more than 'greenwash'.

However, only 26 per cent currently actively manage their carbon footprint in all their activities. Just one third of managers have clear measures for calculating their carbon footprint.

Carbon management practices are more likely to be found in organisations that are growing compared to those that are static or declining. Equally, managers that are "climate change cynics" – that is, sceptical about carbon management and their ability to reduce their carbon impact – are more likely to work in organisations with low or no growth rates. The group of managers most likely to be climate change cynics are directors.

Larger organisations are more likely to have measures for calculating and managing their carbon footprint. Public sector organisations also appear to be taking a strong lead in this area, relative to the private and not-for-profit sectors.

Some 40 per cent think that carbon management requires additional regulation to become effective. The Carbon Reduction Commitment, which will affect up to 5,000 large business and public sector organisations, is likely to have a major impact when its introductory phase begins in April 2010.

Practical measures to cut carbon

- The top three areas that organisations are targeting to cut carbon dioxide emissions are energy usage in buildings (65 per cent), followed by recycling measures (54 per cent) and fuel usage in transport (45 per cent).
- More complex management activities, such as managing carbon dioxide emissions from products and services or along the supply chain, are much less common (14 and 11 per cent respectively).

Harnessing personal attitudes to create a climate for change

An understanding of employees' personal attitudes about climate change is an important step in implementing a successful environmental management programme. The evidence shows that the majority of managers acknowledge the need for environmental activities and broadly support such actions. Of concern, however, is the strong scepticism revealed among managers at director level. This group has the responsibility to lead their organisations but the evidence suggests that many are not doing so on this issue.

- There is widespread acceptance of the science of climate change. Only a minority (24 per cent) of managers feel that the human causes of climate change have been over-stated.
- 73 per cent of managers would not want to work for an organisation with a bad environmental reputation. However, substantially fewer (48 per cent) feel pride in the environmental performance of their current employer.
- EDF Energy's 2008 Employee Engagement Survey found sustainability to be the number one driver of employee engagement within the company.

Further statistical analysis of managers' attitudes to environmental issues led to the identification of four clusters or groups. The findings suggest that while the need to cut carbon emissions is widely accepted among managers, differences of opinion exist about why action is necessary – with consequent implications for the focus of activities. By understanding and appealing to these different groups, managers will increase the effectiveness of low-carbon programmes. The clusters were as follows:

I. **Business Greens** (36 per cent) – managers that seek to integrate sustainability into their business processes on the basis of the benefits to the business. They are proud of their organisation's environmental performance and have a clear understanding of their environmental impact. Notably, this group was significantly better-represented in rapidly growing organisations. They may be seen as the vanguard of companies who are bringing environmental considerations into the mainstream of management activities; they are evidence that UK business cultures are changing in light of the climate change challenge.

II. **Ethical Greens** (25 per cent) – managers that are characterised by strong ethical environmental values rather then market-based or customer-driven business strategies. They, more than any other group, have a deep personal commitment to climate change issues. They have doubts about the ability of the market to drive low-carbon change and thus view leadership as a crucial driver of environmental innovation.

- Younger managers are more likely to fall into one of these two 'green' groups. The predominant cohort of the Ethical Greens and Business Greens were aged 30 – 49.
- Female managers are more likely to fall into these two 'green' groups
- Ethical Greens and Business Greens tend to be found primarily in medium and larger organisations, and in private sector companies.

III. **Customer-focused** (21 per cent) – focused primarily on customers and meeting their expectations. As such, they are sensitive to the potential for changes in consumer choices.

IV. **Non-Greens** (18 per cent) – follow market trends regardless of the environmental impact of their actions and are very sceptical about climate change. Managers in this cluster were particularly predominant among smaller owner-managed or sole trader companies.

The role of regulation

Regulation plays an important role in Government efforts to improve environmental standards so the survey examined managers' views on the impact of environmental regulation. Two sets of interrelated barriers to improved compliance were found by the survey. One is internal and includes a lack of resources, which was seen as the single most important barrier. This is likely to be linked to the lack of commitment and strategic vision from directors which is evident throughout the research. The second set is external. Complexity of regulation – rather than the volume of regulations – was identified as a leading problem, particularly for smaller businesses.

Two distinct groups were identified in relation to attitudes to environmental regulation. Some 46 per cent of respondents take a positive view, stating that environmental regulations help drive higher standards of environmental practice, encourage innovation and create new markets. However, the second cluster (54 per cent) perceive regulation as a barrier towards achievement of their strategic goals and warn that it can encourage an expensive, bureaucratic tick-box compliance culture.

- Managers in larger companies are more likely to have a positive view of regulation than smaller companies.
- Directors are particularly scathing about the impact of regulation, with 68 per cent reporting a negative perspective.
- Managers working in organisations which are in decline have a greater tendency to hold a negative view of regulation.

Background: The Evolution of Sustainable Development

In 1987, the World Commission on Environment and Development Report (commonly known as the Brundtland Commission Report) coined the term "sustainable development" and defined it as development "that meets this generation's need without compromising the ability of future generations to meet their own needs".

The Report explicitly stated a positive role for businesses in furthering the cause of environmental protection, in contrast to the traditionally negative view of corporations as being the "problem" and government being the "solution". Since that report, terms such as environmental management, corporate social responsibility and sustainable development have become much more familiar in debates on the role of business and its responsibilities.

The need for sustainability to be at the heart of our thinking about economic development is particularly pressing in light of the prospect of rapid growth among nations seeking to attain the benefits of economic development previously enjoyed only by the industrialised world.

Indeed, the urgent need for action has been underlined by a recent report suggesting that 300 million people globally are already being affected by climate change, with some 300,000 deaths being caused by droughts, famines, heat waves, storms, forest fires and floods. The total economic costs are already at $125bn annually[2]. Yet, the Stern Report commissioned by the UK Government has shown that the cost of taking steps to mitigate against climate change now – substantial though they may be – are far outweighed by the costs of adaptation later.

Businesses also operate in the context of an increasing level of regulatory activity at national and international levels. That activity will only increase: the Kyoto agreement's successor will be negotiated in Copenhagen in December 2009. In the UK, climate change has moved to the centre of political debate in an unprecedented way. The UK now has a Department for Energy and Climate Change and it is putting in place legal targets to cut carbon emissions, with five-year carbon budgets placing markers along the way. Many high-carbon businesses are already participants in the EU Emissions Trading Scheme while many more large UK organisations will be affected by the Carbon Reduction Commitment, which comes into force in 2010.

It is time, therefore, for businesses to craft corporate strategies that address this phenomenon. Change is not only an ethical imperative. It also makes sound business sense. Climate change poses real risks and opportunities that companies must begin planning for today, or risk losing ground to more forward-thinking competitors.

[2] Global Humanitarian Forum: *Human Impact Report: Climate Change – The Anatomy of a Silent Crisis* (2009) http://www.ghfgeneva.org/portals/0/pdfs/human_impact_report.pdf

Historical precedent

It is worth noting that the environmental management agenda is not a new phenomenon at all. The earliest piece of environmental regulation is over 3500 years old, found in the Code of Hammurabi (c. 1760BC). In the UK, environmental prosecutions date back to the 11th century. Since then, an impressive array of issues have come and gone. Some serious problems such as acid rain, the London Fogs, or particle pollution from smokestacks are, fortunately, no longer on the political agenda. They have been replaced by concerns around global-level climate change, water scarcity, and over-use of non-renewable resources including energy fuels.

The challenge we now face

Despite the existence of some historical precedents, the current problem of climate change on a global scale has an urgency and complexity incomparable to previous issues. Its causes and consequences are complex and are, in most cases, global and irreversible – at least within this or the next generation.

More importantly, the changes needed to respond to the climate challenge go to the very heart of who we are, how we live and what we do. Meeting the UK's legal target of an 80 per cent reduction in carbon emissions by 2050 will be impossible if we rely only on incremental change. It demands a profound and far-reaching response in policy, strategy and behaviours. In particular, we cannot address the over-use of non-renewable resources without a radical re-assessment of our energy needs and the lifestyles that come with them.

Businesses have a Janus-like role in this agenda. On one side, they consume vast environmental resources and create the products to address our needs, desires and wants. But they also provide the only place where systematic innovation can take place at a scale commensurate with the problems and challenges we face. This report provides insights into how far businesses have responded to the challenges they face in this pivotal role.

1 Driving Greener Management

1.1 The Pressure State Response model

Most academics and consultants alike assume the OECD "Pressure State Response" model of environmental management. It states that external and internal pressures and barriers all have an influence on an organisation's approach to environmental management.

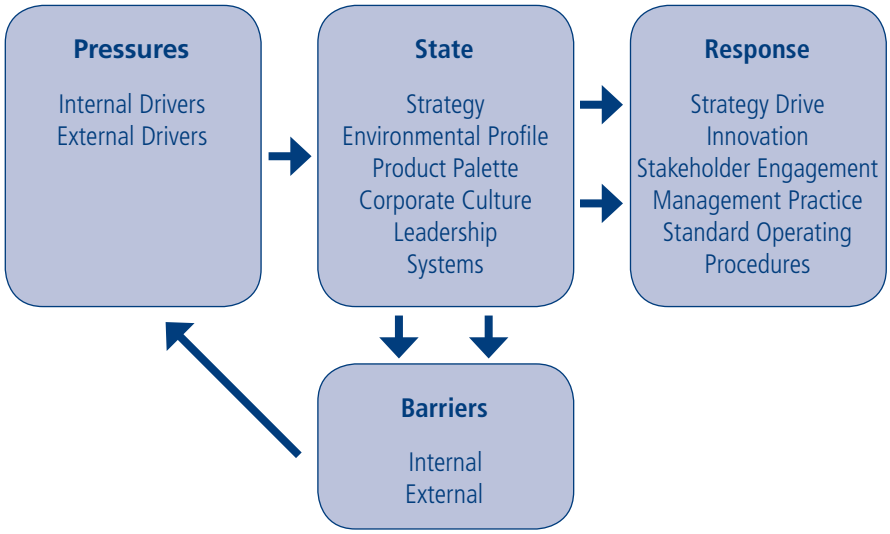


Figure 1: Pressure State Response model

External barriers and drivers are generally similar for organisations within the same sector. How a given organisation responds, however, is shaped by its internal interpretation of these external forces and the state of the organisation itself. External pressures therefore tend to state whether an organisation needs to change; internal pressures and barriers state how an organisation responds to these factors.

In light of the role of both internal and external factors in driving organisational responses to climate change, this research examined managers' perceptions of the drivers of environmental activities.

1.2 Internal drivers

Respondents were asked to assess the importance of a range of possible drivers. The findings are outlined in Table 2 below.

	Not at all important %	Not very important %	Quite important %	Important %	Very important %
Senior management commitment	2	5	11	27	55
Cost savings	1	4	17	35	43
Regulatory compliance	3	5	18	29	46
Corporate targets	6	6	20	33	36
Ethical responsibility	3	7	23	34	33
Employee engagement	5	9	29	32	25
Customer engagement	7	9	26	32	26
Product/service design	10	12	30	28	0
Consumer brand	13	11	28	26	22
Employer brand (i.e. ability to recruit)	9	13	34	26	18
Competitive advantage	15	13	25	26	22

Table 2: Internal drivers of environmental practices

It appears that traditional drivers of organisational change – such as top management leadership, economic factors and legal considerations – are dominant in this field as well. Senior management commitment is the single most important internal driver, with 82 per cent seeing this as important or very important – while corporate targets, which also require senior management backing, also rank highly. Second and third most highly ranked are cost savings (78 per cent) and regulatory compliance (75 per cent).

It is notable that consumer and employer brand are less highly ranked – while the factor most commonly rated as 'not at all important' was competitive advantage. Strikingly, these factors were in fact critical for some of the managers interviewed in this report, such as the Director of CSR at Tag Worldwide, a media services company – see page 47.

Further analysis of these findings showed that:

- The high importance attached to cost savings was uniform across all company sizes.
- The low relative importance of competitive advantage was similarly consistent.
- A number of factors were ranked significantly more highly in larger organisations (over 250 employees), including corporate targets, consumer brand, ethical responsibility and employee engagement. Similarly, regulatory compliance was found to matter more for companies with more than 250 employees than for those with fewer than 50.
- Employer brand ranks higher in medium and large sized firms (i.e. more than 50 employees).
- All these pressures were ranked more highly by managers in organisations which are in a difficult economic position. This suggests a correlation of environmental and economic performance.

1.3 Outside influences

Survey respondents were asked to consider a range of possible external drivers of green activity. As shown in Table 3 below, three factors emerged as significantly more important than the others: energy costs, ranked as important or very important by 77 per cent; and regulation and Government (both 74 per cent). Pressures from customers (potential customers or existing customers) also emerged strongly.

	Not at all important %	Not very important %	Quite important %	Important %	Very important %
Energy costs	2	4	17	35	42
Regulation	3	5	19	29	45
Government	2	5	18	30	44
Potential customers	8	8	22	29	33
Existing customers	8	10	23	27	32
Benchmarking comparisons	7	9	30	32	21
Insurers	7	11	31	28	23
Media	9	11	30	30	20
Suppliers	8	13	30	29	19
Investors/shareholders /funding bodies	14	12	25	25	25
Cost of carbon	10	13	33	25	18
Competitors	15	13	28	24	20
NGOs	13	14	37	23	13

Table 3: External drivers

The high importance attached to energy costs is very likely due to the recent substantial fluctuations in oil and correlated other energy prices. This finding is consistent with the case studies, in which energy costs were frequently cited as a significant driver. By contrast, the cost of carbon is regarded as being of relatively little importance, albeit that a substantial minority still rated it highly. Of course, it may be argued that the cost of carbon has become a factor in the cost of energy as a result of the development of carbon trading systems such as the EU's Emissions Trading Scheme.

Interestingly, the ranking also casts doubt on the relevance of a range of stakeholders. The media rank in the bottom half with NGOs (non-governmental organisations) ranking last. Even stakeholders with an economic interest in the organisation itself, such as investors, shareholders or funding bodies, are not perceived to be very important here. However, the respective figures for public and private limited companies and partnerships are somewhat higher than those of public sector organisations and charities. The relatively low ranking of competitors echoes the finding (section 1.2 above) that competitive advantage is of relatively low importance.

1.4 Conclusions and recommendations

It appears from the data that managers currently recognise six drivers as key for the design and implementation of an environmental programme: from an internal perspective, senior management commitment, a focus on achieving cost savings and regulatory compliance are key. The critical external factors are energy costs, regulation and government.

Managers in fast-growing organisations tended to rank internal factors more highly compared to companies in slower-growing sectors. Perception of the key drivers changes little between sectors.

Managers should:

- Show commitment and leadership at all levels of management and particularly at senior management level.
- Demonstrate the benefits of environmental initiatives. Initiatives that are uneconomical are unlikely to progress.
- Ensure that the focus on energy does not mean that other environmental issues, such as water and waste, drop off the agenda.

Case Study - Arora International

Organisation profile

A hotel chain with sites in Greater London and Manchester, employing approximately 1,000 staff.

Environmental concern in the current economic climate

The underlying view at Arora International, as commonly shared by many other organisations, is that these are troubling times, with new ideas, new leaders, and a global economic crisis to the fore. Arora's response to these challenges, however, is to see sustainability as an even more critical issue to the organisation.

Green thinking is high up on the agenda because committing to sustainability is seen by the organisation as a means to not only staying profitable, but also to driving customer engagement.

Environmental projects and green audits, particularly monitoring and rationalising utility consumption, are integral to the overall strategy of how Arora plans to manage the business going forward.

Cost savings

Arora International's approach has recognised that going green can be a source of cost saving. It understands that in tough times, organisations need to focus on their bottom lines and cut costs – and ideally this needs to be done sooner rather than later. Its experience, though, is that reducing energy and utility use, can save a great deal of money:

> *"The single most important tangible evidence is that in the five comparable hotels where we have been running this programme of Green Team activity for the last three years almost, we have seen a reduction of about 15 or 16 percent in our total utility costs."*

A number of Arora International's savings have been achieved at minimal expense.

Senior management commitment

A key to these rewards has been organisational commitment, particularly at senior management level. The Chairman was heavily consulted on the organisation's green strategy and was "absolutely delighted" that low-carbon initiatives were being introduced. Whilst the strategy was developed by the Group Chief Engineer in co-operation with the Group Operations Director, the organisation also has a 'green team' with representatives from each department to further raise awareness and promote the results of green schemes.

The company is also in the process of installing Variable Speed Drive Inverters to all water and air handling pumps across all its hotels. This will achieve savings of up to 50 per cent energy consumption from those pumps and builds on the

many other initiatives it has taken to improve energy efficiency. To date, the inverters have been installed into two hotels and this has seen immediate and noticeable savings. The return on investment is therefore very satisfactory.

