Global Reporting Initiative™

ACCA

High-impact Sectors: the Challenge of Reporting on Climate Change

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ACCA is the global body for professional accountants. We aim to offer business-relevant, first-choice qualifications to people around the world who seek a rewarding career in accountancy, finance and management. ACCA has 131,500 members and 362,000 students who it supports throughout their careers, providing services through a network of 82 offices and centres around the world.

Accountants are playing an increasing role in the accounting, compliance and reporting requirements of corporate social responsibility and have considerable expertise in these areas. ACCA champions the extension of corporate reporting to include the social and environmental aspects of a business and has launched awards for sustainability reporting in Australia and New Zealand, Hong Kong, Malaysia, Pakistan, Singapore, South Africa, Sri Lanka, the UK and North America.

In 2002, ACCA became the first professional body to be awarded the prestigious Queen's Award for Enterprise: Sustainable Development, in recognition of its leadership in the sustainability field.

ACCA is delighted to have had the opportunity to partner with GRI on this project. ACCA was one of the original group of GRI supporters and, as a torch bearer for sustainability within the accountancy profession, is proud to have been associated with GRI throughout its evolution into the de facto global standard setter for the sustainability reporting process.

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ABOUT THE GLOBAL REPORTING INITIATIVE

The Global Reporting Initiative™ (GRI) is a multi-stakeholder non-profit organisation that develops and publishes guidelines for reporting on economic, environmental, and social performance ('sustainability performance'). The GRI's Sustainability Reporting Guidelines have been used by over 1,000 organisations worldwide, with many more organisations considering them informally during the preparation of their public reports.

The Guidelines are developed through a unique multi-stakeholder consultative process involving representatives from reporting organisations and report information users from around the world. First published in 2000 and then revised in 2002, the Guidelines have now entered their third generation, referred to as the GRI G3 Guidelines which were released in October 2006.

www.globalreporting.org

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ACCA and the Global Reporting Initiative (GRI)

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This report is divided into four sections.

Section 1 provides an overview of current climate change initiatives and the changing landscape ahead.

Section 2 presents an analysis of carbon reporting disclosures across 14 high-impact industry sectors from 2003 to 2008.

Section 3 provides an analysis of carbon reporting disclosures in the BRIC countries (Brazil, Russia, India, China) and South Africa.

Section 4 comprises a series of expert perspectives on the corporate response to climate change. ACCA and GRI would like to thank Paul Dickinson, Martin Hiller, Professor Mervyn King, Professor Tim Jackson, Rory Sullivan and Lord Adair Turner for their insights.

Contents

Foreword from ACCA

For the last decade, the risks and opportunities posed by climate change have been climbing the corporate and investor agendas. In the months before the UN Climate Change Conference in Copenhagen, interest in this issue has seemed to reach a new high – in particular, interest in the corporate response to the risks and opportunities of climate change.

The core sections of this report use climate change disclosures by the corporate sector as a proxy for the corporate response to the climate change challenge.

Section 1 looks at the various mandatory and voluntary disclosure schemes in existence today. The implication of this section is that the disclosure web is growing tighter by the year.

Section 2 explores the way in which the climate change disclosures of a select group of 'high impact', largely developed-nation based, multinationals have expanded over a six-year period. The results of this ACCA-conducted research show that climate change disclosures have doubled over the six-year period 2003 to 2008 but, overall, fall far short of what informed financial statement users actually want.

Section 3 recognises that a proper response to the climate change crisis demands cooperation between the developed and developing world. In this section, using similar disclosure criteria to those used in section 2, GRI-led research focuses on the extent of climate change disclosures of corporations in the BRIC+SA nations (Brazil, Russia, India, China and South Africa).

Developing countries are expected to account for 75% of greenhouse gas **(**GHG) emissions over the next 25 years, with China alone already responsible for one third of the global total. If we accept the premise that reporting drives behaviour, the extent to which corporates in these emerging economic powerhouses embrace climate change reporting will be critical to the future of the planet. On the evidence of this report, BRIC+SA corporate reporters in high-impact sectors are laying good foundations. But, with the increased focus on carbon reduction, will companies be able to develop reporting at the pace required?

