

Carbon Disclosure Project Report 2008 FTSE 350 Building business resilience to inevitable climate change

The Adaptation Challenge



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Carbon Disclosure Project Context



Just this month, the world's leading scientists agreed that worst case IPCC scenarios were already being realised and called on governments to act before we face 'abrupt or irreversible climatic shifts'. It is clear that the mitigation of climate change through emissions reduction is fundamental if we are to avoid dangerous climate change.

Yet whilst mitigation must remain integral to a company's response to global warming, we are already facing significant climate change as a result of past emissions and organisations need to understand how to adapt in order to minimise business disruption. As climate change has the potential to negatively impact company value, adaptation alongside mitigation is the only responsible approach to take. Shareholders have a right to understand how the companies they are investing in plan to manage climate change impacts; in fact, shareholder actions on this issue have been taking place for the last few years.

An effective climate change strategy is only possible once a corporation has measured the risks that it faces, both current and long-term. Those that do will also reap the significant opportunities that emerge from providing solutions to the problems. As climate change is upon us, it is time for businesses to understand their threats and take rapid action to both adapt and to mitigate adverse effects.

Paul Dickinson
Chief Executive
Carbon Disclosure Project

Acclimatise Viewpoint



The message is clear: we have to act without delay to reduce emissions to avoid the unmanageable and we must adapt to manage the unavoidable. There is no choice.

Increasing temperatures, changes in precipitation, melting glaciers, permafrost thaw, rising sea levels and natural resources under threat are now a feature of our world. We are already seeing their impacts.

The risk of serious damage to our economic, social and environmental systems is real. The key messages from the recent Copenhagen conference¹ are clear and unambiguous on the consequences of climate change.

For many companies, climate change means carbon trading, greenhouse gas emissions control, renewable energy and energy efficiency. Few companies have heeded the warnings from scientists that however successful we are in reducing emissions we also must cope with the impacts of unavoidable climate change due to historic greenhouse gas emissions.

As each year goes by and we delay action the costs to business will increase, threatening the sustainability of some companies. For those companies that recognise the signals and build business resilience, there are significant opportunities to be explored.

This report focuses on the actions being taken by the UK FTSE 350 companies to adapt to a changing climate and build business resilience. There is a clear responsibility on directors and all those providing professional advice to listen to the warning signals and take appropriate action – now.

John Firth
Chief Executive Officer, Acclimatise

“Recent observations confirm that, given high rates of observed emissions, the worst-case IPCC scenario trajectories (or even worse) are being realised. For many key parameters, the climate system is already moving beyond the patterns of natural variability within which our society and economy have developed and thrived. These parameters include global mean surface temperature, sea-level rise, ocean and ice-sheet dynamics, ocean acidification, and extreme climatic events. There is a significant risk that many of the trends will accelerate, leading to an increasing risk of abrupt or irreversible climatic shifts.”

“Recent observations show that societies are highly vulnerable to even modest levels of climate change, with poor nations and communities particularly at risk.”

“There is no excuse for inaction.”

Extracts from the key messages issued in a statement by the ‘Climate Change: Global Risks, Challenges and Decisions’ International Scientific Congress. University of Copenhagen 10-12 March 2009

“Ten years ago we were talking about these impacts affecting our children and our grandchildren. Now it is happening to us. Even if we achieve a cap at two degrees, there is a stock of major impacts out there already and that means adaptation. You cannot mitigate your way out of this problem. The choice is between a damaged world or a future with a severely damaged world.”

Professor Martin Parry,
Co-chair of the IPCC, 2007

IBM Viewpoint



Climate change risk management and adaptation planning are crucial to business success.

IBM recognises climate change is a serious concern that warrants meaningful action on a global basis to reduce greenhouse gas (GHG) emissions. We consider energy efficiency and conservation to be a cornerstone of climate protection. Indeed, we are witnessing that, by and large, business is taking steps to conserve energy and, where its use cannot be avoided, to use it more efficiently. Action is increasingly widespread to reduce emissions of GHGs from both energy production and consumption. These mitigation steps make sense.

Moreover, energy is costly. Despite recent lower oil prices, it is likely to become more so as world demand grows faster than affordable supply. The pressure to control costs in these difficult times is ever greater. So, taking efficiency steps makes sense.

As the International Panel on Climate Change has reported, the world faces the prospect of considerable climate change despite these increased efforts to reduce emissions. This is so even if concentrations of GHGs in the atmosphere were to be stabilised at present levels – an unlikely prospect given current trends. The consequences for the world's natural environment and the knock-on effects on social and economic systems are likely to be profound.

The lack of attention that many businesses give to climate change risk and adaptation planning in comparison to their mitigation and efficiency efforts is at odds with their overall concern about business risk.²

IBM believes it is prudent that businesses anticipate and responsibly manage potential business risks, including addressing adaptation to consequences of climate change. We believe anticipation and competent management of these risks – and the opportunities they present – will be a source of competitive advantage and be crucial to business success.

There are six reasons why we take this view:

- 1 Seriousness:** the seriousness of climate change requires businesses proactively to take action to improve its understanding, anticipate potential risks and take timely measures. Uncertainty over outcomes, timing and likelihood, increases the importance of effective risk monitoring and management.
- 2 Gradual change:** predictions by climate scientists indicate that consequences of climate change will occur gradually rather than immediately and become serious at some time in the future. This presents the opportunity to adapt gradually and minimise disruptive change.
- 3 Volatility:** as the International Panel on Climate Change has stated in its reports, gradual climate change will be accompanied by increased frequency, seriousness and unpredictability of extreme weather events. Scientists also express concern over the possibility of rapidly accelerating change once so called 'tipping points' in nature's systems are passed. Preparedness for such events makes good business sense.
- 4 Lead times:** it will take time to make many of the changes in business operations or products and services that adaptation requires. Once a risk materialises, in some circumstances it will be too late to act to avoid the worst consequences and possibly even to repair the damage.
- 5 Learning:** adaptation requires businesses to think differently and use different capabilities. Learning through action enables building capability and familiarising a workforce with new challenges.
- 6 Connectedness:** the global integration of businesses, societies and economies is well documented and commented on. This interconnectedness causes shocks to be transmitted across the globe at unprecedented speed. Climate change poses risks to businesses not just directly but through the supply chain, market and customer ecosystems.

² 2009 IBM Chief Supply Chain Officer Study: "The smarter supply chain of the future". 60% reported Risk Management as a significant or very significant impact on their supply chain, the second most challenging issue after Visibility (70%) and ahead of Cost Containment (55%). 69% formally monitor supply chain risk but only 31% manage performance and risk together.

So, what should a company's leadership do? Here are three practical suggestions.

The first step is, as always, to start. Asking questions – of your colleagues, suppliers and customers – will be the first step in putting in place an adaptation strategy and a climate change risk management process. This report contains a series of questions to help start this dialogue.

The second step is to understand the situation. This will require different approaches to knowledge management, involving different types of information and different approaches to deriving actionable intelligence. As an example, IBM is working with meteorological organisations and forward looking clients to combine high-resolution weather forecasting techniques, floodwater simulation and business scenario modelling to better understand physical adaptation risks.

The third step is to learn from others. This report contains invaluable guidance from those who are already on the journey and suggestions as to how this can be used to work out where the risks are and where things need to be done.

We hope that the best practices identified in the report will assist you in formulating your organisation's adaptation strategies. We look forward to evidence in future disclosures to CDP indicating that businesses are better prepared.

IBM is pleased to have collaborated with Acclimatise and the Carbon Disclosure Project to have sponsored the analysis Acclimatise conducted of the CDP reports and to have partnered with Acclimatise on developing the questions for directors. The report content provides the opinions and findings of Acclimatise, however, and should not be read as necessarily representing IBM's views.



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Executive Summary



Our climate is changing and will continue to change for many decades even if we are successful in stabilising greenhouse gas emissions and limiting global temperatures. As our understanding improves, we realise that the scale and nature of the challenge before us is quite unlike anything that we have ever experienced before.

All companies, whatever their sector, location and size, are faced with direct and indirect impacts from climate change. Companies will experience a 'pinball' effect as the impacts work through their business models creating new and enhanced risks for raw materials, supply chains, utilities, operational processes, assets, employees, customers, local communities and environments. In some parts of the world we will see political instability as countries and their citizens struggle to cope.

The nature of these impacts will threaten the sustainability of many companies. They will have to respond or face a crisis far worse than the current economic problems we are now experiencing. This requires leadership by directors.

This report has analysed the responses to the Carbon Disclosure Project 2008 (CDP 6) from the UK FTSE 350. It looks at those questions aimed at understanding the actions being taken by companies to adapt and build resilience to climate change. There has been some progress by companies in the UK since our previous report on the UK FTSE 350 in 2006³. However, it is clear that adaptation has not yet gained the same level of interest given to mitigation and emissions control.

Responses to the CDP suggest that most UK FTSE 350 companies might be failing to take notice of the warnings issued by scientists or choosing to ignore the overwhelming information, to doubt its conclusions or to use uncertainty as a reason for inaction. A few companies are using the scientific knowledge to build resilience and take advantage of the opportunities, most notably in the water and insurance industries.

We have seen with the current economic crisis how 'short-termism', failures in risk management, poor governance and limited disclosure have led to business failures. There are parallels to be drawn with the business risks driven by climate change. The science is overwhelming, the impacts are visible, and the threats to business models are real. Directors should ensure that they are acting on the information that is available.