Taking the 'green' message home

The savings achieved by green schemes have driven awareness amongst Arora staff of the need to conserve energy and resources. These tangible outcomes also appear to be influencing a more wide-ranging cultural shift in the organisation, with a belief that "employees have taken these green messages to their homes as well". It is clear that benefit derived both inside and outside the business has encouraged a "positive feeling" within the organisation.

Simplicity is the key

At Arora International, the critical distinction between costs and investments has not been overlooked. However, the short-term availability of capital expenditure to facilitate improvements remains a going concern.

Human resource has also been committed to the cause as the General Managers of each hotel are given responsibility for utility consumption. Performance is reviewed on a monthly basis with senior management:

> *"We look at utility costs and consumption. If it is out of line I want to know why. If there is a good reason, that is fine; if there is a bad reason then we work on it to eliminate that reason; and if there is no reason then we have to find a reason."*

Addressing simple house-keeping matters has led to "small actions totalling up to being a lot". This included actions that it was acknowledged could be perceived as "nitpicking", but once implemented have provided a notable return. Such examples were stipulating that employees switch off the pilot light on their computer and turning lights off in rooms not being used.

The logic behind Arora International's decision to go green is ostensibly no different from the logic for pursuing other business strategies. It is looking to drive profitability, customer loyalty, employee engagement, innovation, and so forth:

> *"If it is in our interests to do something, because it is good for our customers and for our business, then we will do it."*

The consensus within the senior management team of Arora International is that, where possible, the organisation wants to accelerate and broaden its sustainability work. Overall, the evidence does not point to an organisation slowing down its green efforts because of a recession.

Case Study – EADS Astrium

Organisation profile

An aerospace, defence and related services operator, with two main sites in the UK and other locations in Germany, France, the Netherlands and Spain. There are approximately 3,000 employees in the UK, with 15,000 in total across the five countries.

Workplace initiatives

EADS Astrium's efforts to minimise its environmental impact have many wide-ranging aspects including minimising travel wherever possible, promoting recycling in all offices on site, and using energy efficient lighting. The organisation has also encouraged car-sharing schemes, and has entered a partnership arrangement with a cycling company to persuade employees to bicycle to work. The cycling initiative is further supported by the provision of full shower facilities, proper bike sheds and, in the case of the Stevenage location, an excellent cycle path network.

Two examples of best practice cited by EADS Astrium as part of their environmental strategy include switching their entire lighting to a higher environmental standard, and equipping their buildings with transparent roof tops in order to effectively use the daylight.

EADS Astrium has sought to further reduce lighting costs through recently adding an automatic movement detection system for its office fluorescent lighting. Rooms are also equipped with remote control units that enable fluorescent lamps to be turned off completely if not required, or for the lighting to be dimmed on individual lamps, 'enabling existing technology to bring about rapid benefits with cost reductions'.

As a result, the company has achieved financial savings, particularly in the areas of travel and electricity consumption. It believes that the need for financial savings will compel organisations to act to educate their employees on environmental best practice, with the intention that this filters down into practical actions.

Product innovation

EADS Astrium is also innovating in terms of its products with a view to minimising both costs and disruption to the environment:

> *"We have increased the service life of a satellite by a factor of three. You put the satellite up and you can now have it working for 15 years, so the manufacturing costs come down."*

The senior management team is highly committed to the organisation's environmental strategy, seeing it as a key means of improving reputation and thereby sustaining the organisation's lead within the sector. Stakeholder

feedback has been positive on the organisation's engagement with environmental issues.

Promoting the long-term message

The company accepts that there needs to be a long-term understanding of its environmental impact, aside from the actions that can bring quick wins:

> *"The message we need to get into is… working on long term solutions and realising that you're not going to get a return on that work for quite some time. Accept that you're not going to make a profit today – you've got to wait."*

But this more long-term view also goes alongside the "pursuit of improvement in what we have at the moment", pushing products to their evolutionary limit to get the best from them in terms of their environmental impact.

2 Basic Practice: Lean, Green Organisations?

2.1 Current and future adoption of low-carbon activities

Organisations looking to reduce their carbon impact can take a number of practical steps. Figure 2 below, outlines which steps have been taken at present and which are likely to be introduced within the next three years. It suggests that efforts are focused on energy usage and are largely cost-driven. Priorities are commonly tailored to the prevailing context for the organisation.

Practices that are most appropriate for any given organisation are likely to vary according to a range of factors. These include sector, size, strategic outlook, product range, place of the organisation in the value chain, distance to the final consumer, rate of technology change, outlook towards innovation, growth rates, capitalisation and corporate culture.

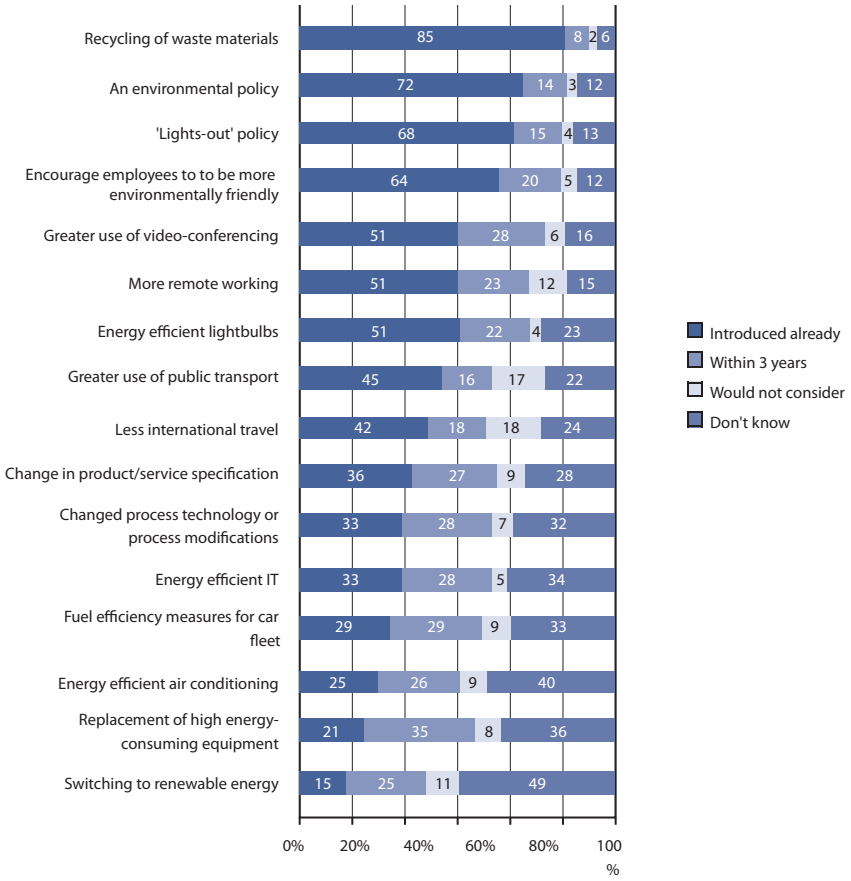


Figure 2: Current and future adoption of low-carbon initiatives

The most common green initiative is recycling, which 85 per cent of organisations have introduced. However, it is striking that this figure is largely unchanged from the Chartered Management Institute's previous report (*A Green and Pleasant Land?* 1998). The high rate of current practice and the low rate of planned future activity suggest that waste recycling has reached a plateau.

2.2 A focus on energy

The results suggest that the drivers outlined in Chapter 1 are reflected in practice, with activities that provide direct, short-term economic benefits being predominant. "Lights out" policies, more energy-efficient light bulbs and efforts to improve the energy efficiency of IT equipment and other energy-hungry assets tally well with the prominence of energy costs as a driver of change. One of the most fruitful areas for carbon reductions over the next few years is expected to be the introduction of more efficient technologies, with replacements for high energy-consuming equipment and energy-efficient IT solutions.

Compare the uptake of these activities with the relatively low incidence of organisations switching to renewable energy – a step which is likely to be associated with additional costs. The prevalence of cost as a driver therefore shows the critical importance that market signals and prices have in this field. Furthermore, it suggests that resistance to more widespread adoption of environmental measures is economic, not principled.

2.3 Changing patterns of workplace activity

Another area of emphasis involves initiatives which will require changes in workplace behaviours. Almost two-thirds of managers (64 per cent) report that employees have been encouraged to be more environmentally conscious. Some specific employee-centred activities include greater use of video-conferencing (51 per cent are already implementing this and 28 per cent plan to do so in the next three years); greater use of remote working (50 and 23 per cent). There is also a suggestion that ongoing campaigns to highlight the environmental impact of flying are having an impact, with managers expecting to make fewer international journeys and make greater use of public transport.

Such practical activities not only save costs but many also have benefits for employees. Remote working and video-conferencing may save time and reduce stress associated with commuting, for example. Organisations may also benefit from wider cost reductions: for instance, a co-ordinated approach to encourage remote working and "hot-desking" could lead to a reduced need for office space.

These findings suggest three interdependent points. Firstly, that a basic appreciation of environmental management is already relatively widespread in organisations. Secondly, it emphasises that employees have a pivotal role to play in environmental improvement programmes; and thirdly, that the motives and personal values which staff have with regard to environmental business management need to be better understood. These issues will be discussed further in Chapter 4 below.

Box 1: Environmental ideas to improve the office

Survey respondents suggested a number of potential schemes to encourage more environmentally-friendly working practices:

- A ban on desk-side bins, replaced by central recycling bins
- All PCs being switched off at night – including standby mode. In some cases it may be possible to introduce automatic switching off of PCs and other appliances.
- A number of suggestions involved ways of achieving reductions in paper usage. A "clear desk" policy or a commitment to electronic-filing only were reported by some respondents. Others said that double-sided printing had been established as the norm. One manager said that reduced paper print-outs had been linked to a new hot-desking policy.
- One manager reported that individual departments had been required to buy stationary from their own budgets – thereby giving them a cost-based incentive to be more resource-efficient.
- For one manager, a relatively simple key step was "replacing a very old roof on our warehouse". Others adopted more high-tech approaches, with one company installing a 3600kw solar panel in order "to demonstrate to staff the effect of renewables". Others reported introducing ground and air source heat pumps.
- Measuring power consumption, in terms of both electricity and gas
- Making employees aware of how much energy they use at work
- Using energy-efficient IT, for example replacing old CRT monitors, or installing low-energy light bulbs
- Better use of IT, both internally and by clients and suppliers, to help to reduce emissions from travel or paper use
- Installing movement sensors throughout the building so that lights are not left on unnecessarily
- Including low-energy considerations in procurement specifications
- Supporting a car-share scheme.

2.4 Service and product design

A further set of practical activities relate to the design and delivery of businesses' services and products, such as changing the process technologies used to deliver a given product, or changing a product or service itself. Relatively low levels of current take-up of these approaches – and relatively high expectations for the next three years – show the comparative youth of those activities.

These findings may also indicate an effect of the current recession, in that such activities require capital expenditure – which is likely to be vulnerable to cut-backs in difficult times. A similar argument can be made for efforts to improve vehicle fuel efficiencies or to changing high energy-consuming equipment. However – to our surprise – the case studies consistently revealed that the recession has so far not reduced the scope or scale of environmental programmes. This, indeed, may reflect the extent to which successful environmental programmes are recognised as contributing to cost reductions.

2.5 Communicating change

A relatively high number of managers report that they do not know whether miscellaneous measures or actions were, or will be, implemented within their organisation. Given the influential role of managers within organisational structures, this was something of a surprise. In fact, it appears that the more complex the measures, the less likely managers were to have heard about it. The case study interviews confirmed this impression, suggesting that managers are often unclear which measures are being implemented within their organisation. This suggests a requirement for improved training and communication on these matters in many organisations.

2.6 Relative priorities: a focus on direct measures

Arguably, organisations must set priorities in relation to the areas of environmental performance they most need to address. The survey examined the relative importance of a number of areas that are linked, directly or indirectly, to environmental performance, as shown in Table 4 below. The findings show that energy usage is the most important concern, in keeping with the finding that energy costs are the top driver of environmental change. Carbon dioxide emissions are ranked second-last in importance, albeit that an impressive 53 per cent still consider these to be quite or very important.

Table 4: Environmental and sustainability priorities

	Not at all important %	Not very important %	Quite important %	Important %	Very important %
Energy usage	2	4	13	25	56
Corporate social responsibility	3	3	15	27	51
Waste levels	4	7	21	29	40
Vehicle fuel usage	8	9	21	23	40
Water usage	7	12	26	25	31
Carbon dioxide emissions	9	14	25	22	31
Other greenhouse gas emissions	10	15	27	22	25

The survey suggests that managers are focusing on factors which are more immediate and accessible over those that are more difficult to calculate. For example, energy usage and vehicle fuel usage are viewed as very important by 56 and 40 per cent respectively. These factors may constitute a substantial part of overall carbon dioxide emissions for many organisations – and yet managers are much less likely to regard the issue of carbon dioxide emissions as very important (31 per cent).

The case studies offer evidence to support this. For example, the Head of Environmental Solutions of Royal Mail noted that the 33,000 vehicles they operate travel a total daily distance roughly equivalent to travelling to Jupiter and back. Hence, achieving a more sustainable vehicle fleet will be Royal Mail's biggest future challenge. Fuel efficiency may be seen as more important than emission reductions per se, although they are mutually reinforcing.

North Wales Police suggested that the energy side of their environmental strategy was the most successful in so far as it prompts employees to think about the energy they use. The Head of Sustainability at EDF Energy also stated that tackling building energy use had been the biggest and most successful measure so far taken by the company in improving its environmental performance as an organisation.

2.7 Conclusions and recommendations

It is evident that many organisations have already undertaken a variety of actions to improve their environmental performance. However, there is also a substantial amount of progress pending, and the coming years are likely to see extensive changes in UK organisations.

The main focus at this point is primarily cost-driven, as reflected in the focus on immediately tangible measures such as energy and fuel usage. Spending is most likely to be on energy and fuel efficiency improvement and in upgrading or retrofitting of assets.

The future challenge, however, will be for organisations to move on from the 'low-hanging fruits', such as waste management and recycling, to more radical service, product or manufacturing change. Employee engagement is clearly critical to the success of such organisational initiatives, with senior level commitment and consistent communication throughout the organisation integral to success.

In order to create lean, green organisations, managers should:

- Seek to maximise the business benefits from implementing low-carbon initiatives. Key areas include cost reduction, winning new business or attracting new customers.
- Adopt meaningful measures of environmental performance that are appropriate for the organisation's specific operating context. A focus on electricity usage provides a readily accessible initial measure for many businesses and is easily related to costs, although it is unlikely to encapsulate an organisation's full carbon footprint.
- Build a shared understanding about the areas in which carbon emissions cuts can best be achieved.

Royal Mail – Case Study

Organisation profile

Primarily in the postal sector, but Royal Mail also operates in logistics and communications. It will be regulated within the communications sector in the future. Royal Mail employs 165,000 staff employed across the whole of the UK, with 33,000 vehicles operating across 3,000 sites within the UK.

Clear strategy, targets, and management responsibility

Royal Mail has had a carbon management strategy in place for several years, with a programme of activity looking at how the organisation can effectively reduce its carbon consumption over periods of five to ten years. Given the nature of the business, the main areas of focus are on fuel and transport, alongside energy use, particularly in buildings. Additional sustainability targets on waste, landfill and water consumption feature prominently in the strategy.

Royal Mail is clear on its commitment to a series of targets including reducing its total carbon dioxide transport emissions by 20 per cent by 2010, reducing the solid waste it sends to landfill by 25 per cent, reducing fresh water consumption by 5 per cent and reducing greenhouse gas emissions from building energy use by 10 per cent. It has an overall stretch target of reducing total carbon dioxide emissions by 50 per cent by 2015.

The CSR team determined the organisation's environmental objectives and is responsible for both developing and implementing the carbon management programme. Development of these objectives was carried out in conjunction with the Carbon Trust. A CSR committee made up of managing directors across Royal Mail Group's brands and chaired by the chief executive, leads implementation of the strategy. This council provides high-level visibility across the organisation and approval at this senior level helps to remove obstacles further down the organisational chain. Essentially, success in this area is about "making sure that the drive is there for the business to adopt these new strategies."

Championing the green agenda

The organisation is working towards developing formal internal networks with local champions to support the business in driving through change. Additionally, there is increased emphasis on creating accountability by looking at how environmental aspects can be built into business targets for senior managers. Environmental aspects are also incorporated into all business case submissions, so that there is a "green consideration" in everything the organisation does.

A carbon management board, with representation from senior leaders covering each of the directorates, was set up to ensure that sustainability targets were embedded and monitored, and as a means to avoid any barriers to implementation. The organisation is conscious of the need to deliver better communications to help drive employee engagement.

One of the most effective initiatives in the organisation's carbon management strategy has been the transport review, which looked to model different ways to run the fleet of vehicles. Following remodelling, the Royal Mail was able to reduce its overall carbon footprint by approximately 120,000 tons per year. Other initiatives include looking at training staff to drive in a more environmentally friendly way and rewarding customers for producing 'sustainable mailings' that reduce waste through better targeting and are easy to recycle.

Comparatively, the International Post Corporation's assessment of carbon management programmes in postal organisations around the world ranked Royal Mail third at the beginning of 2008. This process has helped to demonstrate the achievements of the organisation, as well as increasing awareness of other sustainability agendas, which has led to shared understanding of best practice across the sector.

Looking to the future

Royal Mail views a highly successful carbon management programme as integral to its future and to capitalising on potential new commercial

opportunities. It is crucial, therefore, to establish credibility by practising green management within the organisation itself.

In terms of the present economic climate, the Royal Mail accepts that it will have to get "very creative" at how it delivers carbon reduction. Equally, the future context is likely to heavily shape the organisational response:

> *"And of course there are things coming that are in the pipeline. So April 2010, the Carbon Reduction Commitment is being introduced which will potentially put some interesting financial penalties on companies . . . That is going to drive peoples' views on how they use energy within their organisations."*

The notion of sustainable development may appear less glamorous than other aspects of the business operation. Yet it is arguably both an important and urgent agenda for organisations to come to terms with:

> *"I can't imagine there are too many organisations that would actually put their hands up in the air and say "yes" to the idea that the future longevity of their organisation is based on being unsustainable".*

Case Study – North Wales Police

Organisation profile

The Association of Chief Police Officers (ACPO Cymru) in Wales is comprised of four police forces, of which North Wales Police have been the most active in work relating to sustainability and carbon management. North Wales Police has approximately 2,800 employees, made up of 1,800 police officers and 1,000 police staff.

Embracing the environmental agenda

In spite of the current economic situation, the realities are that organisations must deal with current and longer-term environmental issues. The North Wales Police strategy on the environment and carbon management has embraced this reality and this has resulted in a leaner, smarter, more creative, and increasingly engaged organisation.

The North Wales Police has a sustainable development action plan covering the period 2008 to 2020 which is grounded in the UK Government's own sustainable development strategy. It prioritises the North Wales Police's 'contribution towards the UK Government's climate change bill objectives of mitigating against and adapting to climate change'. The strategy mirrors the four priority areas of the UK Government: sustainable consumption and production; climate change and energy; protecting natural resources and enhancing the environment; and creating sustainable communities in a fairer world.

A long-term objective to emerge from this strategy is for North Wales Police to measure, record and report its annual energy and fuel consumption with a view to reducing them annually, and overall achieving a reduction of 60 per cent by 2020. The organisation is also concentrating on its water consumption and waste generated, with a view to reducing its landfill by at least 75 per cent by 2020.

North Wales Police also has a series of biodiversity action plans for its own estate and it works in conjunction with local authorities on their biodiversity action plans. The organisation already contributes to wildlife and environmental crime issues alongside the Countryside Council for Wales and the Environment Agency. The organisation's sustainable strategy also links closely to its policing plans and targets to ensure North Wales is a safer, cleaner and greener environment.

The baseline year for the strategy was 2007/08 and a sustainable development board was established with high-level representation in the form of the Chief Constable and the Director of Finance and Resources, as well as various other senior members from within the force and the police authority. In the first year of the strategy, the board prioritised energy and fuel consumption, emissions and waste management issues. In order to roll this out in the organisation, each division and department was tasked with producing a carbon reduction plan to include transportation usage and electricity consumption. Recycling management issues were addressed centrally from the Facilities Management Department, working in conjunction with divisions and departments.

Putting the plan into action

Simple actions were set in place such as switching to more fuel efficient car engines and introducing high visible recycling points on site. This has resulted in some notable savings, with vehicle fuel emissions by the year end down 8 per cent on the previous year and waste going to land fill down by approximately 30 per cent.

Comprehensive recording of energy consumption via meter-reading mechanisms are collated on a monthly basis and analysed through a programme called Systems Link. This energy monitoring and targeting system enables business managers to track their performance against set targets, on a monthly and cumulative basis. The system also provides for the analysis of contextual factors to allow for a fair assessment: for instance, if it the weather was colder in one year than the year before. Accordingly, the organisation can pinpoint excessive consumption to individual sites, identify the causal issues and respond appropriately. This comprehensive monitoring has enabled the North Wales Police to begin compiling a database to allow for systematic analysis and problem-solving.

A unique senior level commitment

The significance of senior level commitment and buy-in to a sustainable strategy can be seen as critical to the success that has been achieved to date in North Wales Police. The Chief Constable's personal background as the national ACPO lead for wildlife crime was one of the catalysts to the organisation questioning

and reviewing environmental issues in its own buildings. The need to address these issues was further heightened by the increasing range of environmental legislation being introduced and the necessity to ensure compliance with this. Accordingly, a post was created in North Wales Police, the first of its kind in any UK police force, to look specifically at environmental issues.

A sustainable development board followed as it became clear that a strategic approach was needed to address carbon and environmental management at both an operational and non-operational level. Initially, there was some trepidation about the strategy from heads of departments and business managers, owing to the perceived scale of additional work involved. But individuals were quickly persuaded of the merits of the strategy by the financial gains that could be achieved.

Spreading the word

Communication of the strategy is driven by the senior management team, with performance reporting incorporated into the organisation's standard reporting and performance mechanisms. The strategy has, effectively, sought to normalise green activities in the organisation and encourage a culture where they are seen as part of the everyday routine.

Aside from significant financial savings, the strategy has encouraged innovation in terms of ideas and issues raised throughout the organisation being able to be considered under a designated umbrella of the sustainable development board.

Keeping it local

The organisation's strategy has been very closely aligned to benefits that would be local to North Wales and its communities. In terms of carbon offsetting, the North Wales Police force has been working with the Countryside Council for Wales and the North Wales Wildlife Trust to explore the possibilities for heath land regeneration; tree planting; fen creation; and woodland management for the production of bio-fuels. The organisation also seeks to support local businesses for any outsourcing of activity related to environmental management.

North Wales Police's approach is not necessarily attributed to regulation in the environmental area. Nor is it deemed that it will be unduly affected by the present economic downturn. Longer term, however, the organisation recognises the challenges of attempting to meet its reduction targets and at the same time engaging with renewable technologies. Ensuring that technology is fit for purpose will be the key challenge, going forward, for the senior management team at North Wales Police. The high level of commitment to the environmental cause can give confidence to this challenge being tackled successfully.

3 Carbon Management

Potential responses to climate change are typically divided into two categories: mitigation and adaptation. Mitigation refers to the avoidance of activities that can increase or compound climate change, while adaptation refers to measures to reduce the impact that climate change has on human systems.

The concept of carbon management, as used here, relates to a mitigation strategy and activities focused on an organisation's carbon dioxide emissions. Carbon management can be used to comply with legal and regulatory emissions obligations, as a voluntary policy or as an element of a partnership. Given the increasing certainty and dramatic quality of the evidence of climate change, carbon management is likely to become a defining feature of the next decade.

3.1 Attitudes to carbon management

The survey shows that many UK managers are clear that carbon management is an issue of genuine importance. Almost two thirds of respondents (64 per cent) agree or agree strongly that carbon management will become more important in the next three years. A majority of managers (69 per cent) reject the idea that there is little that their organisation can do to reduce its carbon footprint, as shown in Table 5 below.

	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
Carbon management will become much more important for our organisation	3	10	23	46	18
We use energy efficiency as a criteria in purchasing / procurement decisions	6	19	27	39	10
Carbon management will not be adopted unless required by regulation	9	29	21	30	10
We have clear measures for calculating our carbon footprint	15	30	21	23	10
We actively manage our carbon footprint in all our activities	15	34	25	19	7
Carbon management is not much more than 'greenwash'	12	39	28	14	6
There is little my organisation can do to reduce its carbon footprint	16	53	17	11	4

Table 5: Managers' attitudes towards carbon management

Despite recognising the growing importance of carbon management, only 26 per cent currently actively manage their carbon footprint in all their activities. Just one third of managers have clear measures for calculating their carbon footprint. However, just under half – 49 per cent – already use energy efficiency as a criteria in purchasing decisions.

Some 40 per cent think that carbon management, to become effective and meaningful, requires additional regulation. The Carbon Reduction Commitment, which will affect up to 5,000 large business and public sector organisations, is likely to have a major impact when its introductory phase begins in April 2010.

The suggestion that organisations anticipate a greater impact on their operations in future resonates with earlier findings about the large numbers of energy-related improvements organisations plan (see Chapter 2). In light of the UK's formal legal commitment to an 80 per cent reduction in carbon emissions by 2050 it seems likely that specific regulatory measures, probably focusing on specific sectors or activities, are likely to follow – with a particular emphasis on energy-intensive sectors or business practices.

Some stark differences emerge in relation to the organisation's economic success. For instance, 43 per cent of companies with declining growth disagreed that carbon management will become more important in the future, compared to only 8 per cent of growing companies did so. Perhaps this is a reflection of the short-termism that poor results tend to instil.

Parallels may also be observed with other findings discussed elsewhere in this report. For instance, those organisations with a more strategic and constructive attitude towards environmental regulation (Chapter 6) consistently had a more positive response to the above questions on carbon management, and vice versa. Equally, organisations with a more pro-active approach towards innovation as a strategic driver for their success consistently tend to see carbon management as more relevant – and have taken more action – than those organisations that see cost considerations as hampering innovation (Chapter 5).

There was also a size effect, with larger companies being more actively involved in this agenda. Smaller companies appear to see themselves as being on the receiving end of a carbon management agenda which they see little chance of shaping.

3.2 Managing carbon: current measures

The survey examined the areas in which organisations are focusing their carbon management activities. As detailed in Figure 3, below, a majority of organisations (65 per cent) focus on energy usage in buildings, with waste materials and fuel usage in transport also being widely adopted.

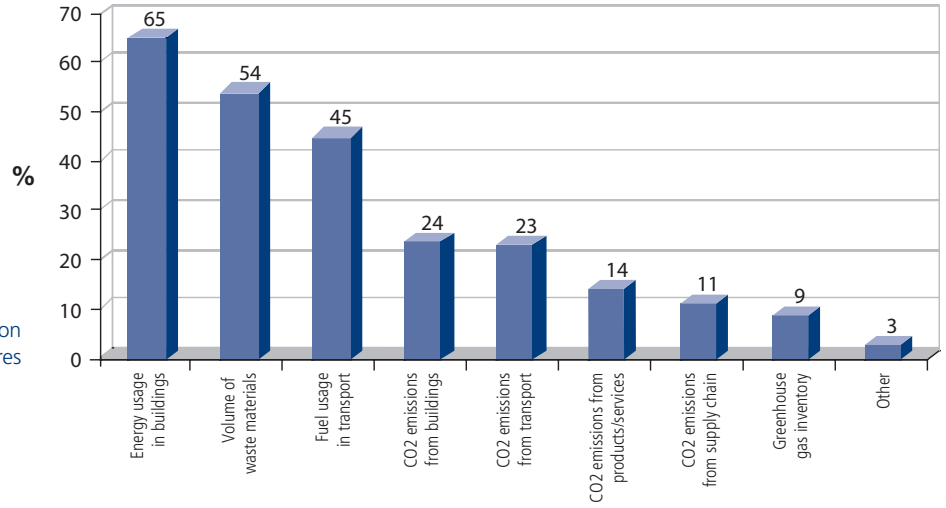


Figure 3: Carbon management measures

Of this range of individual and practical steps to manage the organisation's energy use, about a fifth of organisations have adopted one action; 23 per cent have adopted two, with a further 23 per cent running three. There are very few fully integrated approaches, with only 12 per cent making use of six or more activities. There was a very noticeable size gradient with small organisations, predictably, adopting far fewer than larger organisations.

Activities that require a more strategic approach, including extended producer responsibility and management of carbon emissions upstream in the supply chain, are even less frequent.

3.3 Reducing the carbon footprint

Respondents were asked to comment on whether their organisation had adopted any of a range of activities to help reduce its carbon footprint.

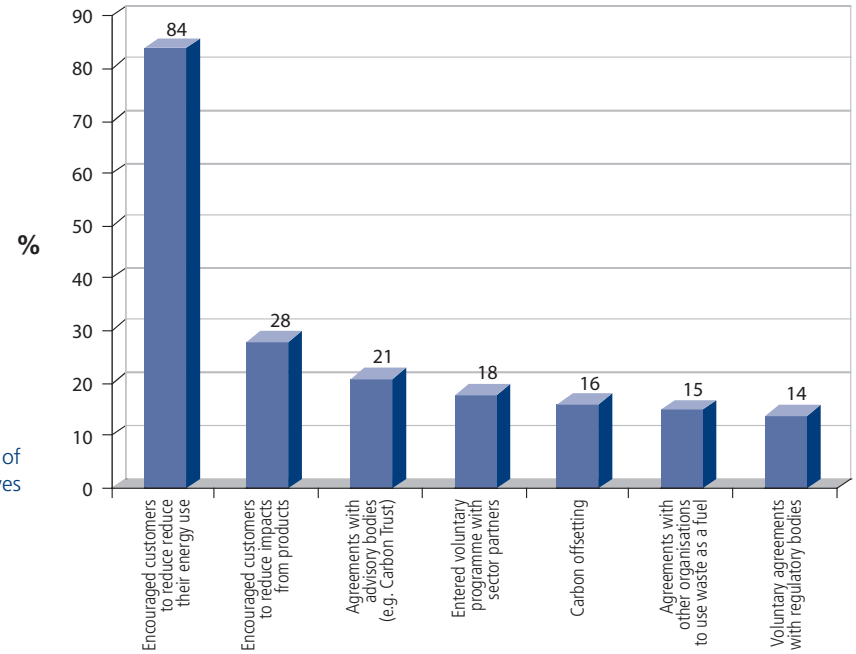


Figure 4: Frequency of carbon initiatives

It is clear that employees have a particularly strong role to play. Encouraging employee involvement was by far the most common activity, pursued by more than three quarters of organisations.

However, the next most popular initiative – encouraging consumers to become more environmentally-friendly – is employed by just over one quarter. It is notable that the businesses which do most to encourage their customers to reduce their environmental impacts are those which are rapidly growing. Stable or declining organisations appear to be doing least.

However, the other activities are broadly similar in popularity. No clear first choice emerges from the other options such as making voluntary agreements with advisory bodies, regulators or voluntary partners, carbon offsetting, or industrial-ecology types of initiatives where waste from one organisation is used (often as fuel) by other organisations. This suggests two alternative explanations: are these activities only popular amongst specific companies, or are they equally unpopular across all responses? The latter is the case, as 20 per cent of companies have adopted none of the seven activities, 35 per cent have taken up one only, and just fewer than 20 per cent have adopted two.

It appears that there are only two very active sectors in this area, namely utilities and local government. Utilities have much greater public exposure and face higher expectations to act than most other sectors. As such, they have begun to integrate these concerns into their product range to a greater extent than almost all other sectors. Local government is likely to be motivated by the unique governance structure and contribution to local services made by them.

Case Study – Fujitsu

Organisation profile

Fujitsu is a global provider of customer-focused IT and communications solutions. It has approximately 15,000 employees in the UK, with 600,000 worldwide.

Environmental strategy

Fujitsu has a well-established strategy on carbon and environmental management. A green office policy is seen as having been "most effective", and includes measures such as a clean desk policy and removing wastepaper bins to encourage recycling at its core.

It also has extensive carbon management processes including energy management processes. Each individual Fujitsu data centre follows an overall policy with accompanying processes, to ensure a focused approach throughout the organisation. Data centres also have targets to reach external accreditations, which also serve as a gap analysis of where the organisation stands on certain measures. Organisational policies and processes are overseen by a Green Team.

Winning hearts and minds

The impetus behind the strategy was primarily a response to customer demand and it was seen as critical that the company could show evidence that certain standard initiatives were being undertaken. They underlie any business activities:

> *"… Any initiatives that we run such as reputation, green policies or anything else that helps us win business; those underpin any work we do".*

Raising staff awareness on the demonstrable benefits was fundamental to driving the strategy:

> *"The key thing, above all, was making staff aware of how they can help their own environment and how they can help make the working environment a better place – i.e. by displaying a green policy daily at work. So, for example, initiatives like cycling to work, car-sharing – simple things like that were introduced as well".*

Aside from being central to the retention of existing customers, Fujitsu's carbon management strategy has resulted in significant cost reductions. It has also created value in helping the company to be perceived as 'green-conscious' and to engage with various local communities.