The report explores the challenges for directors and their responsibilities to develop resilience in their businesses. Examples of best practice are provided, along with a list of 10 questions to guide directors in the actions they need to undertake to build business resilience to climate change.

³ Firth et al., 2006

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1 Introduction



“If we’re not ready, we’re in trouble,” said the CEO of Cinergy Corporation in 2005. A year later, Lloyd’s urged the insurance industry to ‘adapt or bust’. In its 2006 report on the UK FTSE 350 responses to the Carbon Disclosure Project (CDP) fourth request for information, Acclimatise stated: “It is clear that few businesses have yet recognised the new and unfamiliar threats arising from a changing climate. Fewer still have begun to assess the risks and opportunities and to develop risk management processes and actions to meet the challenges.”⁴

The majority of scientists throughout the world agree on the overwhelming evidence that climate change is underway and on sending strong messages to policy-makers about its mounting gravity. Many of the climate changes that we will see over the next 30 to 40 years are already built into the climate system due to historic greenhouse gas (GHG) emissions. This means that changes will continue in the short- to medium-term regardless of the success of emissions reduction plans.

The world’s climate is already changing, creating risks and opportunities for many businesses irrespective of their size, location, markets, products and services. The impacts will be felt throughout a company’s business model, with consequences for its raw materials, supply chains, essential utilities, assets and operations, markets, customers and products, its workforce and the communities in which it is located.

Stakeholders will develop their own perceptions and expectations regarding the impacts of climate change and the responses they expect to see from the business sector. In the UK we are already seeing increased policy and regulatory activity around adaptation; and the financial community is requesting disclosure on climate risks and opportunities.

Directors will find it increasingly difficult not to acknowledge the growing concerns and the wealth of information, guidance and advice that now exists. They may need to reassess their fiduciary responsibilities and consider carefully their duties under the UK’s Companies Act 2006 if they are to avoid potential legal action.

Companies that tackle the mitigation agenda exclusively, in their response to climate risks, are only considering half the picture. We face two climate challenges not one. Prudent businesses are preparing strategies to assess and manage the impacts of a changing climate, in addition to their efforts to reduce GHG emissions. Focusing exclusively on carbon neutrality does not create climate resilient businesses.

Report overview

Has the situation changed since our 2006 CDP adaptation report? What is the current level of adaptation and business resilience to a changing climate achieved by FTSE 350 companies? These are the questions this report aims to answer by reference to the FTSE 350 responses to the CDP6 (2008) questionnaire.

How do companies build business resilience to inevitable climate change? In this report we have identified some of the key challenges for directors with the benefit of hindsight from the current financial crisis. The report provides questions prepared jointly by Acclimatise and IBM for directors. Its purpose is to give guidance with the aim of ensuring companies are taking the right steps towards building corporate resilience to climate change. Examples of best practice are provided to illustrate the actions corporate leaders are taking.

The report is divided into four main sections with an appendix.

Section 1 provides an introduction to inevitable climate change, business adaptation and resilience.

Section 2 provides an overview of the analysis of responses focusing on risk, opportunity and governance issues. It also looks at the ‘preparedness’ of business sectors, taking into account their inherent differences in vulnerability to climate change, and extracts key messages and best practice on corporate adaptation.

Section 3 explores the challenges for directors and their responsibilities to develop resilience in their businesses. Questions are provided to guide directors.

Section 4 presents a call for action by directors to build business resilience and adapt to the consequences of a changing climate.

An **Appendix** presenting the detailed analysis undertaken on the FTSE 350 responses using the **Acclimatisation Index™** methodology is available to download at www.acclimatise.uk.com/resources/reports

The CDP’s sixth annual information request from investors (CDP6 2008 questionnaire) was sent to the UK FTSE 350 companies in February 2008. A copy of the questionnaire is available on the CDP Web site: www.cdproject.net

In 2009, 475 institutional investors signed the CDP request for information. A list of the signatories can also be found on CDP Web site.

“Amid increasing uncertainty over weather patterns, there is no doubt that companies need to adapt. They need to review their assets, strategies and business models in the light of the possible scenarios for climate change. Even if we halt or reverse the growth of carbon emissions now, some climate change is inevitable. And of course it is more likely that carbon emissions will continue to grow. Yet many companies are still behaving as though ‘business as usual’ is still an option. This is simply not the case. Companies need to wake up now or sleep-walk their way into oblivion. There will be winners and losers in each sector, and access to insurance and investment will increasingly depend on whether companies have appropriate strategies in place.”

Alice Chapple,
Director Sustainable Financial
Markets, Business Programme,
Forum for the Future

“Exercising any duty of care should now include consideration of climate risks – the strength of evidence that these risks are changing no longer allows this issue to be ignored. Directors need to be able to assure investors and customers alike that their business is robust to climate change.”

Chris West,
Director, UK Climate
Impacts Programme

Climate change is underway

In 2007, Lord Stern recognised the importance and urgency of adaptation when he said: “It is the only response available for the impacts that will occur... before mitigation measures can have an effect.” In an interview in July 2008, Lord Stern commented that: “The dangers of climate change were, if anything, underestimated.”⁵ In March 2009, he reaffirmed the urgency of adaptation in a major public speech: “This means countries – all countries – will have to adapt.”

There is scientific consensus that the world’s climate is changing due to human activity and that whatever steps we take to limit GHG emissions we are now faced with several decades of increasing global temperatures and a far longer period of rising sea levels.

Limiting temperature rise to 2°C is looking increasingly challenging and if we fail, we are faced with further rises in temperature and an even greater adaptation challenge. In 2009, Dr Vicky Pope, Head of Climate Change Advice at the UK Met Office, stated: “Even with drastic cuts in emissions in the next 10 years, our results project that there will only be around a 50% chance of keeping global temperature rises below 2°C ... if the world fails to make the required reductions, it will be faced with adapting not just to a 2°C rise in temperature but to 4°C or more by the end of the century.” A 2°C increase in global temperatures will create severe stress in many parts of the world. The Prime Minister of Barbados in a recent speech⁶ warned delegates that: “2°C spells disaster for Barbados... it is not acceptable.”

In 2007, the Intergovernmental Panel on Climate Change (IPCC) – the most authoritative scientific body on climate change – confirmed the scientific evidence that climate change is already under way:

- “Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level.”

- “At continental, regional, and ocean basin scales, numerous long-term changes in climate have been observed. These include changes in Arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones.”

We can see the incremental changes that have already taken place in the UK. Figure 1 from the UK Climate Projections (UKCP09) illustrates that over the last decades of the 20th century, average temperatures in the UK increased significantly across all regions. Changes in both precipitation and soil moisture deficit have also been recorded, along with a rise in sea level. There have also been significant implications for biodiversity in the UK with changes in species populations and distribution.

The UK Met Office estimated with high probability that the risk of extreme weather events, such as the European heat wave of 2003, has already doubled from 1 in 1000 years to 1 in 500 years, due to the effects of man-made greenhouse gas emissions.⁷ The Met Office has stated that by the 2040s heat waves similar to 2003 will have a return period of 1 in 2 years. Temperatures above 30°C and approaching 38°C will become normal during summer in southern England.

Successful businesses already cope with climate risks, which range from typical day-to-day and seasonal changeability in weather, to climatic differences across the various regions in which a business operates. Most businesses have implemented practical strategies to manage climatic uncertainty and minimise disruption.

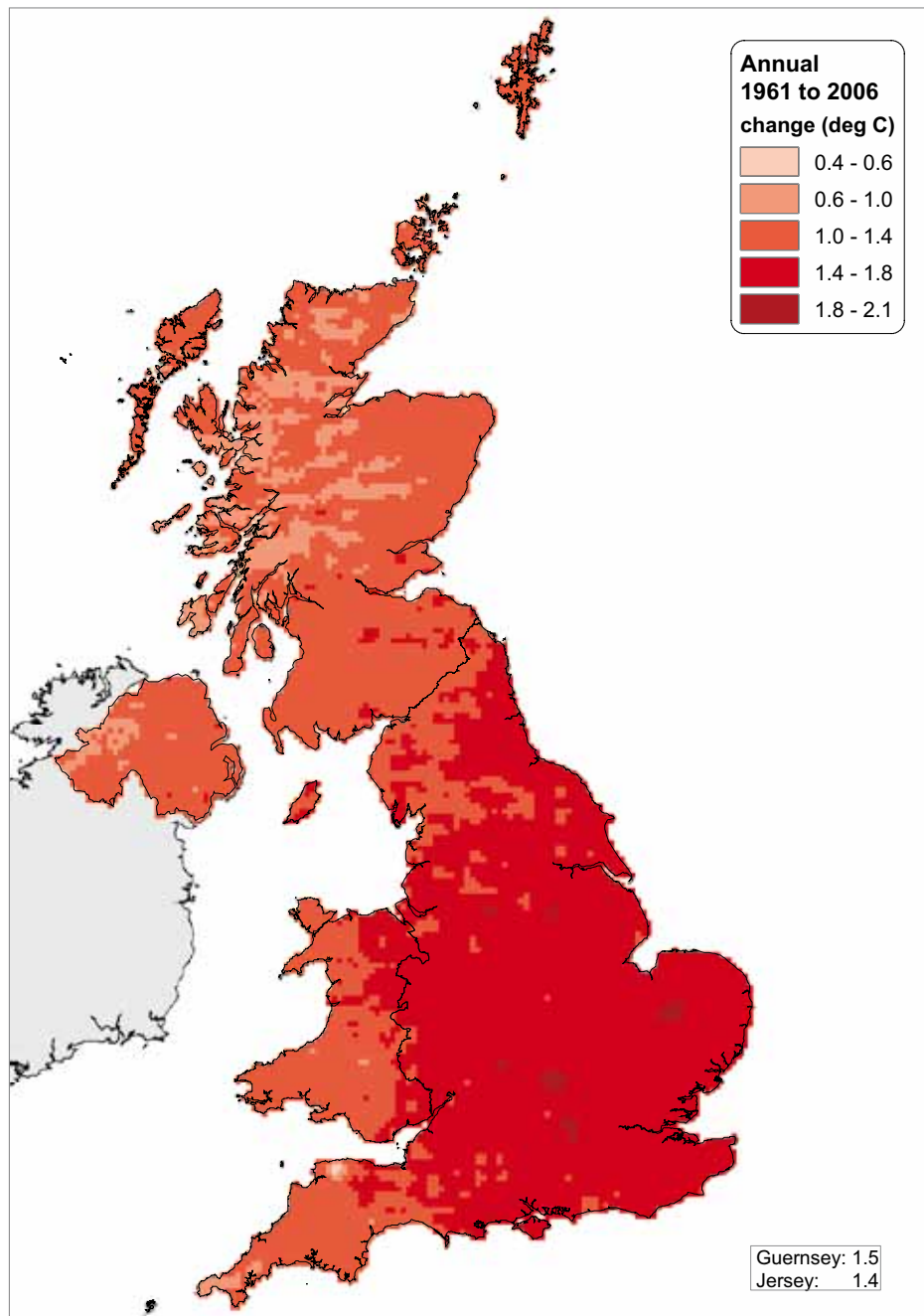
These strategies continue to be a necessity in coping with natural climatic variability. However, the baseline climate is changing, and business decisions and practices will need to evolve as a result.

⁵ Prospect, Vol. 148, July 2008.

⁶ ‘Climate change and the Caribbean: strengthening the science policy interface’, Barbados, 18 November 2008.

⁷ Stott et al. 2004.

Figure 1 – Change in annual average daily mean temperature (in degrees Celsius) between 1961 and 2006



Source: Met Office. UKCIP08: The climate of the UK and recent trends (2008)

Businesses need to understand that our past climate is no longer a robust basis on which to plan for the future.

We have already seen the significant impacts of extreme weather events around the world. In recent years in the UK we have experienced severe droughts, heat waves, wind storms,

and flooding. These are indicative of the events that climate change scenarios project and are likely to become more frequent. While no single weather event can be directly attributed to climate change, climate change increases the chances of these kinds of events occurring.

The impacts of a changing climate

Under continuing climate change we can expect:

- Increasing climatic variability
- Rising temperatures
- Increasing risk of heat waves
- Changing patterns of rainfall
- Increasing risk of drought and flood
- Sea-level rise
- Increased frequency and severity of sea storm surges
- Possible increased storm intensity and frequency.

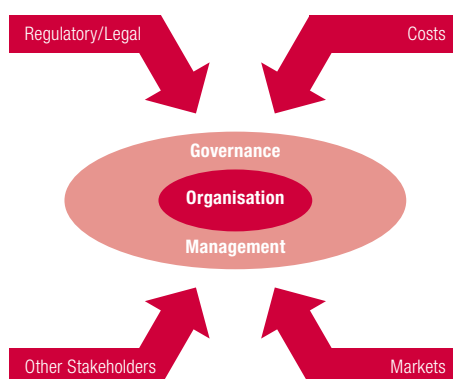
In the UK context, climate change projections show a trend in the seasonality of precipitation, with UK winters becoming wetter, and summers increasingly dry. In addition, the Gulf Stream will continue to exert a very important influence on UK climate, although its strength may weaken in the future.

The UK Climate Projections due for publication in 2009 (UKCP09) will provide a range of products, including a series of probabilistic climate change scenarios.

“BP sees climate change as an issue increasingly linked with its business and operational plans, rather than as a purely environmental matter, and is therefore increasingly integrating management of climate change into the existing strategic and operational processes within the company.”

John Wells,
Vice President Environment, BP

Figure 2 – Drivers for corporate adaptation action



Source: Adapted from the 'Energy & Efficiency Framework', IBM Climate Change Centre of Excellence

Corporate drivers for action

Inevitable climate change will have impacts for all companies. The key drivers for adaptation will be experienced through regulatory and legal liabilities, changes in cost profiles, market transformations, stakeholder interest and governance (see Figure 2). Some examples of how the drivers would affect companies are given in the following paragraphs.

Regulatory and legal drivers

We are seeing changes in legislation, regulation and in supporting guidance, codes of practice and standards in response to the impacts of climate change.

The UK's Climate Change Act 2008 introduced the concepts of a national risk assessment and statutory risk assessments for public authorities. It also provides the Government with discretionary powers to require companies providing essential utility services to assess and disclose the impacts climate change might have on their business. The longer the delay by business in responding to inevitable climate change, the more likely we are to see governments in the UK and elsewhere introduce more prescriptive regulation on adaptation.

Those companies that fail to prepare for these changes may stand to lose competitive advantage and market share. This could impose future liabilities which may require remedial action. Climate-proofing strategies and projects can be a sensible adaptation action.

The wealth of information from the scientific community, academia, research institutions, government, government agencies, trade associations, professional institutions and NGOs is so great that no company or no director, senior manager and professional advisor could claim ignorance of the consequences of climate change.

There is reasonable foreseeability of the impacts of a changing climate and it is incumbent upon every decision maker to demonstrate they have used the best available information. As the financial impacts of climate change and adaptation begin to be recognised and quantified, we are likely to see the use of litigation as a means to recover costs incurred because of changing climatic conditions. The legal costs and reputational damage associated with defending climate change actions could be enormous.

Cost drivers

We can expect to see changes in cost profiles working through a company's business model. These costs will in part be attributable to the adaptation responses by other companies and stakeholders (e.g. governments, local communities) as they seek to manage the impacts.

Security of water and energy supplies, seasonal shortages, and changes in raw water quality will all have cost implications. Disruption to utility supplies will increase the risk of business disruption.

Commodity prices will become more volatile in response to the impacts of climate change. In particular we can expect to see significant changes in agricultural yields and fisheries catches driving up prices. Companies will be faced with increasing costs as they endeavour to source agricultural produce from new areas of the world in response to changes in the geographical viability of crops.

Disruptions to supply chains and transportation logistics will become an increasing risk. Those companies reliant upon global supply chains will have greater vulnerability.

Operational costs will increase in response to changes in the efficiency of plant and equipment under higher

“Cadbury is taking action on the adverse effects of climate change through its Cocoa Partnership and also developing adaptation action as part of its 'Purple Goes Green' programme, encouraging good water management.”

Ian Walsh,
Head of Environment, Cadbury

temperatures, modified humidity and water quality.

Actions to maintain and/or improve employee workplace conditions in the face of increasing temperatures and changes in health risks could have considerable cost implications. For example, the effect of introducing a maximum workplace temperature standard in the UK would place a significant cost burden on companies.

We may also see changes to credit ratings and the cost of capital based on actual and perceived climate change impacts.

A direct correlation between climatic impacts and costs is most apparent in the Insurance sector. Major events and their increasing frequency – for example flooding in the UK, category 4 and 5 hurricanes in the USA and Caribbean, forest fires in Europe and Australia and windstorms in Europe – have already demonstrated that insurance companies are very vulnerable to climatic changes. Previous work by Acclimatise for the Association of British Insurers in 2005 demonstrated the scale of the potential risk.⁸ With the benefit of more recent information, the costs that were identified in 2005 already underestimate the scale of the problem.

Market drivers

Companies will need to review their current products and services to see if they remain viable in the future considering changes in customer needs and behaviours. New products and services will be required to meet changing customer expectations and to help customers adapt to climate change.

The demographics and geography of markets and customer bases will change over time. Companies will need to understand the implications of increased stress on unstable economic, social and environmental systems in vulnerable countries, due to both direct and indirect climate change impacts. New business opportunities will be available for those companies that understand the potential impacts ahead of their competitors.

Climate change will have significant impacts on national internal security

in many parts of the world. The increasing risk of international territorial disputes will have clear implications for many companies and their markets. Companies will have to consider how geo-political risks will change over the next 10 to 20 years.

Companies who are able to project a climate resilient and climate sensitive image are likely to gain a competitive advantage.

Stakeholder drivers

Investors and other stakeholders – including market and financial analysts, governments and regulatory agencies, consumers, local communities and NGOs – will place greater pressure on businesses to address the risks and opportunities posed by climate change as they become more aware. Companies will be faced with increasing demands for ever greater disclosure of risks and impacts.

Similarly, investors are increasingly likely to favour companies that proactively embrace climate opportunities and adapt to minimise risks. Creating sustainable businesses able to become climate resilient will be seen as a beneficial attribute.

Governance and management

The combined effect of these drivers will translate into increasing pressure on companies to demonstrate that their system of governance is adequately assessing and managing the risks of inevitable climate change.

Already, the use of shareholder resolutions to encourage companies to address climate change risks has increased dramatically. Ceres (Coalition for Environmentally Responsible Economy) noted that a record high of 57 climate-related resolutions were filed with US companies during the 2008 proxy season. Of that figure, almost half were withdrawn because the businesses positively addressed the issues involved in the resolutions.

The use of other instruments, such as investor meetings and the CDP to gather climate-related business information, may also develop and impact on corporate governance. Companies will see their governance, and the quality of their management response challenged more often.