The organisation's strategy has been credited with 'changing the culture and making individuals start to think about their own carbon footprint'.

Looking to the future, the challenge is for Fujitsu to become "leaner and smarter", and building on its existing policies to increase the attractiveness of its green policies and corporate initiatives.

3.4 Three attitudes to carbon management

Statistical analysis identified three behavioural clusters in relation to carbon management. They vary in the extent to which their organisations have implemented steps to measure and manage their carbon emissions.

I. **"Carbon Managers" – 32 per cent**
This group has clear measures for calculating and managing their carbon footprint in all of their activities. This group also most closely follows the Total Quality Management (TQM) approach in how it manages its carbon programme with a good degree of integration across functions so that, for example, energy efficiency is used as criteria in purchasing and procurement decisions.

II. **"Waverers" – 29 per cent**
Waverers have not yet made up their mind regarding the direction and intensity of their carbon management programmes. Their approach is characterised by sometimes contradictory statements, perhaps reflecting a prevailing lack of understanding regarding how carbon management may impact on their business.

III. **"Climate Change Cynics" – 39 per cent**
This group believe there is little they can do in order to reduce their carbon impact, and are sceptical about the truth of climate change.

The fact that "Climate Change Cynics" were the largest group was a surprise. It is perhaps due to continued popular discussion about the extent of the climate change threat. In particular it may reflect the idea that smaller organisations have a smaller environmental impact, in that managers in larger organisations were less cynical and tended to be "Carbon Managers". Of course, while the absolute impact of a small organisation is less, the accumulated impact of large numbers of small organisations can be substantial. Analogous to the fact that the biomass of ants in the African Savannah is many times that of cohabiting elephants, it is a dangerous fallacy to assume that their small size means small companies matter less.

Analysis by level of seniority revealed that the group most likely to be classified as Climate Change Cynics were Directors. As shown in Table 6 below, over half (54 per cent) fall into this category.

Job Level	Carbon Managers %	Waverers %	Climate Change Cynics %
Director	21	24	54
Senior Manager	34	31	35
Middle Manager	36	31	34
Junior Manager	35	29	36
Senior Engineer	42	20	38
Junior Engineer	10	48	43
Total	32	29	39

Table 6: Attitudes to carbon management by management seniority

Dramatic differences may be observed between the engineers who participated in the survey. Forty-two per cent of senior engineers are "Carbon Managers", while 43 per cent of junior engineers are "Climate Change Cynics".

An interesting difference emerged in relation to organisational growth rates. "Carbon Managers" are found in organisations which are growing faster than others, while "Climate Change Cynics" are found predominantly in organisations with growth rates closer to zero.

Analysis by economic sector reveals that "Carbon Managers" are in a majority in the public sector. "Waverers" are more strongly represented in not-for-profit organisations, while "Climate Change Cynics" are the largest group among managers in partnerships, owner-managed companies and among sole traders. By industrial sector, "Climate Change Cynics" were found to be distributed across all sectors with no clear pattern. "Carbon Managers", however, are predominately found in the creative and media sector; utilities; IT; legal and accounting services; local government; manufacturing and production; sales, marketing, and advertising; transport and logistics; and wholesale and retail sectors. "Waverers" are most commonly found in education; hospitality; catering, leisure and tourism; housing and real estate sectors and the police.

3.5 Conclusions and recommendations

In conclusion, the survey shows that carbon management activities are now to be found across the UK's economic sectors, albeit that the majority of companies presently adopt a piecemeal attitude. There does not appear to be a clear preference in favour of specific activities, although the link between energy efficiency and cost savings suggests that energy efficiency drives are an area of focus – as confirmed by many of the case studies. It is clear that there is potential for more comprehensive, multi-faceted activities. Activities which are undertaken are not, by and large, measured, and are not yet systematically related to the bottom line.

There remains substantial uncertainty and scepticism regarding the threat posed by climate change and the ability of individual organisations to affect change, which is a formidable obstacle for further activities. Directors have a particularly sceptical attitude. This is potentially a powerful obstacle to further environmental action, particularly given the need for leadership from the top that was identified earlier in this report.

Demonstrating the benefits in terms of the bottom line will be critical to achieving a wider up-take of these activities. While the market does not seem to be sufficient to drive further change at this stage, higher energy and carbon prices may well prompt rapid change in the future.

The findings also suggest that energy is often seen as a proxy for carbon – and therefore, that energy management is often seen as a proxy for environmental management. Such proxy measures may be first steps on the way to a more full understanding of an organisation's carbon footprint.

Managers should:

- Draw on the widespread understanding and acceptance of the environmental agenda. Some employees, particularly younger managers, have a strong personal commitment which may be harnessed to drive powerful change throughout the organisation. Others can be motivated by clear identification of the business benefits that may accrue.
- Embed sustainability and low carbon objectives in procurement processes.
- Ensure that the organisation's low carbon vision is communicated consistently both externally and internally. Include it in brand and marketing messages, in the induction of new staff and in training for existing staff.

Case Study – EDF Energy

Organisation profile

EDF Energy is one of the UK's largest home and business energy suppliers and a wholly-owned subsidiary of the EDF Group, one of Europe's largest energy groups. EDF Energy employs nearly 20,000 people.

Carbon emissions, and reducing these emissions, are a critical area of business for EDF Energy. Furthermore, its importance is seen as only likely to intensify as it becomes clearer that "we're going to have to operate in a low carbon world in the not too distant future". In order to gain a serious competitive advantage, EDF Energy acknowledges that it will have to make "some fairly significant changes to our business as soon as possible."

The Climate Commitment

In 2007, EDF Energy launched 'Our Climate Commitment', an outline of how the organisation proposed to tackle carbon emissions across the business. As part of this commitment, a series of clear targets were put in place including pledges to cut the intensity of CO2 emissions from electricity generation by 60 per cent by 2020; a 30 per cent reduction in emissions from energy use and a 20 per cent reduction in transport emissions by 2012; and a 15 per cent reduction in the energy-related carbon emissions of its customers by 2020. These targets embraced the complete chain of the business; generation, supply and the energy used by customers.

> *"We developed Our Climate Commitment as a way of explaining to employees that sustainability is important and exactly what we are going to do over the coming years. That was something that was driven from the top of the organisation."*

The company has already seen reductions in energy and transport emissions, and it is envisaged that more sizeable reductions will be achieved over the next few years. At EDF Energy, however, the most important element of the commitment has been the "cultural angle within the business", with employees understanding what the organisation is trying to achieve and how they will need to contribute over the coming years. It is this cultural shift that is expected to deliver long term, genuine change.

As part of this new approach, EDF Energy appointed a Director of Sustainable Future responsible for driving its sustainability programme and defining the organisational strategy.

Measuring progress

EDF Energy has a connected reporting system developed in partnership with the Prince of Wales' Accounting for Sustainability project that provides links between performance on headline indicators, levels of CO2 emissions, the causal factors that are going to bring about effective change, and then the risks and costs associated with each of those. This provides a strong process using independently verified data and it is completely integrated into the organisation's overall business reporting. This process also takes into account the progress against the strategy, and not just baseline figures on emissions, so

EDF Energy is able to identify how it is moving forward against its action plans.

Taking pride in being 'green'

At EDF Energy, support for the strategy grew in terms of individuals realising that it was strategically important to the organisation. Aside from the commitment at senior-management level, it was apparent that at the individual level and operationally, there was a strong desire to really tackle climate change. The strategy also led to increased employee engagement:

> *"A lot of employees were concerned that this actually has a big impact on reputation… and that they didn't feel very comfortable working for a company perceived as not being particularly active in this area. So they are responding to the strategy and promoting the organisation as a good, righteous company…. that caused a lot of employee pride."*

In its 2008 Employee Engagement Survey, sustainability was found to be the number one driver of employee engagement within the company.

EDF Energy launched the strategy via an internal communication programme on World Environment Day in 2007 – an occasion that the organisation routinely celebrates. Sustainability has now formed a key part of the organisation's external communication and the dominant subject in all company advertisements.
In addition to the significant impact on employee engagement, the drive on sustainability has enabled EDF Energy to position itself as a progressive energy company to its stakeholders. This has been seen to generate 'real brand benefits' as well, whilst other competitors have seen a decline in this area.

Carbon rationing

The fundamentals of EDF Energy's strategy has been rooted in taking small steps and simple actions to achieving its goals, but more radical schemes have also been welcomed within the organisation. EDF Energy now operates "'carbon rationing" in some parts of its business where, for example, employees are only permitted to use their vehicle four days out of five and there is a car-free day every month. EDF Energy employees have provided feedback that these schemes have actually helped them in their day job.

Providing an energy service

Whereas before EDF Energy sold units of energy and left business customers to use whatever they wanted, its approach now is to provide an "energy service" that incorporates investments in energy efficiency alongside the supply of electricity and gas. This work has been driven by the innovative ideas being generated by the organisation's research and development unit.

"It's got to be done"

In the midst of the present economic climate, EDF Energy accepts that there will be challenges, but that shifting the emphasis is not a feasible option:

> *"It's going to make it more difficult but because it's a strategic issue for us, it's not something we can really change. It's just going to get harder, but it's got to be done."*

4 Harnessing Personal Attitudes to Create a Climate for Change

Understanding employees' personal attitudes to climate change and the environment is an important step in implementing a successful environmental management programme. The survey found that the majority of managers acknowledge the need for environmental activities and offer broad support for such actions. Of concern, however, is the strong scepticism revealed among managers at director level. This group have a responsibility to lead their organisations but the evidence suggests that they are not inclined to do so in this particular field.

4.1 Personal and organisational commitment to the environment

The survey examined the broad environmental attitudes of managers in relation both to their personal lives and their professional lives.

The vast majority of managers – 93 per cent – personally try to "do their bit" to protect the environment (see Table 7 below). Some 85 per cent report that they recycle more waste in their personal life than two years ago, while almost three quarters (74 per cent) use energy efficient light bulbs. A substantial number report the use of energy efficient housing materials (39 per cent). Smaller but still significant numbers report that they travel more by public transport (28 per cent) or use renewable energy sources (22 per cent).

It is clear, therefore, that many managers have a greater engagement with environmental issues on a personal level. How far is this personal engagement translating into the workplace?

Overall, the survey found broadly high levels of concern for environmental matters and enthusiasm for environmental activities, as shown in Table 7 below. It is clear that for most managers, personal commitment extends into the workplace.

	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
Personally, I try to do my bit to protect the environment	1	1	5	57	36
I would not want to work for a company with a bad environmental reputation	2	6	19	48	25
I have a clear understanding of my organisation's environmental impact	2	14	21	50	13
I am proud of the environmental performance of my organisation	2	11	39	39	9
Environmental issues are important drivers of organisational innovation	3	17	27	44	10
At work, green concerns get squeezed out by other priorities	5	35	26	30	3
My organisation's main environmental concern is to avoid breaking the law	14	37	22	21	6
Human causes of climate change have been over-stated	17	38	21	19	5
The green agenda will become less important for my organisation because of the recession	12	44	25	15	4

Table 7: Environmental attitude statements

Perhaps most strikingly, three-quarters (73 per cent) would not want to work for an organisation with a poor environmental performance. Yet, far fewer – 48 per cent – feel pride in the current environmental performance of their organisation.

In terms of organisational attitudes, 63 per cent report that they have a clear understanding of their organisation's environmental impact. Other responses confirm that – for the majority of companies – environmental issues are of genuine importance. Fewer than one in five (19 per cent) agree that the recession will reduce the importance of the "green agenda" for their organisation. A narrow absolute majority disagree that their organisation's main environmental focus is to avoid breaking the law – although around one quarter agree that this is the first priority.

Taken together, these perceptions indicate a widespread motivation for individual managers to engage with the environmental agenda, both at home and in the workplace. Such enthusiasm for environmental activities can be funnelled into organisational motivation.

Box 2 – Building on personal attitudes

Ideas emerging from the survey about how organisations can increase employees' awareness of green issues included the following:

- Putting environmental targets into employee performance indicators
- One company has offered a regular series of lectures, seminars and debates for all employees about the realities of green science and the real implications of climate change, pollution and sustainability. Such debates may draw on external groups – another manager reported that they had brought in Friends of the Earth
- Setting up a Green Employee Group
- Improving the ability of employees to work from home
- Encouraging employees to take public transport
- Strongly discouraging business travel
- "Keep things simple!" was the message from one manager who warned that colleagues need to be engaged and said that successful change requires a collaborative and participative approach.

4.2 Segmenting managers by environmental attitudes

Statistical analysis of managers' attitudes to environmental issues led to the identification of four distinct clusters or groups. The findings suggest that while the need to cut carbon emissions is now widely accepted among managers, differences of opinion exist about why action is necessary – with consequent implications for the focus of activities. By understanding and appealing to these different groups, managers will increase the effectiveness of low-carbon programmes. The clusters were as follows:

I. **Business Greens** (36 per cent) – This cluster tries hard to integrate environmental sustainability into their business processes. They state that environmental issues are not squeezed out by other priorities; they are proud of their organisation's environmental performance and they have a clear understanding of their environmental impact. Consequently, they would not work for a company with a poor environmental performance and generally believe that human causes of climate change have not been overstated. Notably, this group was significantly better represented in rapidly growing organisations. They may be seen as the vanguard of companies who are bringing environmental considerations into the mainstream of management activities; they are evidence that UK business cultures are changing in light of the climate change challenge.

II. **Ethical Greens** (25 per cent) – This group is characterised by very strong environmental ethical values rather then market-based or customer-driven business strategies. They, more than any other group, believe that human causes of climate change have not been overstated and they would not consider working for an organisation that is known for its poor environmental performance. They have doubts about the ability of the market to drive low-carbon change and thus view leadership as a crucial driver of environmental innovation, alongside environmental issues.

- Younger managers are more likely to fall into one of these two 'green' groups. The predominant cohort of the Ethical Greens and Business Greens were aged 30 – 49.
- Female managers are more likely to fall into these two 'green' groups. Twenty-two per cent of men were Ethical Greens compared to 34 per cent of women.
- Ethical Greens and Business Greens tend to be found primarily in medium and larger organisations, and in private sector companies.

III. **Customer-focused** (21 per cent) – This cluster focuses primarily on their customers and seeks to satisfy their expectations at almost all costs, which explains why they believe that potential changes in consumer choices increase the drive to invest in environmental innovation. "Market pull" is therefore more important than a "techno-push" when it comes to environmental innovation. In terms of personal attitudes, they believe that human causes of climate change have not been overstated and consequently do not want to work for a company that has a bad environmental reputation. While recognising environmental problems as real, this group tend to wait until customers present them with clear market signals to act; they may feel that it is not up to them to provide leadership in this area.