“Lloyds TSB has effectively identified both the direct impacts of climate change on its business continuity and the indirect impacts, via its customers. Given the breadth of its business, it is working with a wide range of stakeholders ... in order to manage and mitigate the risks and support its customers.”

Paul Turner,
Head of Sustainable Development,
Lloyds TSB

In response to increased annual flood claims (a tenfold increase on business-as-usual claims and a £113 million increase in weather-related claims), Lloyds TSB is working with the Association of British Insurers to develop a statement of principles in flooding which aims to instigate an industrywide collaboration to improve monitoring, mitigation and management of floods.

“Carnival Corporation & plc recognises that its operations may be significantly affected by increased extreme weather events. Therefore it is taking action to reduce its vulnerability by creating alternative ports of call for its cruise lines, whilst also addressing and managing the risk of higher disease incidence.”

James Hunn,
Vice President Corporate
Environmental Compliance,
Carnival Corporation & plc.

⁸ See ABI and Acclimatise (2005)

2 Results From The Analysis

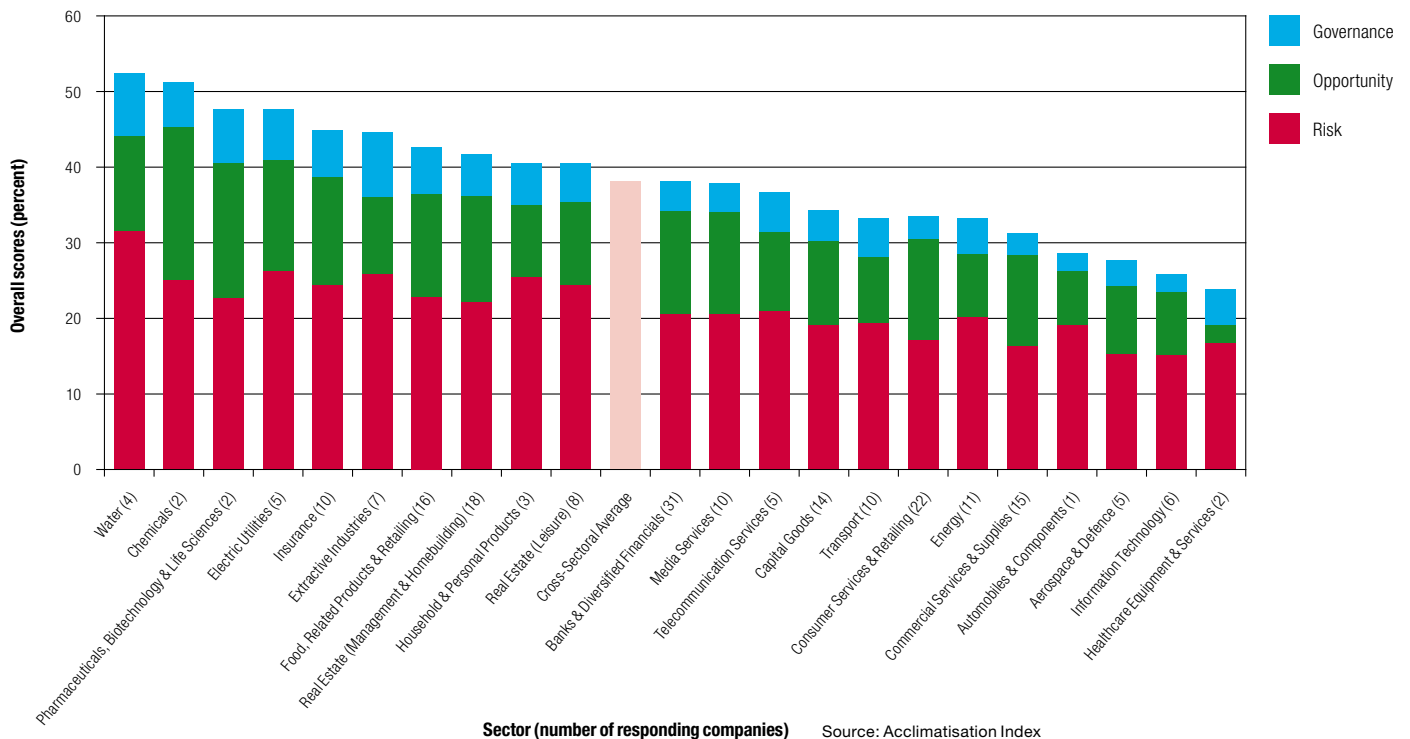


The analysis has been undertaken using our **Acclimatisation Index** methodology. This enables a semi-quantitative analysis of the responses recognising the scope of the questions. The Index can take into account information from other sources to provide a more comprehensive analysis if needed. The Index also allows a relative score for each company to be calculated, although these scores are not available as part of this project.

The **Acclimatisation Index** has been used to analyse the resilience of UK FTSE 350 companies to climate change in response to questions contained within sections 1 and 4⁹ of the CDP questionnaire. It describes how FTSE 350 companies understand the risks and opportunities they face as a result of the changing climate, and how they plan to adapt to them.

- Companies show greater awareness of the need to reduce greenhouse gas emissions than of the risks and opportunities of changing climatic conditions
- FTSE 350 respondents averaged a low acclimatisation score of 38%, which carries four major lessons:
 - Adaptation remains at an early stage of assimilation into core operations and/or strategy for most sectors
 - In general, while some companies have begun to assess their risks, fewer have moved on to action
- The physical impacts of climate change are most often seen as risks to bottom lines rather than as opportunities for increased profits, market share or goodwill
- Climate change adaptation is still considered an environmental rather than a core business issue, as observed through answers on governance.
- High individual performances indicate that some companies have already identified material business consequences from the changing climate and thus may be gaining competitive advantages.

Figure 3 – Average Acclimatisation Index™ scores for the FTSE 350 sectors



⁹ Excluding question b 'Individual Performance' of section 4 which focused on performance towards GHG targets.

It should be noted that the population samples between sectors vary.¹⁰ Figure 3 presents the average scores achieved by all represented sectors.

Headline results

Adaptation: an unexplored corporate issue

The impacts of climate change expose companies to potential operational, regulatory, reputational and financial risks.

87% of the FTSE 350 respondents acknowledge that their company is exposed to the impacts of a changing climate and 69% report to be taking action. The analysis indicates that adaptation remains limited in most companies and sectors to isolated actions. There is little evidence of companies taking a business-wide approach and developing comprehensive action plans. Only 38% provided a response indicating that a quantified analysis of risk may have been undertaken.

The highest overall scoring sector is Water. Its four responding companies serve as a benchmark of 'good practice' for all other industries.

Other sectors with high overall scores include Chemicals, Pharmaceuticals, Biotechnology & Life Sciences, and Electric Utilities.

Only two of the 22 responding sectors attained more than 50% of the total points available (Water and Chemicals).

Unexpectedly, considering the high vulnerability of the Insurance and Food, Related Products & Retailing sectors to climate risks they were not among the highest scorers.

The Healthcare Equipment & Services, Information Technology, and Aerospace & Defence sectors achieved the lowest overall scores, suggesting that companies in these industries:

- May not have considered the issue of adaptation
- May not believe themselves to be at significant risk
- Do not believe that they have substantial climate opportunities.

Companies are generally more aware of the risks than the opportunities

The number of companies identifying business opportunities is far lower (32%) than those reporting risk exposure.

This is reinforced with business sectors scoring higher on the **Acclimatisation Index** in the assessment and management of climate risks, than in the assessment and maximisation of climate opportunities.

However, both the Chemicals and Pharmaceuticals, Biotechnology & Life Sciences sectors showed a very low differential between the points scored for risks and opportunities. On average, they achieved the best scores in the opportunity section.

Governance implications

Overall, the results on governance indicate that FTSE 350 respondents have yet to recognise the importance of embedding adaptation issues into their governance systems by assigning internal responsibilities for this task, reporting on their adaptation efforts, and engaging with policymakers.

15% of the respondents provide some evidence of integrating adaptation in their corporate governance.

The **Acclimatisation Index** scores on governance are, on average, low for all sectors. Extractive Industries and Water come out on top. Due to the scope of the questions on governance, most answers do not specifically refer to adaptation and do not allow precise conclusions to be made.

"Biffa is maximising the opportunities that have resulted from climate change by taking steps to adapt its services to more complex waste collection and disposal as a result of changing climatic conditions and changing consumption patterns."

David Savory,
Director Environment & External Affairs, Biffa Waste Services

"Rio Tinto has partnered with respected research centres to determine key physical risks associated with climate change, producing detailed site assessments and resulting in the development of adaptation measures for the risks identified."

Peter Cunningham,
MD Energy and Climate Strategy, Rio Tinto

Rio Tinto has partnered with the Hadley Centre for Climate Change in the UK and the University of Oklahoma to generate climate models for the areas in which it operates with resolutions as high as 20km². Using this climate data, Rio Tinto has identified risks associated with changes to parameters such as temperature, rainfall and sea level for six sites.

These sites were selected on the basis of their remaining life, prospective developments and expansion, and their location in climate sensitive parts of the world. The assessments led to the implementation of adaptation measures, such as water-use strategies to respond to drought and flooding.

¹⁰ The following sectors have a population sample inferior or equal to three: Automobiles & Components, Pharmaceuticals, Biotechnology & Life Sciences, Chemicals, Healthcare Equipment & Services and Household & Personal Products.

While Figure 3 shows sectoral results based on scores of responding companies, Figure 4 incorporates a 0% score for non-responding companies. This slightly changes the make-up of the overall results, with the Water sector remaining on top, behind Electric Utilities. Other high scorers include the Food, Related Products & Retailing, Real Estate (Management & Homebuilding) and Insurance sectors.

Sector vulnerabilities vary

Vulnerability to climate change varies significantly from sector to sector and company to company. When investors examine sectoral scores, they may need to consider that each industry and company is exposed to different levels of risks and opportunities arising from climate change.

Clearly, some sectors are more vulnerable to the impacts of climate change than others. As such, Figure 5 presents the levels of exposure to climate risks and opportunities of each sector considered in this analysis as determined via the **Acclimatisation Index**.

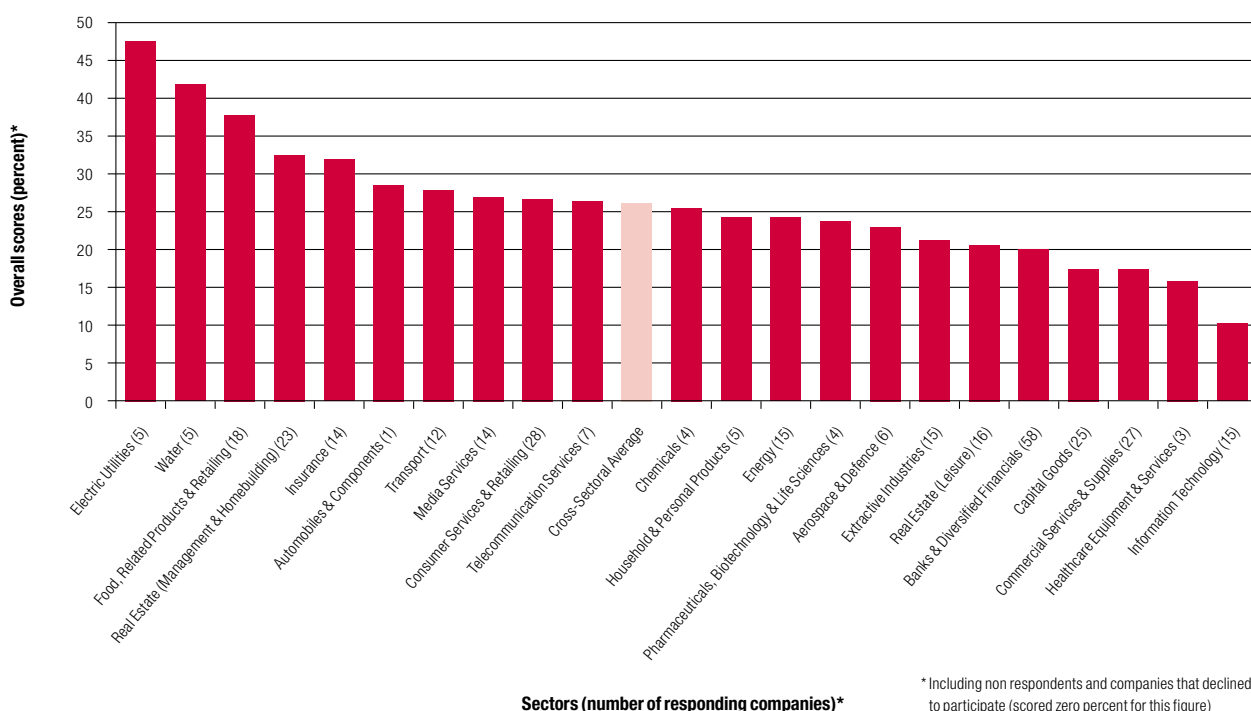
These different levels of exposure are explained by many factors, including:

- Operational factors such as asset performance and integrity, operations and processes, emergency planning, business continuity and logistics, supply chains, products and services, and workforce health and safety
- Stakeholder-related factors such as regulations, contractual agreements, markets and customers, access to capital as well as investors, brand and reputation, and market-share
- Social factors such as ‘licence to operate’ and resilience of local communities
- Environmental factors such as changes in species distributions, habitats and ecosystems.

Sectoral exposure to climate opportunities might also vary in size and immediacy. For example, the Insurance sector is already embracing the market opportunities of new insurance covers against climatic factors, such as alternative risk transfer mechanisms.

- Water and Electric Utilities companies both achieve consistently high response rates and high overall scores, thus securing positions as highest performers on adaptation ‘good practice’.
- In the case of Water companies, the business risks and opportunities are being quantified and managed as part of core strategic and operational functions because of regulatory, cost, market and stakeholder influences.
- Sectors among those to be affected most by both extreme and gradual changes in climate – either because of their dependence on natural resources, like the Food, Related Products & Retailing and Electric Utilities sectors, or because of the particular nature of their assets, as with Transport and Real Estate – do not appear among the best achievers. This may be a signal to investors of possible accrued liabilities and financial losses in the future.

Figure 4 – Total Acclimatisation Index™ scores including non-respondent and non-participating companies (scored as zero %)



* Including non respondents and companies that declined to participate (scored zero percent for this figure)
Source: Acclimatisation Index

Opportunities for consultancy services around business adaptation and resilience are also becoming more visible to commercial services companies. The construction sector is faced with increased demand for more resilient materials and asset design.

The combination of exposure to climate risks and opportunities forms a composite score that can be helpful to investors in understanding how different sectors need to prepare in different ways to climate change.

Most sectors that are highly exposed achieve scores that are higher than the overall average, suggesting a correlation between levels of climatic exposure and amount of adaptation action.

However, a few sectors with high levels of exposure to climate change did not score well, which might suggest a lack of ‘preparedness’. In particular, the Healthcare Equipment & Services, Aerospace & Defence, Commercial Services & Supplies, Energy, and Transport sectors all received scores that were significantly lower than the cross-sectoral average.

In addition, some sectors with low climate exposure scored particularly well, especially the Chemicals, Household & Personal Products and Media Services sectors.

The Water sector appears as a climate change adaptation leader and a benchmark.

Similarly, Pharmaceuticals, Biotechnology & Life Sciences and Electric Utilities score highly in terms of how they assess and manage adaptation.

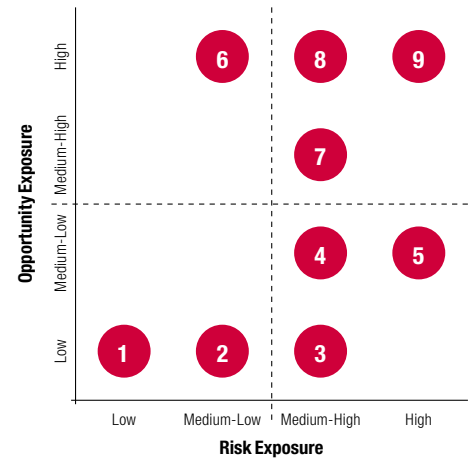
The Energy and Transport sectors score remarkably low, despite their high exposure to climate impacts. Regardless of their mitigation performance, the information they provided did not demonstrate a thorough consideration of adaptation.

UK FTSE 350 key themes

Several themes can be drawn from the questionnaire results and the sectoral perspectives highlighted above.

Building business resilience to climate change remains a relatively new issue. This can partly explain the low acclimatisation score of 38% across all sectors. While extreme weather events – such as hurricane Katrina in the USA and the European heat wave of summer 2003 – have alerted many companies to the importance of adaptation, the tipping point in climate awareness has not yet occurred in all sectors.

Figure 5 – Sectoral levels of exposure to climate risks and opportunities



- 1. Media Services
- 2. Chemicals, Automobiles & Components, Household & Personal Products
- 3. Banks & Diversified Financials, Telecommunication Services
- 4. Aerospace & Defence, Consumer Services
- 5. Transport
- 6. Commercial Services & Supplies, Information Technology
- 7. Capital Goods, Extractive Industries, Healthcare Equipment & Services, Real Estate (Homebuilding)
- 8. Pharmaceuticals
- 9. Water, Food, Electric Utilities, Energy, Real Estate (Leisure)