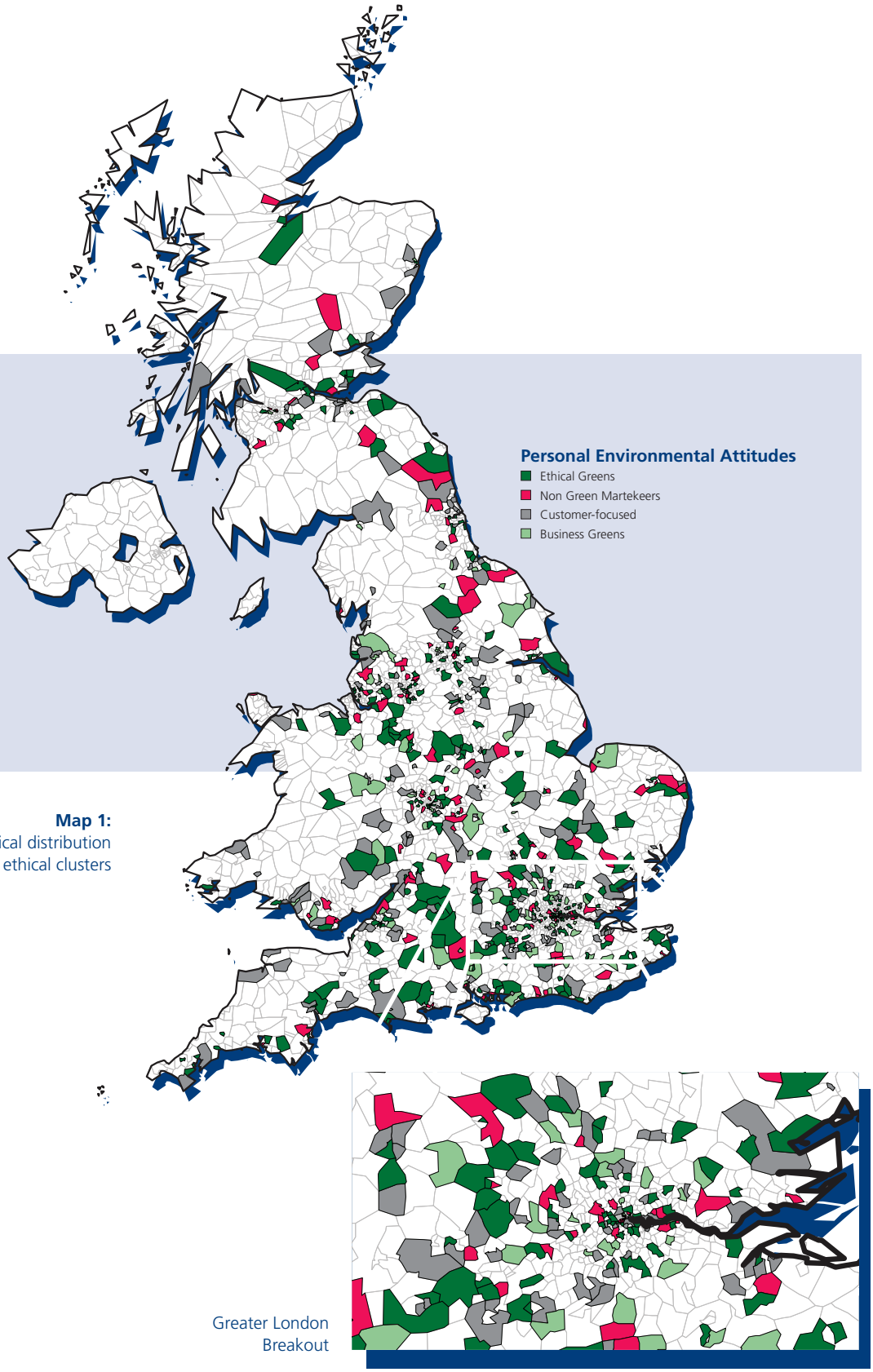
IV. **Non-Greens** (18 per cent) – More than any other group, managers in this cluster follow market trends regardless of the environmental impact of their actions. They strongly believe that environmental innovation will be the result of market changes rather than leadership or new technologies. They are concerned about potential changes in consumer choices that increase the risk of investing in eco-innovation. The defining characteristic here is a strong belief in market forces to shape the organisation's success as well as the direction (and outcome) of the evolving sustainability agenda. The group does not share the ethical concerns of the Ethical Greens but share some traits with Customer-focused. Arguably, they are the most cynical of the groups.

- Non-Greens were most frequent amongst the 60 and above age groups
- Non-Greens were most frequent amongst Directors, while Ethical Greens were least common.

An understanding of these attitudinal clusters may help the design of successful environmental programmes. Employees with different personal attitudes may need different motivational and informational approaches to secure optimal levels of engagement and motivation. In addition, the attitudes are likely to lend themselves towards different functions. Non-Greens, for example, should not be picked for the leadership of green teams.

4.3 Geographical mapping

The geographical distribution of the four ethical clusters is displayed in Map 1 below. Analysis reveals that the Customer-focused group is the most dispersed type among the four. The geographical distribution shows that Business Greens and Ethical Greens are predominant in London, the South West, Northern Ireland, Scotland and Wales, with Business Greens in fact largely found in the South and the Midlands. Non-Greens were prominent in the West Midlands.



Map 1:
Geographical distribution
of ethical clusters

4.4 Size and type of organisation

In relation to size of organisation, analysis showed that the Ethical Greens and Business Greens are to be found in medium and larger organisations. They are also particularly well represented in private and public limited companies. Non-Greens are found in smaller owner-managed or sole trader companies. The Customer-focused group is under-represented in partnerships and owner managed/sole trader companies.

4.5 Organisational growth and decline

The distribution of the four clusters was examined in relation to the level of growth or decline of the business. As shown in Table 8 below, the proportion of Business Greens rises steadily with organisational success, from 24 per cent in declining organisations to about 40 per cent for growing and growing rapidly. Likewise, the proportion of Non-Greens tends to fall with organisational success.

	Personal Environmental Attitude Clusters			
	Ethical Greens %	Customer-focused %	Non-Greens %	Business Greens %
Declining rapidly	17	0	33	50
Declining	24	23	21	32
Stable	34	19	20	27
Growing	41	23	15	21
Growing rapidly	40	16	18	26
Total	36	21	18	25

Table 8: Personal attitude clusters and degree of organisational growth/decline

4.6 Industry sectors

Sectors in which Business Greens and Ethical Greens are not dominant are creative and media; defence; housing and real estate; justice and security; legal and accounting services; and the wholesale and retail sector.

Non-Greens were particularly well represented in legal and accounting services, the police and the wholesale and retail sector, whereas the Customer-focused group was well represented in the wholesale and retail as well as telecommunications and post sectors.

4.7 Management function

Analysis of the clusters according to management function suggests that – as might be expected – those functions which are likely to include a high element of customer-facing or external relations activities are often dominated by Customer-focused managers. A few interesting observations may be drawn from the findings (see Table 9 over the page):

- The biggest group among business development managers, who are likely to have a keen appreciation of factors likely to improve the chances of winning new business, are Business Greens

- A majority (58 per cent) of those in facilities management – who are likely to be intimately involved in the delivery of low-carbon programme – are Business Greens
- The group with the highest percentage of Non-Greens are production and operations managers.

	Personal Environment Attitude Clusters			
	Business Greens %	Customer-focused %	Non-Greens %	Ethical Greens %
Administration / management services	32	22	18	27
Business development	45	13	17	25
Corporate affairs / public relations	46	31	15	8
Engineering management	40	23	15	21
Facilities management	58	27	9	6
Finance / accounting	36	18	18	27
IT / computing	34	16	20	30
Knowledge / learning	25	19	21	35
Management consultancy	32	20	23	25
Marketing / sales	38	29	13	20
Personnel / HR	30	29	13	29
Production / operations	37	21	26	17
Project management	37	22	15	26
Purchasing / contracting	35	35	17	13
Research and development	30	24	24	21
General manager	35	16	20	28
Not a manager	27	22	18	33
Total	**36**	**21**	**19**	**25**

Table 9: Personal environmental attitudes by job type

4.8 Conclusions and recommendations

It is argued throughout this report that the understanding of personal environmental attitudes and beliefs is critical to successful environmental management programmes – probably even more so than the development of the typical management tools such as an environmental policy or an environmental management system. Staff attitudes matter because:

- the enactment of personal values at the workplace is instrumental for motivation and leadership;
- cultural values convey meaning and purpose for environmental (and other) policies and practices;
- employee groups containing substantial value differences may not perform very well;

- the ethical meaning conveyed within environmental agendas is an important part, and helps with the dissemination, of any corporate social responsibility or related programme.

Overall, the evidence is that the majority of managers acknowledge the need for environmental activities and broadly support such actions. Of concern, however, is the strong scepticism again revealed among managers at director level, echoing the theme discussed earlier in this report. This group have a responsibility to lead their organisations but the evidence suggests that they are not inclined to do so in this field.

Managers should:

- Develop strategies for overcoming resistance to environmental change from different individuals in their organisations, recognising the different sets of motivations that individuals have for responding to the green agenda.
- Highlight the multiple and varied benefits of environmental action, including the business benefits, customer engagement, marketing or brand opportunities, as well as the ethical case for action.
- Managers should identify champions to lead green initiatives and seek to staff 'green teams' with employees that have supportive personal attitudes.
- Include environmental targets or performance bonus arrangements in performance management systems.

Tag Worldwide – Case Study

Organisation profile

Advertising and marketing production agency based in the UK with offices around the world. They have 1,000 employees worldwide.

Developing an environmental strategy

The origins of Tag's current environmental management strategy builds on a previous policy which gave a clear overview of Tag's values and objectives, but needed to be more practical with direct links to the operations of the business. A research audit was carried out to determine 'sustainability gaps', examining management in the organisation, the supply chain, the environment, the social environment and key stakeholders. A carbon survey was also carried out with the Carbon Trust to help formulate a formal energy policy. A further driver of the strategy has been the demand from clients to be able to demonstrate sound environmental credentials.

As Tag's environmental policy is developing, a focus has started to emerge on reducing carbon emissions, managing waste and achieving a quantifiable waste

reduction, and engaging employees with the strategy. Achieving FSC certification has been a substantial achievement for the company. Corporate responsibility policy is also being tied in with charitable and community programmes, communicated to employees through e-bulletins, seminars and presentations.

In terms of future reporting, Tag hopes to track emissions from its buildings, using this alongside data from the Carbon Trust and evidence on best practice. Tag is also in discussion with industry groups, such as the Media CSR Forum and the Media Trust, who are able to provide sector-specific information and guidance.

Leadership

Integral to developing strategy at Tag has been the support of the CEO and senior directors, with the recognition that fully integrated corporate responsibility and sustainability is good for business. Senior level commitment has helped to push the environmental agenda and the development of a new CR strategy.

Enthusiasm for the strategy is widespread throughout the organisation, and the new sustainability team involves 16 people from all levels, drawn from every department within the company.

The push for clear and sound environmental management practices is coming not just from the competitive imperative, but also from the attitudes of both employees and clients:

> *"It has been great to see such enthusiasm… from all our staff throughout the company. With the interest and support of our major clients as well, we're in a very good position now for the CR and sustainability activity to make a big difference."*

Tag recognises the strong point of differentiation that comes with being environmentally-savvy, which will help to give the company a strong profile within the industry.

Whilst very much at the start of implementing their environmental strategy, there is no sense that the current economic conditions will have a negative impact:

> *"I certainly don't think the downturn will have an effect on our activities – it isn't about money, it's about very important initiatives which are a central part of our business and will continue to be extremely important for our staff and clients."*

At Tag, it is clear that if there is a will to act, then there is a lot that can be done without necessarily requiring huge financial outlay. Simple steps such as recycling and energy efficiency measures can quickly lead to easy wins, which then develop into more complex, longer-term initiatives. In this sense, what really matters is *"what the company's values are, and how interested the business is in pursuing sustainable business practice. Here at Tag we know that what's good for the bottom line is also good for our people, our community and the environment, and we're very proud to be developing in this area."*

5 Harnessing Environmental Innovation

5.1 A model of innovation

It is clear that innovation is necessary for businesses to achieve changes on the scale needed to meet the challenge posed by climate change. Just as innovation may play a role in stimulating economic growth, so it will play an integral part in any meaningful progress towards mitigating climate change.[3]

Innovation can be a complex process and it is only partially described in a linear model of research and development leading to commercialisation and to diffusion.[4] Figure 5, below, gives an overview of the interplay at potential different stages of the innovation process. It depicts innovation as an interactive process between businesses, consumers, regulators and existing technologies. The core distinction is between "technology push" and "market pull" in driving successful innovation.

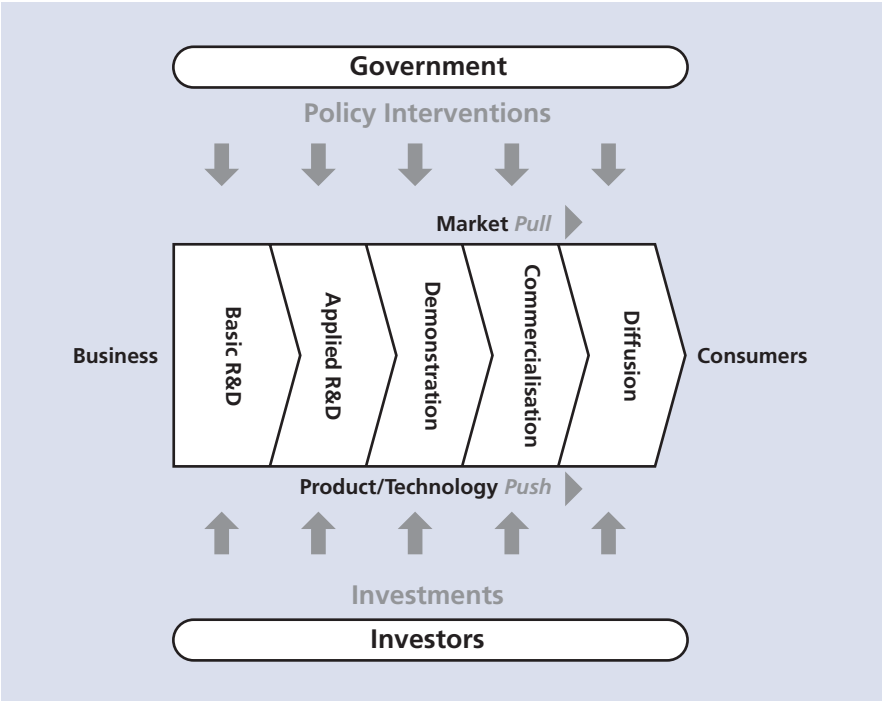


Figure 5: Role of innovation chain actors (Carbon Trust 2002)

- The innovation process involves the development and deployment of new technologies, products and services by business in order to meet the needs of consumers. To achieve this, funding is required from a variety of investors, such as insurance companies, bank, private equity houses and angel investors.
- In the early stages of the market, take up is largely driven by the product/technology push. As consumer awareness builds, the rate of deployment is accelerated as consumer demand grows.
- Government can make various policy interventions at various stages of the innovation chain to overcome barriers to the development of various technologies, products and services.

[3] The Chartered Management Institute is presently undertaking research into managers' role in supporting innovation, for publication in Autumn 2009.

[4] Diffusion of innovation is a theory of how, why, and at what rate new ideas and technology spread through cultures. *"Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system."* Rogers, Everett M. (2003): Diffusion of Innovations, 5th ed. New York, NY: Free Press.

5.2 Technology, markets – or leadership?

The survey revealed that 50 per cent of managers view market pull as more important to their eco-innovation than technology push. Both factors, however, are trumped by leadership. Three quarters (72 per cent) of managers agree that leadership is more important for eco-innovation than competition.

This highlights the critical role played by managers. Providing leadership is pivotal to the success of environmental innovation.[5]

5.3 Drivers and barriers

The Greening Management survey assessed managers' perceptions of the extent to which a range of relevant factors act either as drivers or as barriers, as shown in Figure 6 below. Three factors emerge particularly strongly: energy costs, management commitment and regulation. Each was cited as a driver or a strong driver by around three quarters (76 per cent for regulation, 75 per cent for energy costs and management commitment).

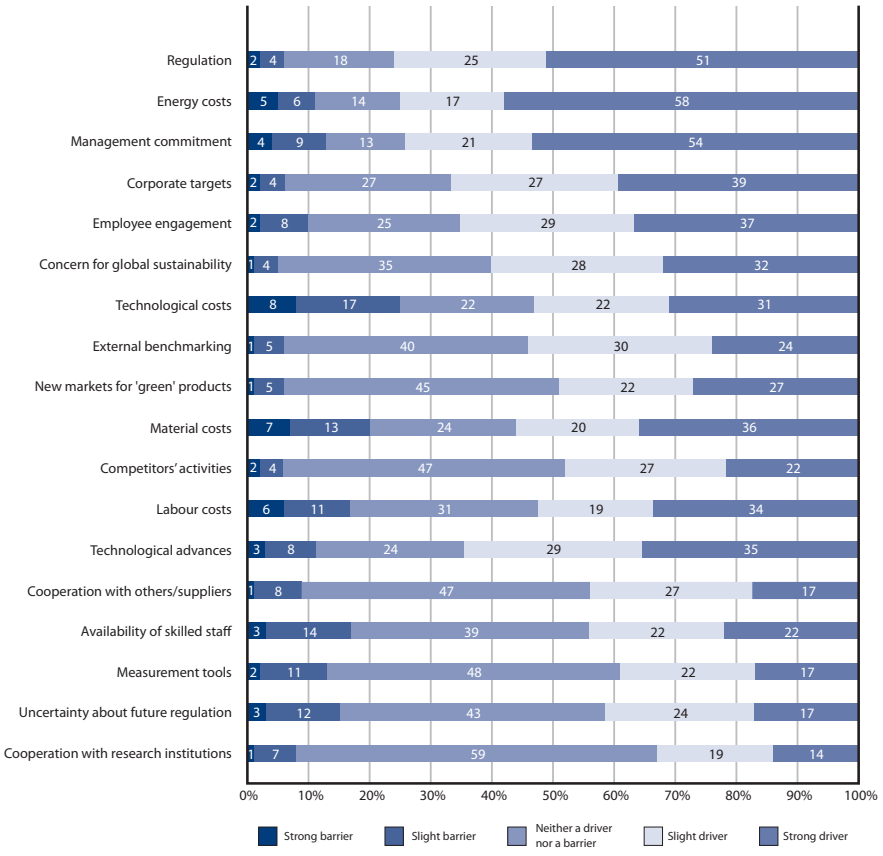


Figure 6: Drivers and barriers of environmental innovation

[5] Managers also recognise that innovation requires widespread participation from employees across the organisation (and potentially beyond) if it is to be effective. The Chartered Management Institute's "Quality of Working Life" report (2007) suggests a significant relationship between employee engagement and innovation. *The Quality of Working Life*, Cary Cooper and Les Worrall, Chartered Management Institute, 2007.

Other factors traditionally identified as having a role in innovation are also important, such as corporate targets and employee engagement. The ethical dimension of concern for global sustainability is also a substantial driver. However, new markets for green products are rated relatively low, suggesting that many companies are yet to identify new business opportunities created by the low-carbon agenda.

Similar themes emerge from analysis of those factors most commonly regarded as barriers. Costs are evidently a critical factor for many managers: not only are they a strong driver for most, but they can also act as barriers, especially in terms of technology or material costs. The availability of skilled staff is also of a matter of substantial importance. There has been some policy debate about how far the UK possesses the required skills[6] and this evidence adds to that discussion.

5.4 Factor Costs Innovators and Strategic Innovators

To understand what drives environmental innovation on the one hand and what hampers it on the other, participating organisations were allocated into types that reflect their position within their innovation process. Two distinct types of innovators emerged.

The largest cluster, consisting of 66 per cent of managers, views Factor Costs as the dominant, if not only, drivers of their innovation processes. Energy, material, labour and technology costs are crucial. This group does not seem to be guided by regulatory pressures or external engagement.

The second cluster consisting of one third of managers (34 per cent) were identified as "Strategic Innovators". This group perceives regulation, corporate targets and organisation-specific strategic decisions to innovate as strong drivers of environmental innovation. Uncertainty about future regulation also acts as a strong stimulus. A further important attribute is their internal/external engagement, as they seek cooperation with other firms including suppliers or even research institutions to drive innovation within their own organisations. External benchmarking, employee engagement and a particularly committed management contribute to pushing environmental innovation in this cluster.

[6] For example, the 'Skills for a Low Carbon and Resource Efficient Economy' project, backed by three Government departments. See http://skills4lowcarboneconomy.co.uk

The following table provides insight into other dimensions of the innovator types.

	Strategic Innovators	Factor Costs Innovators
Approach to Regulation	Close Link to "Regulation is Good"	Close link to "Regulation Causes Problems"
Carbon Management	Highest proportion of "Carbon Managers"	Most frequent amongst "Waverers" and "Climate Change Cynics"
Organisation Size	Highest amongst 250+ employees	Highest amongst 1-50 employees
Organisation Status	Highest amongst Plcs and public sector	Highest amongst owner / sole traders, partnerships and charities
Economic success	The more growth, the higher the proportion of Strategic Innovators	Highest amongst declining or zero-growth organisations
Sector Growth		The less growth, the higher the proportion
Industry Sector	Highest in local government, housing, utilities, construction, health & social care, telecommunications	Highest in consultancy, central government & public sector, education, finance, insurance, hospitality & leisure, manufacturing.

Table 10: Attributes of Strategic and Factor Cost Innovators[7]

5.5 Conclusions and recommendations

The main factors influencing how organisations approach innovation were energy costs, regulation, and management commitment – echoing the drivers of environmental management overall that were discussed earlier. For many organisations, it appears that innovation is a strategy-driven but cost-constrained process.

Evidence from the case studies revealed arguments that government should ideally stimulate innovation by incentivising companies to innovate towards long-term solutions. Another suggestion was that government has not yet found a way to spur environmental innovation by giving organisations the tools and measures to act.

Alternatively, regulation could be seen as more of a prompt to gather better information, rather than a stimulus to innovate, as expressed in the BT case study. Likewise, a strong theme to emerge from the Royal Mail case study was that the creation of market pressures, in terms of competitors and commercial advantage, is likely to have the biggest impact in terms of innovation. Regulation could therefore usefully provide a level playing field and a consistent set of standards against which companies can be measured, as well as directly driving innovation.

[7] With the exception of organisation status, all differences were statistically significant at 95 per cent and 99 per cent.

Recommendations to better harness environmental factors for innovation include:

- Environmental impact should be included as a key consideration in all product, service or process innovation.
- Senior managers must demonstrate leadership and commitment to environmental innovation.
- Organisations should develop an innovation strategy commensurate to their product strategy. The goal of product innovation should be to meet or exceed customer expectation by offering an improved service, through either a changed physical artefact or the delivery of service in a new form or format.
- Regulators should appreciate that the best way to achieve regulatory compliance is by ensuring innovation stimuli are provided in the design, intention and implementation of policy, and in guidelines and regulatory tools.

Case Study – Derek Pitcher Ltd

Organisation profile

A small construction company in the North East of England, with six employees.

The company's carbon management strategy is focused on energy consumption, with measurement taking place through an engine monitoring system. The strategy was led by the managing director and drew on the company's experience in energy management and efficiency. The cost of implementation was initially a concern but the dramatic savings on the company's electricity bill have more than justified the approach.

The role of customers

The company's carbon management strategy is strongly linked to its overall business strategy. It is seen as imperative that the company is able to demonstrate to its customers that it follows its own advice. To demonstrate this it offers tours of the company premises, highlighting how savings have been made.

The company was also able to cite examples of customers benefiting from its offering. One client reduced its energy consumption by a third by fitting energy consumption meters, whilst another saved approximately 20 per cent on its lighting bill.

Financial savings

For this small firm, it is evident that the driver for engagement with the environmental agenda is financially related:

> *"Everybody goes on about the environment but the truth is we're talking about money. [Companies] are looking to reduce costs all the time. The real world is that companies are out here fighting tooth and nail to survive".*

Derek Pitcher Limited achieved a reduction in overall energy costs of 40 per cent as a result of its energy efficiency measures.

Engaging with energy efficiency projects can therefore result in significant money savings. Especially (but not only) in a downturn, this has the potential to make action on the climate change agenda highly appealing.

6 The Role of Environmental Regulation

Regulation, technology and changes in consumer behaviour are key drivers of transformation in any industry. While these factors are interrelated, regulation is often used to initiate change where the market is deemed to have failed. It may have a direct effect on a specific sector and may affect both technological innovation and consumer behaviour.

The established view is that regulation inherently involves a trade-off: ecology versus the economy. Social and environmental benefits are balanced against industry's private costs for prevention and cleanup – costs that lead to higher prices and reduced competitiveness. This chapter reviews the barriers towards regulatory compliance and links to the Pressure-State-Response model presented in Chapter 1. It discusses managers' attitudes regarding environmental regulation and what barriers stand in the way of compliance with regulation.

6.1 Attitudes to regulation

Many managers evidently perceive positive benefits associated with environmental regulation, as shown in Table 11 below. A large majority of managers – 81 per cent – strongly agree or agree that it drives higher standards of environmental practice. Equally encouragingly, 62 per cent agree that it supports innovation, while 56 per cent argue that it helps to create new markets. A large proportion of managers also disagree that regulation restricts business growth.

	Strongly disagree %	Disagree %	Neutral %	Agree %	Strongly agree %
Drives higher standards of environmental practice	1	5	13	56	25
Increases bureaucracy for managers	1	11	23	45	20
Encourages innovation	1	13	24	48	14
Encourages a 'tick-box' compliance culture	2	14	26	41	18
Helps to create new markets	2	11	31	41	15
Prevents illegal behaviour	3	19	21	43	14
Creates unnecessary costs	3	25	34	28	11
Restricts business growth	4	36	37	17	6

Table 11: Effects of environmental regulation

More cautionary results arise with concern over the increased bureaucracy and the 'tick-box' compliance culture that regulation can cause. These findings would appear to support a need for regulators to connect more fully with businesses to ensure that regulation is proportionate and has practical value.

6.2 Barriers to compliance with environmental regulation

Respondents were asked to identify the one factor which acts as the single biggest barrier to achieving compliance with environmental regulations. An interdependent set of internal factors emerged as particularly important. The most commonly identified barrier was a lack of resources, identified by 23 per cent – which is related to a lack of organisational commitment (15 per cent) and a lack of staff

awareness (14 per cent). If the organisation has not taken the commitment towards environmental management at the highest level, then it is unlikely that appropriate resources will be available, with initiatives to raise awareness less forthcoming. Equally, the effect can be seen to work in the opposite direction, with a lack of awareness contributing to a perceived lack of organisational commitment.

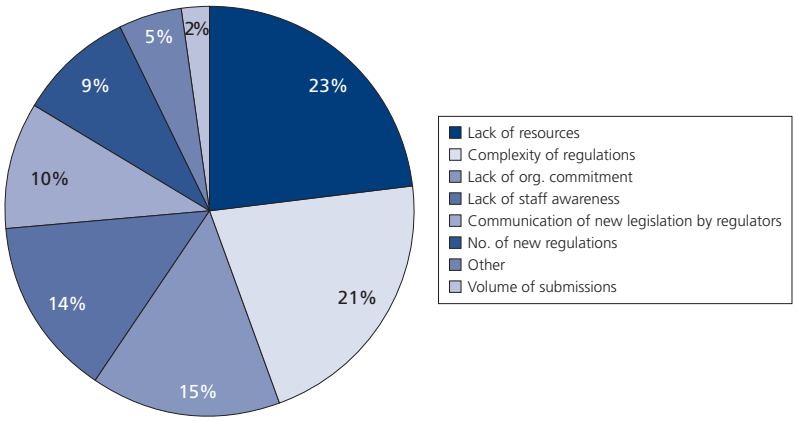


Figure 7: What is the single most important barrier to regulation?

Twenty one per cent stated that complexity of regulation is the single largest barrier, many more than those who felt simply that the number of regulations is a problem. A substantial minority (10 per cent) highlighted the problem of communication of new legislation by regulators.

Interestingly, complexity of regulations is increasingly perceived as problematic as age rises: managers over 60 are twice as likely to hold this view as those under 40. The reason for this is unclear. Perhaps it is due to length of service or absolute age, in so far as older employees may be able to contrast contemporary with earlier regulation. Alternatively, the perception of regulation itself may change with age.

6.3 Barriers by organisational size

It appears that the lack of awareness and lack of resources are more serious barriers among larger organisations. Small organisations are particularly concerned about the complexity of regulation: 27 per cent of companies with fewer than 50 employees view this as the most significant barrier, with resources less of a concern (19 per cent). Communication of new legislation by regulatory bodies is more of a problem for managers in smaller organisations, suggesting that regulators should explain regulatory change in ways that take account of organisational size. For medium-sized organisations, the lack of awareness appears to be the single biggest barrier.

Company Size	Number of regulations %	Complexity of regulations %	Volume of submissions %	Communication of new legislation by regulators %	Lack of employee awareness %	Lack of organisational commitment %	Lack of resources %
None	7	28	5	14	9	14	18
1 – 50	9	27	4	15	7	9	19
51 – 250	12	21	2	11	10	18	24
251 – 1000	8	23	3	8	15	16	22
Over 1000	9	18	2	8	18	17	25
Total	9	21	2	10	14	15	23

Table 12: Single biggest barrier to compliance by organisation size

6.4 Barriers by sector

Looking at individual sectors, consultancies, justice and security and mining and extraction are particularly likely to perceive the complexity of regulation as the biggest barrier in achieving compliance with environmental regulation. Interestingly, given recent debate over the provision of environmental information as part of the house-buying process, managers in the housing and real estate sector did not report problems with the complexity of regulation. A lack of organisational commitment emerges particularly strongly in central government, financial services, fire and rescue and IT.

6.5 Regulation clusters

Statistical analysis of managers' views on the role of regulation and compliance identified two clear clusters. These groups could not have been more distinct in terms of their defining attributes, with a split between broadly positive and negative views of the role of regulation. Interestingly, the clusters are about equal in size, which is indicative of the divisive nature of regulation.

I. **Regulation is Good:** 46 per cent of managers strongly believe that regulation drives higher standards of environmental practice and prevents illegal behaviour at the same time. They do not think that regulation increases bureaucracy for managers and they do not see that regulation creates unnecessary costs. This cluster strongly disagrees that regulation restricts business growth and they are not convinced that regulation encourages a "tick-box" compliance culture.

Managers in larger organisations are more likely to hold a positive view. Almost half of managers in companies with more than 1,000 employees fall into the 'Regulation is Good' group, compared to 38 per cent in companies with fewer than 50 employees.

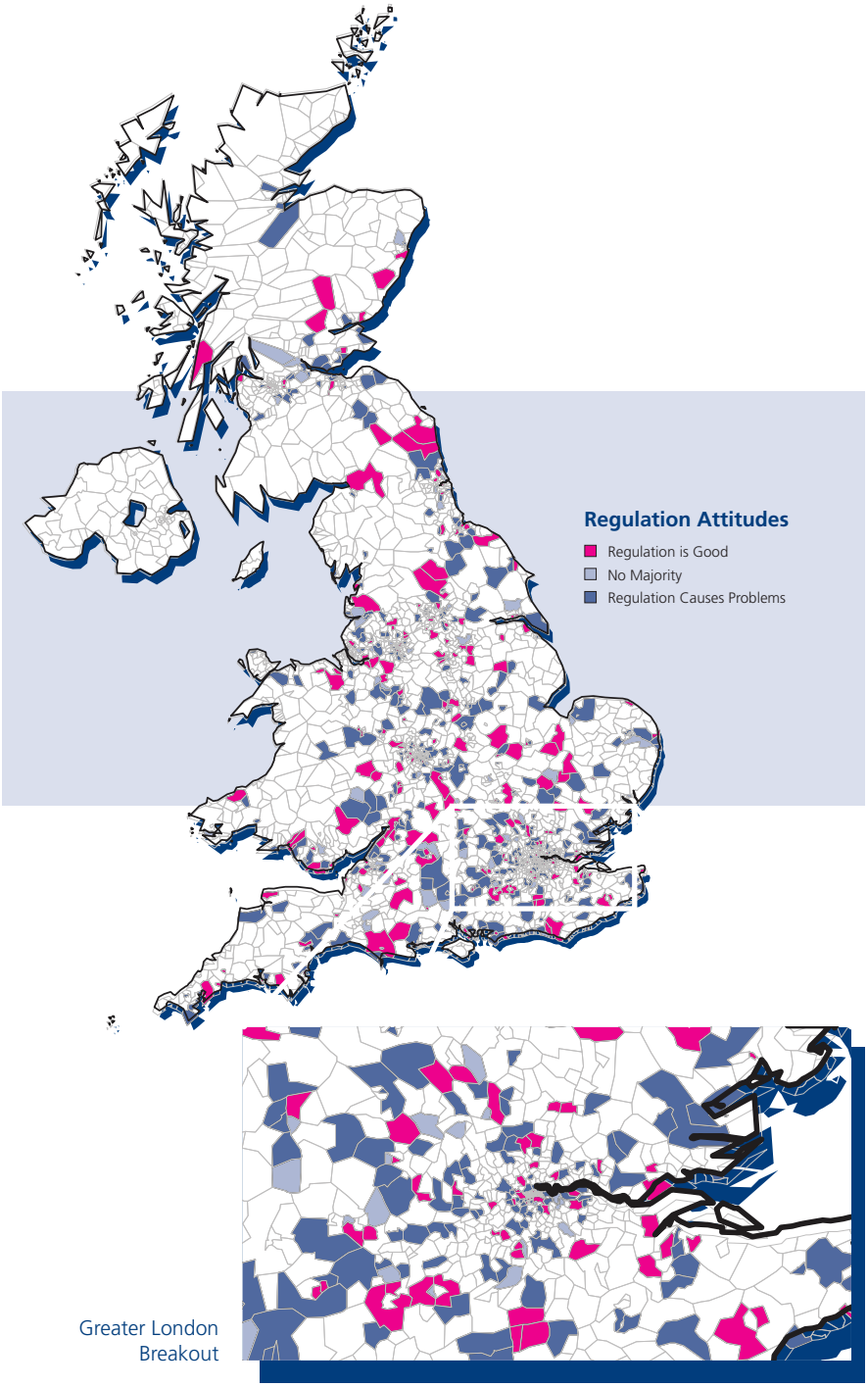
II. **Regulation Causes Problems:** This cluster (54 per cent) is more likely to disagree that regulation drives higher standards of environmental practice. Regulation is likely to encourage a "tick-box" compliance culture, increase bureaucracy for managers and create unnecessary costs. Business growth is perceived to be hampered by regulation. Finally, they believe that regulations are not helpful in terms of creating new markets.

Directors are particularly sceptical about the role of regulation: 68 per cent fall into the "Regulation Causes Problems" group. The negative view of regulation also increases with age. In addition, there is a link to organisational performance. Some 62 per cent of organisations with negative growth rates are in this group.