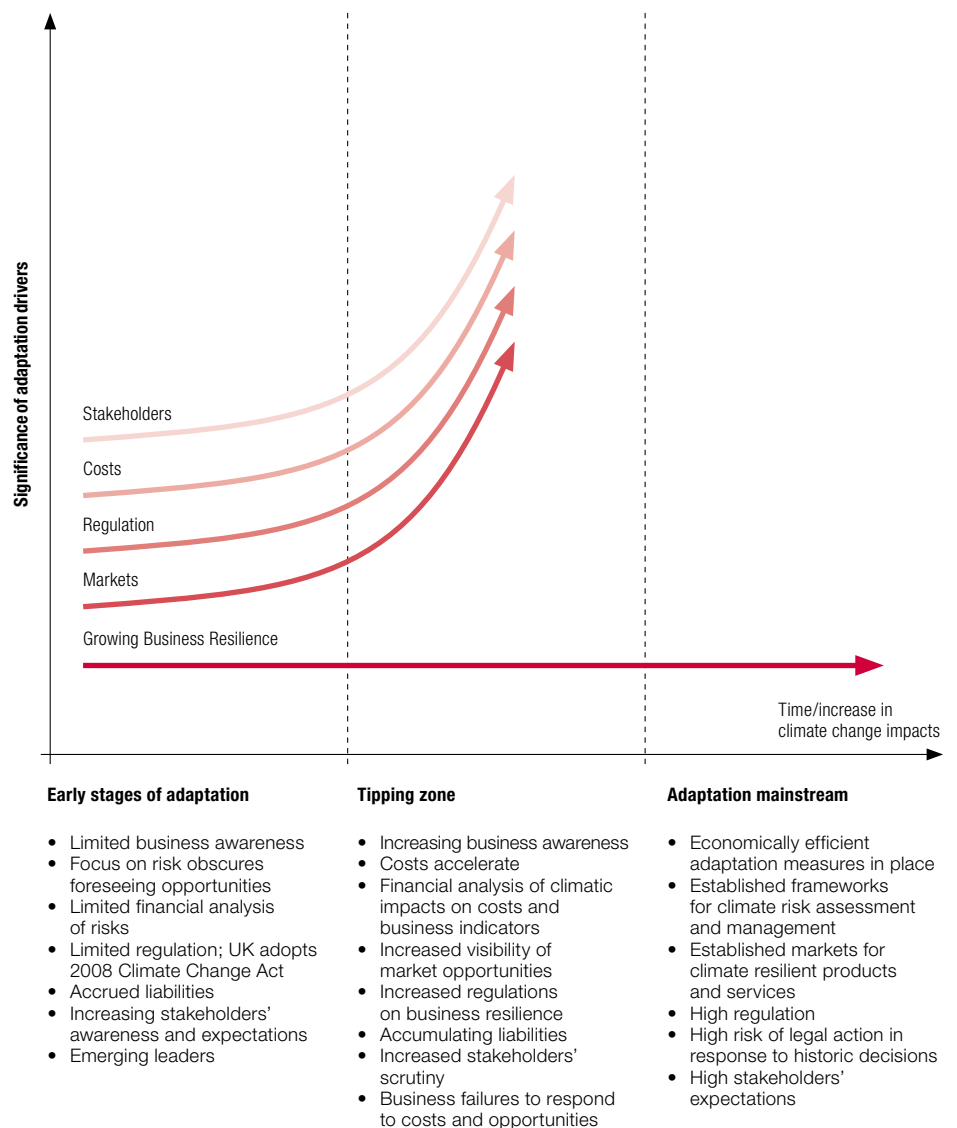
Source: Acclimatisation Index

- In many sectors where the direct and indirect impacts of climate change in the foreseeable future might be significantly relevant to bottom lines, directors are not complying with their fiduciary and statutory responsibilities.
- Most companies might need to build their capacity to deal with uncertainty, which should not be an excuse for inaction when significant business impacts could occur.
- Companies in general have yet to implement purposeful actions to manage their risks and maximise their opportunities. Appropriate planning, managerial, financial and technological solutions are elements of thorough business adaptation.
- In many cases the joint importance of science and technology in building business resilience against extreme and gradual climatic changes has yet to be acknowledged.

“United Utilities has assessed the risk of climate change to their assets and are developing plans to adapt their services; the company understands the impacts of climate change on its value chain and has maximised the opportunities that arise from it through a host of measures.”

Chris Matthews,
Head of Environment and Sustainability, United Utilities

Figure 6 – The landscape of business resilience to climate change



Source: Acclimatisation Index

Figure 6 shows that building business resilience to climate change will gradually become more mainstream in response to the drivers of climate adaptation identified in Section 1 of this report (regulatory and legal liabilities, changes in cost profiles, market transformations, stakeholder interest, and governance, as illustrated in Figure 2).

As previously noted, climate change impacts are mostly recognised as risks rather than opportunities. Opportunities will become more visible as the physical effects of the changing climate increase, impact awareness grows and customers change their behaviours.

The high variation of individual company scores within most sectors indicates that there are pace-setters. Those companies that embrace climate change adaptation in the early stages are well-positioned to gain competitive advantage and have longer term sustainability.

The analysis demonstrates that adaptation is generally considered to be an environmental rather than a business issue. This is illustrated by the low average scores achieved for governance. Those companies that disclose information on the impact of inevitable climate change on their business in their environmental,

sustainability or corporate social responsibility reports still see this as a 'green-issue' rather than mainstream business risk. Reporting of risk and impacts to business models – both material investor interest areas – should be included within financial reports and in the business review.

The analysis revealed a limited use of the available scientific information and data that exists. While many companies did have a broad understanding of what a changing climate would entail in terms of physical impacts, only a few reported using climate scenarios and expert advice to understand how they will be impacted.

Technological solutions do not feature in companies' risk management options. However, for example, information technologies, such as smart meters and sensors, are increasingly used for monitoring the impacts of climate change on performance and consumer behaviour.¹¹

Corporate leaders

Based on existing published information, two sectors stand out as being those that are most aware of the implications of a changing climate for their business models: Insurance and Water. The response by the insurance industry has been well documented not least in a number of reports prepared by the Association of British Insurers and through the ClimateWise initiative.

The Water sector provides a benchmark for other sectors and in particular those with large fixed assets. Other sectors should take note of the scale of investment by the UK water industry in building business resilience to climate change. If the water companies acknowledge the risks and opportunities to their customers then one would expect that their commercial customers in turn, represented by every other business sector, should have climate change on their risk radar screens.

UK water companies show a high degree of maturity relative to other sectors in their approach to risk assessment and risk management and the integration of climate change into their business models. They have already entered the 'tipping zone' of business resilience (as outlined in Figure 6) and are rapidly moving towards 'adaptation mainstream'.

United Utilities plc for example, in its Strategic Direction Statement, states that: "The most significant development discussed in this document is the challenge of climate change – adapting to its effect on our assets and reducing our impact."

All of the industry's key regulators (Government, Ofwat, the Environment Agency, Scottish Environment Protection Agency, and the Drinking Water Inspectorate) have identified specific requirements for the water companies to meet. A key element of the regulatory business plans submitted by the companies to Ofwat this year will be their response to climate change and the implications for levels of service, and capital and operational expenditure.

The water industry has understood that the sole focus on extreme events is potentially misleading. Incremental changes to our climate are more subtle and their impacts on business models may pass undetected until critical thresholds are breached. The responses may result in 'step-changes' for a company, increasing operational costs beyond forecasts, falling revenues, unplanned capital investment and additional balance sheet financing to manage the consequences. This point has now been recognised by Ofwat.

The industry has recognised that customer behaviour (both domestic and commercial) will play a major role in the response by companies to climate change and its impact on business models. Companies are looking at the opportunities to use innovative price mechanisms and metering. They have also recognised the longer term benefits of improving water efficiency as a key adaptation response.

"Future climate change is often thought of in terms of low-frequency, high-impact events, such as extensive floods or prolonged droughts. However, the effects of a gradual shift in everyday conditions could be equally important. This is particularly relevant in the water and sewerage sectors where the extensive asset base (for example, pipes, sewers and treatment works) is influenced by the weather conditions. Serviceability is the capability of a system of assets to deliver the right level of service to customers and the environment both now and in the future. It is essential that the right sets of measures and monitoring processes are in place to track serviceability in a changing climate."

'Preparing for the future – Ofwat's climate change policy statement' 2008

"Part of our adaptation activity will involve influencing customer behaviour towards a more water-efficient lifestyle. More customers will be metered between 2010 and 2015 and we will trial new pricing approaches to encourage and reward conservation. We also expect to ramp up our water efficiency activity."

'Where we are heading', United Utilities, November 2007

¹¹ Totty, 2009.

3 Developing Climate Resilient Businesses



“The significance of climate change for businesses is not limited to reducing greenhouse gas emissions. Inevitable climatic changes in the foreseeable future may present material risks and opportunities...”

“Barclays is developing its understanding of these potential impacts, and the possible need and mechanisms for incorporating them into credit risk analysis and management. In addition to participation in various climate research programmes, such as the London Accord, Barclays is also collaborating with the Department for International Development to establish a greater appreciation of opportunities to improve the climate resilience of vulnerable communities. Incremental, sometimes minor, refinements to the design of infrastructure projects can reduce the climate risk not only to the project being financed, but also to the benefit of local people.”

**Christopher Bray,
Head of Environmental Risk
Management, Barclays**

Although there is uncertainty in the knowledge we have about the extent and rate of future climate change, there is sufficient information to enable robust decision-making to take into account the possible impacts on business models. Our previous report on the FTSE 350 in 2006 highlighted a number of challenges for companies. All of these challenges remain reinforced by the increasing evidence of climate change.

If businesses are to become climate resilient they need to draw on the recent experience from the current financial crisis. Concerns regarding short-termism, the level of risk management and control, and disclosure of potential risks have to be addressed. The evidence of climate change is overwhelming, the signals are already visible and “companies need to wake up now or sleep-walk their way into oblivion” (as stated by Alice Chapple, Forum for the Future).

Uncertainty should be a driver for analysis, rather than a reason for inaction. A business will only flourish if its leaders are adept at weighing risks and making robust decisions in the face of uncertainty. The successful business of the future is taking climate risks into account today, and is developing adaptive strategies and actions to manage the uncertainties. The existence of uncertainties regarding the business risks arising from climate change, should by itself act as a catalyst for companies to quantify the risks, monitor the impacts as they arise and be prepared for changes to their business models.

Understanding climate impacts on business models

The risk of increasingly severe and frequent extreme events due to climate change has grabbed the media headlines and been the focus of most of the work undertaken by companies to assess their risks. This is clearly important; the effects of a major event can have a significant effect on the future viability of a company.

Companies however need to take a more balanced and informed view of the likely impacts of climate changes and understand the risks and opportunities resulting from both extreme events and incremental change. Gradual changes to our climate are more subtle and their impacts on business models may pass undetected until critical thresholds are breached.