6.6 Mapping regulation clusters

The following map based on the UK postcodes of respondents shows the distribution of these perceptions across the nation. It shows that both groups are well distributed across the country, with the grey areas representing those districts where no majority of either group was found.

Interestingly, the same group was often found in adjacent districts and therefore a large-scale area-cluster was formed. This is likely to be due to the effect local government and local enforcement agencies have on the perception of the impact regulation has upon business, suggesting that enforcement cultures matter. Equally, the area of Greater London seems to be encircled by a ring of managers holding the view that "Regulation Causes Problems".



Map 2: Geographical distribution of regulation clusters

6.7 Conclusions and recommendations

The evidence suggests that there are two broad groups of barriers to improved environmental compliance: internal resistance and confusion regarding the regulatory environment. The internal barrier relates to a general scepticism about the importance of climate change as a business issue at director level and a commensurate lack of support and leadership as a result.

Regulatory confusion – with a small majority of managers voicing negative views on the role of regulation in this field – relates to the number and complexity of regulation, as well as difficulties in the communication between regulators and regulated. This is particularly pronounced amongst companies of smaller size.

Recommendations arising from this chapter are related not only to managers but to regulatory bodies:

- Managers should seek to realise the potential benefits associated with environmental regulation by innovating and exploring new business opportunities.
- Regulators and local enforcement agencies should provide specific guidance to small companies on the scope, meaning and implication of environment regulations, preferably from the deliberation stage onwards.
- There is a greater need for regulators to engage and support businesses in their regulatory duties.

Case study – Bristol City Council

Organisation profile

Local government authority with approximately 18,000 employees.

An all-embracing approach

At Bristol City Council, the environmental strategy is interwoven with the organisation's overall strategic goals. This encapsulates the idea of not merely being seen to be green, but actually taking decisive action to demonstrate the Council's commitment to a greener way of life by implementing schemes such as opening up old railway lines as cycle ways etc. It is the aim of the Council to endorse a policy for Bristol as a whole, to become a better, more environmentally friendly place for people to live and work.

Energy Management Unit

At Bristol City Council, there is an Energy Management Unit tasked with overseeing the Council's strategy on carbon management, energy usage, and environmental certification. The broad strategic aim is currently to work

towards achieving a carbon neutral base, and this incorporates large scale, radical projects such as the introduction of a wind farm. Bristol City Council is, at present, actively installing a number of biomass boilers in the area and this includes sourcing the raw fuel locally through the Council's Parks department. The Council's strategy also features more generic activity aimed at reducing transportation costs, as well as minimising energy consumption, particularly through street lighting. Energy awareness is a core message of the Council and it is striving to make sure this is communicated widely to achieve maximum impact. Energy saving discussions have taken place in schools and elsewhere, promoting the concept of 'energy ambassadors' and how simple actions like automatically switching lights off when they are not required can ultimately have a significant impact.

The Council readily recognises that education and energy awareness is only a small part of the overall picture, and that individuals and organisations react much more to change than to information on its own. The strategy, therefore, was deliberately focused on excessive energy consumption as this was an area where the Council could exercise some direct control. The Council is in the process of replacing all its electricity meters with smart metering that records information on usage, and transmits it back every half an hour. This readily available information means that consumption, variance and excessive usage can be easily monitored and red-flagged as necessary, enabling appropriate action to be taken.

Managing the political agenda and showing return on investment

At Bristol City Council, ensuring the successful implementation of the strategy meant adequately addressing the political, financial and practical motives of key stakeholders and reconciling the different priorities and objectives of these groups. A key part of this process was being able to clearly outline the payback period of proposed investments and demonstrating how resources can be utilised to maximum effect. Being able to demonstrate a lead on green issues locally, as well as achieving financial savings, has provided positive exposure given the current economic climate.

The ideas and processes central to the strategy were communicated through the website and various newsletters, including the *Energy Echo*. Posters and notice boards were also regularly updated to reflect key actions and notable rewards.

As members of the Mid West Energy Group, the Avon and Somerset Area Energy Group, and the Government Office of the South West, Bristol City Council benefits from benchmarking its activities and comparing results with others. In this way it is possible for everyone to benefit from the ideas and initiatives that constituent members are implementing.

Case study – BT

Organisation profile

Telecommunications operator, based worldwide with approximately 100,000 employees.

Carbon costs

At BT, the carbon management strategy is underpinned by a central aim of reducing costs and maximising efficiencies. The organisation's directors were involved in setting the objectives of the carbon strategy, but implementation is led by a specialist team. The strategy has received consistent backing from the directors and this is vital to achieving the goal of effectively reducing British Telecom's environmental footprint entirely. The biggest benefit to date that the organisation has derived from its carbon management strategy has been a reduction in the cost of its electrical services.

Updates and progress on the strategy is communicated via the organisation's intranet, with global emails sent out to encourage awareness of the work and its impact.

Within the overall organisation strategy, the focus on a reduction in electrical costs, therefore reducing the organisation's carbon footprint, is heavily linked to achieving a reduction in overall operating costs. At British Telecom, regulation serves as a tool for information and guidance, rather than as a primer to innovate.

Looking forward, the organisation does not envisage dropping any of its environmental management plans. Climate change, however, and the notable change in weather conditions in the UK are anticipated to present significant challenges in the long term.

7 Best Practice Resources and Systems

7.1 Introduction

The high profile of the climate agenda in recent years has seen the development of a wide range of environmental "best practice" resources. Advice on how organisations can improve their environmental performance is offered by a wide range of bodies, from government-supported business support organisations, to charities, non-governmental organisations and global bodies. Identifying which resources are most frequently used by managers, and what information managers are looking for, can help providers to offer better information and tackle barriers associated with a lack of understanding or information access.

7.2 Managers' preferred information sources

The survey examined which bodies managers had turned to for information related to their environmental impact at work over the last 2 years. Professional bodies (such as the IET and Chartered Management Institute) are the most frequently-used source of information, with around a third of managers citing this as one of their sources.

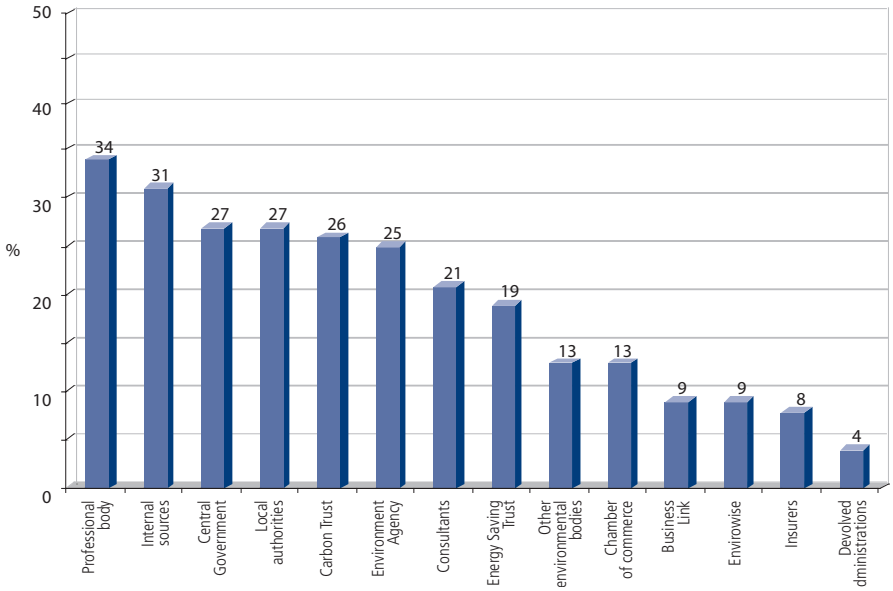


Figure 8: Managers' use of environmental information sources

Second most popular are internal sources (31 per cent), which implies a challenge for those organisations that do not have access to such sources, such as small companies. Of the bodies set up specifically to provide direct support to organisations, the Carbon Trust was used most widely (26 per cent). One-quarter also report that they had sought information from the Environment Agency. Business Link, the broad-remit business advice service, and the specialist body Envirowise were less commonly used (both 9 per cent).

The responses indicate that managers have a clear tendency to source environmental information from multiple providers. The average number of sources used was 3.3, indicative of the diversity of sources available and the fact that managers seem to triangulate advice on these issues. Another reason for using a diversity of information sources can be that different organisations operate in different contexts, so that they may well need different information or have different preferences for such information.

7.3 Information needs by organisation size

Some differences are also discernible in relation to organisation size as shown in Table 13 below.

	None (i.e. sole trader) %	1-50 employees %	51-250 employees %	251-1,000 employees %	Over 1,000 employees %
Professional body	39	38	37	37	31
Internal sources	14	19	25	33	38
Central Government	21	16	21	26	34
Local authorities	31	22	29	26	28
Carbon Trust	17	16	31	32	27
Environment Agency	21	19	25	27	28
External consultants	7	12	28	30	22
Energy Saving Trust	11	13	26	23	18
Other specialist environmental bodies	4	12	14	15	13
Trade association/Chamber of commerce	19	11	20	14	11
Business Link	14	13	11	8	7
Envirowise	6	8	13	13	7
Insurers	6	9	10	10	6
Devolved Administrations	3	3	5	3	5

Table 13: Use of information sources by organisation size

Perhaps unsurprisingly, managers in larger organisations are most likely to use internal sources for information (38 per cent), suggesting a parallel between greater resource and increased internal competence. Engagement with specialist bodies such as the Carbon Trust is far greater among managers in medium and large organisations with over 50 employees. Indeed, the lower overall usage of these information sources among smaller organisations raises a question about whether environmental advice needs to be better tailored to the needs of small business.

7.4 What do managers need to know?

The survey also explored what managers would like information on – as opposed to where they would look to find that information. Figure 9 below shows a surprisingly even distribution across a range of possible support materials.

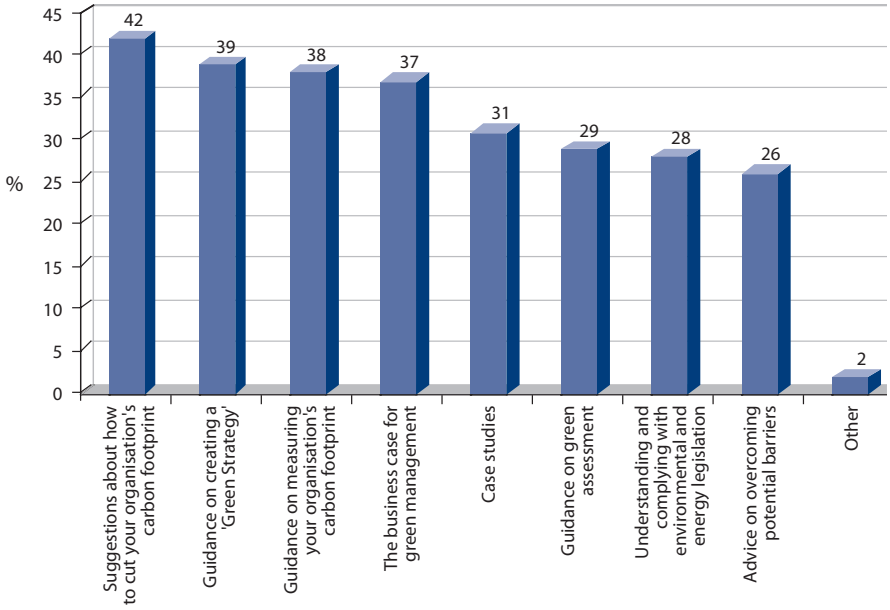


Figure 9: Environmental information needed by managers

The most widely desired information is specific guidance on how to cut an organisation's carbon footprint (42 per cent), followed by guidance on how to create a 'green strategy' (39 per cent).

It is also clear that case studies are highly valued (31 per cent), suggesting that 'story-telling' through case studies and the provision of a narrative which managers can relate to and draw lessons from is perceived as having value.

7.5 Accreditation and verification

In the discussion about how to manage successfully and how to demonstrate such practices and their successes to a – persistently sceptical – public, few initiatives have had as resounding a success in the business world as the ISO environmental management systems approach. Development of the standard can be traced to the run-up to the 1992 Earth Summit in Rio de Janeiro and the result became in due course ISO 14001. It is closely linked to the Total Quality Management standard, the ISO 9000 series, and indeed changes to both standards have brought them closer to each other. Their popularity is evident in the responses to the survey, as shown in Figure 10 below.

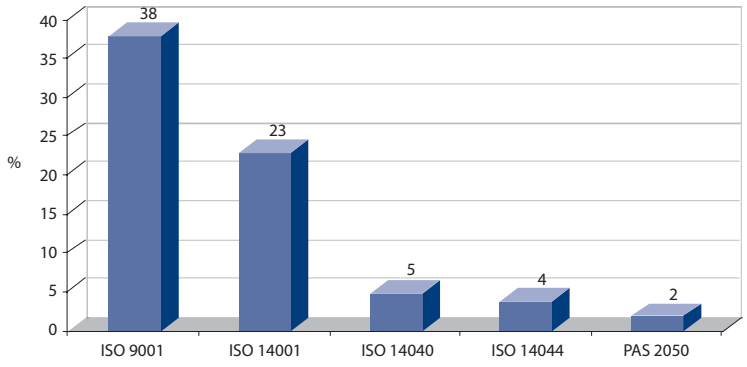


Figure 10: Use of standards

Adoption of ISO 9001 for quality management is clearly most widespread. However, a little over one in five use the ISO 14001 Environmental Management Systems standard. (Note that this survey does not distinguish between those that are accredited and those only following ISO 14001 – or BS 8555 leading to ISO 14001 – without accreditation). A small number of others follow the ISO Life Cycle Assessment standard, using the Principles (14040) and the Requirements and Guidelines (14044).

Interestingly, a small number already follow the Carbon Accounting Guidelines, PAS 2050 – which were only published in October 2008. The development of PAS 2050 was co-sponsored by the Carbon Trust and Defra and it can be used in a variety of formal and informal processes for improving and communicating the greenhouse gas performance of products and services.

The popularity of such standards also depends on the particular organisational culture that is prevalent in the organisations, as well as other context factors such as the size, sector and growth of the organisation. Table 14, below, provides an overview of the popularity of the standards when analysed across a range of different factors discussed in this research.

<table>
<tr><th></th><th>ISO 9001</th><th>ISO 14001</th><th>ISO 14040 / ISO 14044</th><th>PAS 2050</th></tr>
<tr><td>Approach to Innovation</td><td colspan="3">"Strategic Innovators" cluster has significantly more accreditations than the other cluster - twice the proportion of ISO 14001</td><td rowspan="9">No significant difference</td></tr>
<tr><td>Approach to Regulation</td><td>Proportion is slightly higher in "Regulation is Good" cluster</td><td>Higher in "Regulation is Good" cluster</td><td>No difference</td></tr>
<tr><td>Carbon Management</td><td colspan="3">Waverers have lowest number, Carbon Managers have highest</td></tr>
<tr><td>Personal Environment Attitudes</td><td colspan="2">Business Greens most likely to use, followed by Customers. Ethical Greens were lowest.</td><td>Business Greens have highest number of ISO 14040, Ethical Greens have highest number of ISO 14044, Customer-focused are least likely to use</td></tr>
<tr><td>Company Size</td><td>Most common in medium firms (51-250 employees)</td><td>Large firms (250+) have significantly more accreditations</td><td>0-50 employees have highest proportion, over1000 second highest</td></tr>
<tr><td>Organisation Status</td><td colspan="2">Most common in private sector businesses (private or public limited companies)</td><td>Plcs have largest No of 14040, Owner/ Manager & single partners have highest ISO 14044</td></tr>
<tr><td>Economic Success</td><td rowspan="2">Least common in organisations with no growth</td><td rowspan="2">Growing companies have more</td><td rowspan="2">Most common in rapidly growing organisations and in fast-growing sectors</td><td rowspan="2">Most common in fast-growing sectors</td></tr>
<tr><td>Sector growth</td></tr>
<tr><td>Sector</td><td colspan="2">Highest in manufacturing, transport, logistics, engineering, logistics, construction, utilities, and IT (add consultancy & mining for 14001)</td><td>No significant differences</td><td>Too few to allow conclusion</td></tr>
</table>

Table 14: Features of ISO standards use. NB shaded cells indicate statistically significant differences at 95 per cent and 99 per cent.

7.6 Conclusions and recommendations

Managers seem to make choices about where they seek help on the basis of past interactions, seeking advice from organisations or colleagues who they know or from whom they have received good advice in the past. Such sources may be turned to first in favour of those that have the greatest specialist expertise. Managers are also likely to look for information that will come with guidance on what to do. There is a clear appetite for further information about carbon management and how, in practical terms, managers can reduce their carbon footprint. It is hoped that this report will, in itself, address some of those needs; but it is clear that many managers need better information about the climate change agenda. The Further Resources section (page 70) points to other organisations which may be able to address that need.