Business continuity and crisis-management responses are appropriate to manage the impacts of extreme events but have little relevance to incremental change. The latter requires companies to carry out fundamental reviews of their business models and check that processes are ‘fit for purpose’ and climate resilient under new operating conditions.

Assets and operational processes designed without any allowance for incremental change are likely to fail to meet future design criteria, operational performance targets, Key Performance Indicators (KPIs) and regulatory standards. Understanding the incremental changes in the climate and a company’s current thresholds, sensitivities and vulnerabilities are significant issues to be considered in any analysis of a company’s future financial performance. They should feature in corporate assessments of strategic, operational and project risks. For example, these impacts are well understood by water companies and feature in their business and investment planning.

It is also important for companies to recognise that climate change will have both direct and indirect impacts. The compound impacts are likely to reverberate through a company's business model – creating a 'pinball machine effect' as the impacts in one area rebound and have consequential impacts elsewhere in the value chain.

The direct and indirect impacts are particularly relevant for the supply chains of all companies. Increasing globalisation, outsourcing and just-in-time approaches to stock control already create significant risk exposure. Supply chain visibility – namely, being able to map out and understand linkages and relationships – as well as cost containment, will become more difficult under continuing climate change. Disruptions to global supply chains as the suppliers themselves become exposed in their own locations will become a major risk area for UK companies.

Companies should assess the risks and opportunities and develop risk management processes and actions to meet these challenges. Impacts will be felt by every business irrespective of their size, location, markets, products and services, and will affect all elements of their business model:

- Natural resources and raw materials
- Supply chains and logistics
- Fixed asset design and construction
- Asset operation, performance and maintenance
- Processes
- Asset values
- Markets, customers and competitors
- Products and services
- Workforces
- Local community and environment.

The perception of these risks by others will also have implications for investment, project and operating finance, credit ratings and insurance.

Understanding climate opportunities

Every risk always presents a business opportunity for a company, its suppliers and its competitors. The focus so far, and as evidenced by the analysis of the FTSE 350 responses, has been on understanding the risks. As the business resilience landscape unfolds and matures, companies will increasingly recognise that inevitable climate change brings opportunities.

Consumer preferences and needs will change; markets will open up in new locations and for new products and services. Those businesses that do not respond will lose out to their competitors, whilst those that recognise the opportunities will become sector leaders.

The Insurance sector is already looking at the opportunities. The Association of British Insurers for example, has been active in working with its members to consider new products and services. It has also explored the role the Insurance sector can play in influencing consumer behaviour.

During the present financial crisis we can expect to see many companies taking stock and revisiting their business models. This also provides an opportunity for companies to look at the strategic and operational issues they will need to address if they are to become climate resilient.

“AstraZeneca has recognised that climate change creates opportunities and not just risks by researching changing healthcare needs associated with climatic variability and the repercussions of more frequent and extreme climatic events.”

Keith Moore,
Senior HSE Specialist,
AstraZeneca

“The BT Group has assessed and identified the correlations between its bottom line and climate change risks by developing a comprehensive methodology for calculating the financial impact of environmental risks, including climate change.”

Donna Young,
Head of Climate Change
and Environment, BT Group

“With the new scientific evidence from the Climate Congress at Copenhagen, ClimateWise’s current focus to encourage the acceleration of members’ delivery against our principles and to extend the reach and influence of ClimateWise, could not be more urgent or important. We must look to enhance the insurance industry’s contribution to moving this planet onto a path where global temperatures are stabilised and we can adapt to the impacts of the inevitable changes to our social, economic and environmental systems.”

**Andrew Torrance,
Chairman, ClimateWise**

“Aviva has been influential in engaging with peers to better understand climate risks and integrating them into core business practices, whilst also playing a key role in the analysis of methods to reduce industrywide climate risks.”

**Zelda Bentham,
Environment Manager, Aviva**

Director challenges

The current financial situation shows all too clearly the consequences of failing to understand risk and uncertainty and then having to manage the consequences of entirely predictable surprises.

Directors have clear responsibilities to act in the best interests of their shareholders and in compliance with their statutory duties. These responsibilities and duties can only be met by directors if they have taken all reasonable steps to understand the risks facing their business.

Parallels can be drawn between the current financial crisis and the implications of inevitable climate change.

Many companies face problems as a result of their failure to understand and manage risks, which can be traced back to three fundamental issues:

- A focus on short-term return maximisation
- Inappropriate levels of governance
- Inadequate levels of disclosure.

Companies need first to understand the importance and inevitability of climate change if they are to respond to its impacts on their business models.

This implies the need to foresee at least some of the implications for their industry, and take appropriate steps in advance.

Taking this into consideration, what actions should directors take?

Understand the relevance of climate change to fiduciary responsibilities

Maximisation of returns, particularly over the short-term, has taken precedence for many directors. This is reinforced by the average three-year tenure of most board-level directors and remuneration initiatives.

A recent report from the Finance Initiative of the United Nations Environment Programme (UNEP FI)¹² gives a clear review of the law and understanding of fiduciary responsibility:

“We are sure the findings will be of broad interest and will help dispel the all too common misunderstanding that fiduciary responsibility is restricted by law, and solely and in a narrow sense, to seeking maximisation of financial returns.”

Directors need to act in accordance with their wider fiduciary responsibilities to create sustainable business growth and return over a longer time scale. Directors who focus on the response to immediate challenges at the expense of a balanced position on the risks facing their business arising, are not acting in the best interests of their shareholders, nor of those of their employees, customers and the communities in which they are located.

Ensure your governance meets the challenge

Amongst the many provisions of the UK's Companies Act 2006, directors are required to:

- Carry out their duties in a way which is most likely to promote the success of the company for the benefit of its members as a whole
- Understand the likely consequences of any decision in the long term
- Disclose the main trends and factors likely to affect the future development, performance or position of the company's business.

The scientific evidence that climate change is underway, that further climate change is inevitable and that impacts are already occurring in social, environmental and economic systems, is overwhelming. It is incumbent upon all directors to ensure that potential risks to their business models and value chains have been identified and assessed to understand the consequences of decisions and the factors affecting their company's future.

It is difficult to imagine that a court of law in the future will accept a director's argument that impacts of climate change on a business were not reasonably foreseeable in 2009. With this in mind the liabilities of historic decisions and those being accrued as decisions, continue to be made without due consideration of the climate change implications and may provide fertile ground for legal action.

Directors are advised to embed climate risk management into decision-making within their companies in order to:

- Take a wider long-term view of potential risks and opportunities
- Understand the impacts on business systems and value chains
- Understand the impacts on local communities and the environment.

Disclose the material climate risks businesses face

Timely and accurate disclosure of material risks is a fundamental requirement of market-based economies and for the companies that operate in them. Investors need to make informed decisions and can only do so if they have access to the relevant information. Non-disclosure is a failure in fiduciary responsibility and may be actionable under the UK Companies Act 2006.

A business should properly assess and communicate climate risks through their annual reports and business reviews if they are likely to be material to the future financial performance of the company. Using non-statutory CSR, sustainability and environmental reports is not acceptable for companies in sectors or locations at risk from climate change.

“Lloyd's survey of global CEOs and directors for its 360 risk project showed that only one in four companies changed their risk management strategy as a result of increasing weather-related catastrophes. Directors need to act now.

We welcome the 'Prepare-Adapt: 10 questions for Directors' which can be used to improve risk management and business resilience while discovering new business opportunities.”

Trevor Maynard, Emerging Risks Manager, Lloyd's

“We need more and better information about how companies and other assets will be affected so that we can make better informed decisions as to how we allocate our long-term capital.”

Peter Moon, Chief Investment Officer, Universities Superannuation Scheme

Prepare-Adapt: 10 questions for Directors

Investor groups are challenging companies, through initiatives such as the Carbon Disclosure Project, to disclose the actions they are taking to assess and manage the impacts of inevitable climate change.

In 2008 the Universities Superannuation Scheme, Railpen Investments, Insight Investment and Henderson Global Investors issued a report highlighting a number of issues on behalf of the investment industry regarding the implications of inevitable climate change for business. These issues included:

- The lack of attention given to the impacts of physical climate change that may have significant long-term implications for companies and their investors
- Tools need to be developed to aid companies and investors in understanding the risks and opportunities associated with climate change
- Climate change risks need to be incorporated into investment analysis and decision-making as they may affect the timeframes over which investment decisions are made
- Investors need to engage with companies to ensure they have appropriate climate change adaptation systems in place
- Investors also need to engage with policy makers to ensure the views of long-term investors are taken into account in policy.

Each of these issues can be turned around and used by directors to challenge their own companies to assess, manage, integrate and engage on the consequences of climate change. If investors believe there are questions to be answered then clearly directors should be ensuring that the correct questions are being asked within their own companies.

To aid directors, Acclimatise and IBM have jointly prepared their Prepare-Adapt set of questions to help companies take the right steps towards building corporate resilience to inevitable climate change. A simplified version drawing on a more comprehensive set of questions is provided below.¹³

Your Risks

01 What are the operational impacts of climate change on your company?

- How are your supply chains and suppliers' operations affected?
- What are the implications for the price, supply and demand for commodities (e.g. agriculture, fisheries, minerals), and services (e.g. water, energy, telecommunications and IT)?
- How will international and internal security threats due to climate change affect your local labour supplies and supply chains?