The findings also emphasise the essential function of professional bodies, such as the IET and Chartered Management Institute, in educating their members.

In terms of the usage of ISO standards and environmental management systems, the primacy of the economic argument for environmental management appears once again. The main way in which organisations pursue this is via the Total Quality Management or EMS route.

As such, this report recommends that:

- Organisations should use a recognised framework for measuring emissions from goods and services such as PAS 2050. Other standards to consider include BS 8555, ISO 14001 or EMAS.
- Professional bodies should develop appropriate information and advice for their members. As trusted sources of information for managers, they should signpost towards additional resources and expert bodies.
- The Chartered Management Institute should promote the lessons from this research across the management community. Equally, the Institution of Engineering and Technology should seek to encourage its members to realise the benefits that low carbon initiatives can bring to their organisations.
- Specialist environmental and carbon management advisory bodies should seek to provide specific guidance to help managers cut carbon emissions. Guidance should be translated to the specific context of smaller organisations and consideration also should be given to making guidance sector-specific.

8 Concluding Comments

There are two kinds of impossibility. There's a political impossibility and a biophysical impossibility, and right now it's like the horns of a dilemma. I prefer to be impaled on the politically impossible horn because that's not as fundamentally impossible. Things which are presumably politically impossible frequently do change. The Berlin Wall fell. That was politically impossible. A few other things have happened that were politically impossible. But I don't think we're going to change the dimensions of the Earth or reverse the laws of thermodynamics, those kinds of things, which are the fundamental limits.

Herman Daly, former Senior Economist at the World Bank

This report has shown the current status of environmental management and of the blossoming carbon management initiatives in the UK. It has outlined some of the reasons why businesses have come this far - and why they have not yet gone further. It has attempted to provide a coherent argument regarding the potential for future improvements which, from an environmental perspective, are urgently needed.

From an organisational perspective, current steps to address climate change are typically practical in nature and beneficial to the organisation and its employees. They are not only part of "doing the right thing". The evidence suggests that environmental management is increasingly becoming "mainstream". Further steps to achieve this are needed to maximise its effectiveness. It seems likely that carbon management will be integrated into the way UK businesses operate in similar fashion.

Climate change science shows that, environmentally, we are at a turning point in human history. We will not be able to meet the challenge we face without deep changes, in the patterns of our material consumption, but also, arguably, in the values that such material products service – and in our economic thinking. Indeed, the Government's Independent Advisor on Sustainable Development[8] recently published a report on the fallacies of economic growth and its dysfunctional effects, highlighting the need to re-think some of the alternatives available.

Business, then, surely must make a reality of the concept of sustainable development, integrating the triple bottom line of environmental protection, social concern and economic success. It is disappointingly easy to argue that we have not been meeting any of these aspects. If the recession raises complex questions about the viability of economic models based on debt, it is worth remembering that, environmentally, borrowing from the future is decidedly unsustainable.

The undoubted progress being made by British managers, documented and discussed in this report, is therefore being out-paced by the urgent need for climate change adaptation and mitigation. This report shows us much about the current willingness

[8] Tim Jackson: *Prosperity without growth? The transition to a sustainable economy* Sustainable Development Commission, March 2009

to instigate the radical change that's needed. On the side of individuals, willingness can be detected and documented, but individuals as employees too often see the scope for change being constrained by organisational priorities. The evidence is strong that directors in particular are cynical about the necessity of implementing green strategies. The focus upon maintaining the economic bottom line is understandable, but the danger is that a short-term pre-occupation precludes the action needed to support success over the long term.

This report has shown that the majority of UK managers are willing to step up to the challenge and many have begun to do so. The question that only hindsight can answer is whether this will be enough.

9 Recommendations

For chief executives and senior managers

1. Leading change

- Chief executives need to give clear and consistent demonstrations of their commitment to achieving a reduction in carbon emissions. The benefits to the organisation should be fully articulated to explain to staff why they should invest time and energy in the agenda.
- Senior management teams should put in place the necessary organisational structures to lead change. There should be clearly allocated responsibility at board (or equivalent) level for improving environmental sustainability.
- Senior management teams have a responsibility for ensuring low-carbon projects are fully resourced. Providing sufficient resources will help increase the chances of realising the potential business benefits.
- Senior managers should draw on widespread employee understanding and acceptance of the environmental agenda. Some employees, particularly younger managers, have a strong personal commitment which may be harnessed to drive powerful change throughout the organisation. Others can be motivated by clear identification of the business benefits that may accrue.

2. Building measurement capability

- It is essential that businesses establish a sound understanding of their current environmental performance as a first step towards making improvements. Undertaking an environmental audit can establish a benchmark for future performance and help identify opportunities for improvements.
- Businesses should adopt meaningful measures of environmental performance that are appropriate for their specific operating context. A focus on electricity usage provides a readily accessible initial measure for many businesses and is easily related to costs, although it is unlikely to encapsulate an organisation's full carbon footprint.
- Managers will benefit from building a shared understanding about the areas in which carbon emissions cuts can best be achieved.

3. Creating value from environmental projects

- Managers should seek to maximise the business benefits from implementing low-carbon initiatives. Key areas include cost reduction, winning new business or attracting new customers.
- Managers should consider how low-carbon initiatives can support innovation that leads to the development of new products or services.
- Managers should build understanding of how far customers expect a commitment to environmental sustainability and how expectations will change in the future. Demonstrating leadership on the environmental agenda may be a way of gaining competitive advantage.
- Engineers are often in the forefront of making decisions for clients, employers and society which affect sustainability. Managers should call on the expertise of engineers within their companies when developing green policies.

4. 'Greening' management

- Managers need to take active steps to integrate environmental issues into the mainstream of their business activities.
- Managers should be encouraged to drive low-carbon change throughout the organisation through the adoption of targets at an organisational or departmental level. Individual performance targets and performance-management systems, potentially related to pay, may also be used to leverage change.

For professional bodies and business schools

- Professional bodies should develop appropriate information and advice for their members. As trusted sources of information for managers, they should signpost towards additional resources and expert bodies.
- The Chartered Management Institute should promote the lessons from this research across the management community, with a particular emphasis on the challenges for senior managers.
- Engineers have a dual role to play as both designers of systems and managers of organisations. The Institution of Engineering and Technology should seek to encourage its members to realise the benefits that low carbon initiatives can bring to their organisations.
- Particular attention needs to be paid to opportunities to promote this agenda in continuous professional development (CPD) activities including membership events.
- Professional bodies and business schools should integrate environmental issues into the mainstream of business education and training.
- The Chartered Management Institute and IET should seek to develop a common approach to promoting environmental sustainability across UK professional bodies.

For government and environmental bodies

- Government and specialist environmental bodies should seek to provide clear and unified guidance to managers on carbon management practices. There is a clear need to improve understanding of how to measure and manage low-carbon activities and what practical steps can be taken to achieve reductions in emissions.
- Existing guidance should be promoted to managers more effectively. Partnership with bodies with which managers already have relationships of trust, such as professional bodies, may support this aim.
- Care should be taken to ensure that guidance is made relevant to the specific context of smaller organisations. Consideration should also be given to making guidance sector-specific.
- Incentives should be used to encourage businesses to move beyond basic compliance with environmental regulation. A focus on imposing penalties for non-compliance tends to encourage avoidance or meeting minimum standards, rather than promoting innovative solutions that add value.

- Regulators and enforcement agencies should actively promote guidance on the scope, meaning and implication of regulatory initiatives – preferably from the deliberation stage onwards. Such guidance should be particularly focused on small companies.
- The Government should continue to support best practice throughout the public sector. This is a strong opportunity to demonstrate leadership by example and to influence the private sector, for example through further consideration of environmental outcomes through procurement processes.

Additional resources and further information

- PAS 2050 may be used as a framework for measuring emissions from goods and services. It is available free of charge from the BSI at www.bsigroup.com
- Other systems which organisations may consider using include:
  - BS-8555 STEMS (Steps to an Environmental Management Scheme) or ISO 14001 for Environmental Management Systems – both also available from www.bsigroup.com
  - EMAS, the Eco-Management and Audit Scheme, available from the Institute of Environmental Management and Assessment www.iema.net/ems/emas
- The Carbon Trust, which was set up by Government in 2001 to accelerate the move to a low carbon economy, offers a range of information and guidance for organisations. For example, organisations with annual energy bills of more than £50,000 can apply for the Carbon Trust's free carbon surveys. www.carbontrust.co.uk
- The Carbon Reduction Commitment is a new mandatory scheme to promote energy efficiency and help reduce carbon emissions. It will cover large business and public sector organisations across the UK from April 2010. Information about the scheme is available from the Department for Energy and Climate Change, at www.decc.gov.uk
- The Sustainable Development Commission is the Government's independent advisory body on sustainable development. Its website has information, case studies and practical help aimed at businesses: www.sd-commission.org.uk
- The Engineering Council has produced a Sustainability Guide to clarify the role of engineers in relation to sustainability. It lists six principles to guide professional engineers in their work. It can be found via www.engc.org.uk/sustainability
- Members of the Chartered Management Institute have access to the Management Information Centre, one of the largest management libraries in the UK. The 'Ask a Researcher' service can help you find exactly what you need. See www.managers.org.uk/MIC. The Institution of Engineering and Technology's Factfiles offer unbiased information for members, teachers, students and the general public, on a range of subjects including the environment and energy. See www.theiet.org/factfiles

Appendix A:
Profile of Respondents and Methodology

Base: 1,500	%
Status of organisation	
Public sector	35
Public limited company	18
Private limited company	29
Charity/not for profit	10
Partnership	3
Owner managed/sole trader	2
Sector	
Agriculture, forestry & fishing	1
Business services	4
Central government	6
Construction	3
Consultancy	7
Creative/media	1
Defence	6
Education	10
Electricity, gas & water	4
Engineering	6
Finance & insurance	3
Fire & rescue	1
Health/social care	8
Hospitality, catering, leisure & tourism	2
Housing & real estate	2
IT	3
Justice/security	1
Legal & accounting services	1
Local government	9
Manufacturing & production	9
Mining & extraction (inc. oil and gas)	2
Police	3
Sales/marketing/advertising	1
Telecommunications & post	2
Transport & logistics	4
Wholesale & retail	2
Organisation size	
None (i.e. sole trader)	5
1-50	16
51-250	12
251-1,000	15
Over 1,000	50
Management level	
Junior manager	16
Junior engineer	2
Middle manager	31
Senior manager	27
Senior engineer	5
Director	17
Age of respondent	
Under 30	9
30 - 39	22
40 - 49	34
50 - 59	25
60 - 65	8
Over 65	1

Base: 1,500	%
Gender	
Male	76
Female	24
Location	
East of England	6
London	14
East Midlands	5
West Midlands	10
South East	15
South West	12
North East	4
North West	8
Yorkshire & the Humber	6
Northern Ireland	2
Scotland	8
Wales	4
Other	4

Percentages may not total 100 due to rounding or non-responses.

Comment on the responses

The survey fieldwork for this report was undertaken in December 2008 among members of the Chartered Management Institute and the IET. A total of 1,500 responses were received.

There is a bias towards larger companies in the sample: just over half of the respondents work in companies with more than 1,000 employees with less than 5 per cent of responses being owner-managed/sole traders. The remainder of the sample is divided relatively evenly amongst the other size classes. Given the significance of size as a factor in strategic responses to environmental as well as regulatory change, it is important to consider a size bias as a distinct possibility in the analysis.

This self-reporting bias is also replicated in analysis of environmental credentials, where just 15 per cent stated that they had no management system certification at all.

Methodological comments

The project gathered a significant dataset, with more than a quarter of a million data points. The main tools to identify patterns in the data consisted of:

- Frequency counts and cross-tabulations of the original variables with categorising variables, including estimates for size, sector, and demographic characteristics of the responding managers. Where appropriate these were then assessed on their significance using χ^2, Kruskal-Wallis, or Mann-Whitney tests.
- Principal Component Analysis to evaluate initial patterns, verification of the internal consistency of these using α - Reliability tests on the scales
- Hierarchical cluster analysis on the original variables or the Factor Analysis scales
- Analysis of Variance tests for a better understanding of the significance in the mean response by categorising variables
- Use of a Geographical Information System to map and analyse the geographical distribution of response clusters, and basic proximity indicators.

Appendix B: A TQM Approach to Cutting Carbon Emissions

This Appendix offers a model for cutting carbon emissions, based on a modification of the Total Quality Management as crystallised in the ISO 9000 and ISO 14000 series of standards.

The first step (see Box 3 for an overview) is to identify, across the total value chain of an organisation's product range, where in the life-cycle of a product are the most significant environmental impacts. For example, for some products – say, white goods – this is the use phase. For others – locally grown food for instance – primary production matters most, while for in other cases – food imported by air, say – it is the transport of goods. Such an assessment yields an understanding of where in the value chain substantial gains may be made, but also, critically, who is in control of these and who can exert influence.

The second step is then a strategic decision as to how these issues can be addressed. Environmental issues that are under direct control of the organisations concerned are looked at in a continuous improvement system, where integration with product and organisation strategy is central to success. The relationship between these strategies and the environmental programme is often dialectical: it would be a fallacy to ignore the impetus to re-think and re-evaluate. Organisations that have made radical changes in product design and or delivery methods have often not only gained a step-change advantage in their economic success, but often have radically altered market dynamics in their favour. This is what radical innovation towards competitive success should be all about.

The economically and environmentally best way to progress this is finding an answer to the simple question of what the service is that the product – the physical artefact – actually delivers and whether there are ways in which this service could be delivered in a way that is economically more attractive to the organisation and functionally more attractive to the consumer. For example, a car is much more than the 1500kg machine artefact that allows us to bring home 20kg of shopping in relative comfort. As well as serving our need for transport, it satisfies a remarkably large array of emotional, psychological and social needs, displaying status, success, modernity, perhaps environmental concern, membership of specific groups, and other personal values. It would not be possible to explain the diversity of car models without these additional 'services'. Technologies or systems that cannot deliver these services as well will not threaten the supremacy of the car. In short, environmental improvements must exceed the services of the products they replace.

Part of this step is also a strategic decision on what to do with those environmental aspects that lie outside the organisation, but are nonetheless central to the value chain. Those are the aspects an organisation cannot control but can influence. Upstream, this is part of Supply Chain Management. Suppliers can be engaged in diverse ways to provide a better service. The mirror image to this is Extended Producer Responsibility, where downstream consumers are engaged to enjoy a better service. Both these areas should be approached through aspects that the organisation can control, re-thinking the product to deliver its services with an improved environmental profile.

The next step is to implement and then review the changes identified, alongside efforts to communicate meaningfully. Alongside each of these steps there needs to be a concerted, constructive and intelligent approach to engaging the relevant stakeholders. Prime among these must be an organisation's staff.

Box 3: A model for cutting carbon emissions

1. Examine your main product's total value chain and establish where the largest carbon impacts lie. In most cases this will be the life-cycle stage with the largest energy consumption.
2. Examine whether your organisation is in control of these, or can only influence them.
3. Starting with the largest aspect that is within the organisation's control, define what service that stage delivers within the value chain.
   a. Can this stage be avoided altogether?
   b. Can the carbon intensity be reduced?
4. If the stage cannot be replaced, consider the following four levels of environmental improvement (Eco-Innovation Model) to reduce the carbon impact.
   I. **Incremental improvements:** small progressive improvements to existing products that are mainly based on common sense or check lists.
   II. **Re-design or "green limits":** major re-designs of existing products, limited only by the level of improvement that is technically feasible.
   III. **Functional or "product" alternatives:** new product or service alternatives based on life-cycle assessment and life-cycle cash flow analysis of alternative products systems.
   IV. **Design for the sustainable society:** services are delivered through radically different products and legal arrangements, new infrastructure, and a completely new way of fulfilling a product or service's function.

This model suggests four levels of eco-innovation ranging from incremental changes to existing products and services to radical design innovation with potentially disruptive effects. Each level has different facets:

	Risk & Uncertainty	Investment	ROI	Complexity	Impact on Products	Impact on Carbon Performance
Incremental Improvements	Minimal	Minimal/ Inexistent	Minimal	Minimal/ Inexistent	Minimal	Minimal
Process re-design	Limited	Limited/ Minimal	Limited/ Minimal	Minimal	Limited	Limited/ Minimal
Functional or "Product" Alternatives	Moderate	Limited	Moderate/ Limited	Moderate/ Limited	Moderate	Moderate
Radical Change in Service	High	Moderate	High	High	High	High

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Respondents and case study organisations

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