02 Which of your company's key operating assets are located in areas vulnerable to climate change impacts and what are the implications?

- How long would it take and what costs would be involved to relocate and reconfigure key operating assets?
- What are the implications of depreciating, abandoning or writing-off assets before normal end-of-life?
- How will the value of your asset portfolio change over time?

03 How sensitive is demand for your products and services to climate change impacts?

- How will customer needs, buying behaviour and ability to pay, change and over what timescale?
- What steps have you taken to ensure that your current products and services remain viable?
- What are the implications arising from changes in the demographics of your customer base?

04 How could current and future climate change regulations and industry standards affect your organisation and its reputation?

- What is your level of regulatory and financial exposure to the introduction of prescriptive legislation on adaptation, together with further legislation on urgent mitigation action as the reality of climate change becomes more pressing?
- How effective and auditable is your process for reporting regulatory and policy compliance?
- Which areas of your business are sensitive to media, NGO and local community concerns?

Your Opportunities

05 What new and enhanced existing products and services can you offer your customers?

- What steps are you taking to develop new or enhanced business opportunities that will provide competitive leadership?
- How will you develop brand stretch to take advantage of changes in customer behaviours and develop climate related markets?
- Can you provide products and services that will help customers predict, monitor, adapt, insure or recover from climate change?

06 What operational benefits could you enjoy from managing your response to climate change?

- How can you improve the attractiveness of your company to investors, banks, credit rating agencies, employees and potential recruits?
- How will you use the current economic crisis as an opportunity and an incentive to revisit your business model and respond to the growing social, environmental and economic challenges?
- What are the cost advantages if you can secure more favourable insurance cover by demonstrating strong operational risk management processes and a responsible climate-aware business?

Your Response

07 How clear and effective are your company's internal management responsibilities for climate change and your engagement with stakeholders?

- To what extent are your climate change leadership and management roles clearly defined, supported and empowered?
- How are you sharing knowledge with and informing governments, regulatory bodies, NGOs, and the media to manage and forecast exposure?
- What actions are you taking to ensure that the investment community, your bankers and insurers understand and support the steps you are taking regarding climate risk?

08 How well structured is your company's approach for managing climate change?

- How effective is your process for exploring longer-term scenarios and identifying risks and opportunity signals as they emerge to plan and act accordingly?
- How are you assessing the vulnerability of your suppliers, assets, operations, workforce and markets to changing risks?
- What steps are you taking to ensure that climate-driven business risks and opportunities are embedded into your capital investment and operational expenditure decision-making processes?

09 How can you ensure your company's approach is based on robust information and assumptions?

- How have you integrated the latest available climate science, climate change scenarios to inform your business planning and decisions?
- Are your management information systems for assets, supply chains, operations, markets and customers reporting on and monitoring climate change KPIs using realtime, interconnected and intelligent data?
- Can your information systems provide an early warning of operational risk?

10 How can you demonstrate that your company's climate business resilience plans are realistic and financially viable?

- What actions have you taken to understand and manage future liquidity and ensure sufficient contingency funding?
- How do your business continuity and crisis management plans reflect the changing risk profiles due to climate change and are they well-rehearsed?
- What steps are you taking to involve your employees, implement new technologies, and develop new skills, expertise and cultural change?

4 Why Directors Should Act Now



A call to action by Directors

- Start asking questions internally within your company and externally to your investors, regulators, suppliers, customers and the local communities in which you operate (we have provided questions in Section 3 to start this dialogue)
- Check that your knowledge management systems enable you to detect and monitor emerging impacts. Ensure that these extend to your suppliers
- Improve your internal climate change expertise and capabilities. Undertake your own research if there are knowledge gaps
- Develop a risk assessment process operating at strategic, operational and project levels using the best available science. Use scenario planning to help identify the 'what-ifs'
- Learn from others who are already integrating climate change impacts into their decision-making processes. Listen to and engage with your stakeholders
- Disclose the risks and opportunities to your investors so that they may make informed decisions
- Engage with climate change policy makers and ensure that your business is part of the solution not the problem.

In 2006, Acclimatise – working with the UK Climate Impacts Programme – published its first review of the UK FTSE 350 companies and their adaptation positions. In the three years since that report there has been some progress by several companies showing leadership in their sectors.

In the intervening period since the last report we have seen:

- The publication of the Stern Review
- The IPCC Fourth Assessment report
- A significant number of peer-reviewed scientific reports on climate change and the impacts on natural resource systems
- Clear evidence that the climate of the world has changed
- Major floods in the UK and extreme events in other parts of the world
- Action by the UK government to introduce national and public sector risk assessments
- Calls from developing countries for urgent funding on adaptation
- Constant media interest on climate change.

And yet for the most part UK companies are still failing to recognise the impact that inevitable climate change will have on their business models, and on their suppliers, workforce, markets, customers and stakeholders.

It is clear that we must reduce our emissions urgently to avoid global catastrophic climate change. However, whatever steps we take to reduce GHG emissions, we are now faced with increasing temperatures, changes in precipitation and rising sea levels.

Yes, there is uncertainty over the impacts (direct and indirect), timings and probabilities, but dealing with uncertainty and protecting business from risk is the measure of a well managed company. Uncertainty is not a reason for inaction; on the contrary it should be a catalyst for assessing the risks, monitoring the impacts, and taking steps to manage the financial, social and environmental consequences and exploring the opportunities.

During 2009 there will be many opportunities for directors to talk to governments, politicians, scientists, trade associations, and NGOs in the run up to the United Nations Framework Convention on Climate Change (UNFCCC) fifteenth Conference of the Parties in Copenhagen. Although the main emphasis of the conference will be on reaching a global emissions agreement, business must become fully engaged in the discussions on adaptation. The scale of the risks and opportunities and the essential role business should play as a solution provider, requires the full participation of business leaders.

The current financial situation was caused in part by our failures in risk management and poor corporate governance. But it was no surprise – the signals were available for those willing to see them.

If the business community is to avoid a far worse predictable surprise, then directors will need to act upon the clear signals that climate change is underway – now.

5 References And Further Reading



- Acclimatise and Synergy (2008). *Climate Finance, Business and Community: The Benefits of Co-operation on Adaptation*. Discussion Paper. Oxford, UK.
- Association of British Insurers and Acclimatise (2005). *Financial Risks of Climate Change*. ABI: London.
- Association of British Insurers (2007). *Insuring our Future Climate: Thinking for Tomorrow, Today*. ABI: London.
- Bray, C., Colley, M., and Connell, R. (2007). *Credit Risk Impacts of a Changing Climate*. Barclays Environmental Risk Management and Acclimatise: London, UK.
- Carbon Disclosure Project (2008). *CDP Report 2008*. FTSE 350. CDP: London.
- Dlugolecki, A., et al. (2009) *Coping with Climate Change. Risks and Opportunities for Insurers*. Chartered Insurance Institute: London.
- Dlugolecki, A. (2004). *A Changing Climate for Insurance: A Summary Report for Chief Executives and Policymakers*. ABI: London.
- Dowden, M. (2005). The forecast predicts legal liabilities. *Practice and Law. Estates Gazette*: London.
- Dowden, M. and Marks, A.C. (2005). Come rain or shine. *Practice and Law. Estates Gazette*: London.
- Firth, J., and Colley, M. (2006). *The Adaptation Tipping Point: Are UK businesses Climate Proof?* Acclimatise and UKCIP: Oxford.
- Hadley Centre (2005). *Climate Change and the Greenhouse Effect – A Briefing from the Hadley Centre*.
- Henderson Global Investors, Insight Asset Management, RAILPEN Investments and Universities Superannuation Scheme (2008). *Managing the Unavoidable: Understanding the investment implications of adapting to climate change*.
- IBM (2009). *The smarter supply chain of the future*. Chief Supply Chain Officer Study.
- Intergovernmental Panel on Climate Change (2007). *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the IPCC*. McCarthy, J.J., Osvaldo, F.C., Leary, N.A., Dokken, D.J., and White, K.S. (Eds). Cambridge University Press: Cambridge, p. 1000.
- Jenkins, G.J., Perry, M.C., and Prior, M.J.O. (2008). *The climate of the United Kingdom and recent trends*. Met Office Hadley Centre: Exeter.
- Lloyds (2006). *Climate Change: Adapt or Bust*. 360 Risk Project: London.
- Met Office (2007). *Climate change adaptation for UK businesses. A report for the CBI Task Force on Climate Change*. CBI Task Force on Climate Change.
- Mills, E., Roth, R.J., and Lecomte, E. (2005). *Availability and Affordability of Insurance under Climate Change: A Growing Challenge for the US*. Ceres.
- Stern, N. (2007). *The Economics of Climate Change: The Stern Review*. Cambridge University Press: Cambridge, p. 692.
- Stott, P.A., Stone, D.A., and Allen, M.R. (2004). 'Human contribution to the European heatwave of 2003'. *Nature*. Vol. 432, pp. 610-614.
- Three Regions Climate Change Group (2005). *Adapting to Climate Change: A Checklist for Development*. Greater London Authority: London.
- Totty, M. (2009, February) 'Smart roads. Smart Bridges. Smart Grids'. *The Wall Street Journal*: New York.
- UKCIP (2005). *A Changing Climate for Business: Business Planning for the Impacts of Climate Change*. Oxford, UK.
- UNEP Financial Initiative (2005). *A legal framework for the integration of environmental, social and governance issues into institutional investment*.
- World Business Council for Sustainable Development. (2007). *Adaptation: An issue brief for business*.

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