The commentaries contained in Section 4 of this report also signal that, from an expert commentator perspective, the corporate response may not have matched up to the real seriousness of the issues. 'Timid', 'sleepy', 'varied' and 'not yet sufficient' are typical of the views of our panel of experts.

Clearly there is a long road ahead. Corporate disclosures themselves are **not** dependent upon the existence of a globally enforceable climate change agreement. But corporate strategies **will** increasingly be tied to a future global climate change policy framework. The research contained in this report suggests that the standard of voluntary corporate climate change disclosure can still be improved – but the wider message is that performance may improve still further if the climate change policy framework governing and signalling to the multinational market place is firmed up considerably.

Roger Adams
Executive Director – Policy, ACCA

Foreword from GRI

As we approach the COP15 climate summit in Copenhagen, we do well to consider that, while governments spend months and years on climate negotiations, it is companies who are 'the elephant in the room'. They are the silent force – and a significant force they are: of the hundred largest economies in the world, 53 are multinational enterprises and only 47 are nation states.

It is therefore crucial to monitor what enterprises have done, and are doing, to measure and reduce their carbon usage. In recent years, in order to facilitate this, several instruments have been developed to establish a baseline, develop GHG reduction targets, and to measure the emissions and potential for reduction. That greenhouse gas (GHG) accounting must be performed in a transparent way is evident, meaning that information needs to be shared with all stakeholders, including national parties to the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and any agreement reached in Copenhagen and beyond.

The Global Reporting Initiative (GRI), the world's most widely used sustainability reporting framework, includes a core set of GHG accounting indicators among its range of wider environmental, social and governance (ESG) disclosure principles and indicators. Globally, over a thousand large companies now issue annual sustainability reports based on GRI and many include this information in their overall annual reports.

This report, combining the wealth of data available to long-term partners GRI and ACCA, provides a unique insight into the degree to which large companies around the world have begun to disclose their GHG accounting and strategies for reduction.

So what have companies done? How many large companies are transparent about their carbon footprint, mitigation and adaptation?

Encouragingly, this report shows that it is a very significant number. Yet the bad news is that less than half of the companies studied here at the global level give specific information about climate change through GRI indicators in their sustainability reports.

The second part of the study consists of a review of the sustainability reports of 32 large companies from the so-called BRIC+SA countries (Brazil, Russia, India, China and South Africa), the majority of which are from the metals and mining, and oil and gas sectors. The study shows that large companies from Brazil, China, India and South Africa report on their climate change policy; that they report on their climate change strategy and governance, as well as on perceived physical and regulatory risks. All of them engage in mitigation as well as adaptation actions. They set targets and measure them, although very few use external independent assurance, which is perhaps an area that needs further study. Some, but not many, of the Russian companies do the same.

So while some governments may be reluctant to take on binding GHG reduction targets, an impressive business leaders' group is fully engaged already, a significant number of which represent the BRIC+SA part of the world. This is an important message to the Copenhagen negotiators, to the business community and to the world at large.

Teresa Fogelberg
Deputy Chief Executive, Global Reporting Initiative

Teresa Fogelberg was head of the Netherlands delegation to the UNFCCC negotiations from 1999 to 2003, including the period when the Kyoto Protocol final agreement was completed under the Dutch UNFCCC Presidency.

Recommendations

Based on the results of this research, ACCA and GRI make the following recommendations for companies' climate change disclosures.

POLICY

Organisations should be including corporate operational and product climate change policies in annual sustainability reporting – either as part of the environmental policy or as a stand-alone statement. A company's 'position' on the science of climate change should also be explained, including a commitment to any binding targets such as those enforced by the Kyoto Protocol.

GOVERNANCE AND STRATEGY

Sustainability reports should explain how corporate climate change policy is governed and managed within the organisation, in terms of board level responsibility, management systems for climate change and emissions and CEO endorsement. Disclosures should also clearly outline how climate change issues and risks are incorporated into core business strategy and objective setting.

RISK

The risks to business associated with climate change have been widely documented and companies should be demonstrating in sustainability reports that there is a clear process in place for identifying and managing them. This can be part of a generic sustainability risk system, but it should be clear that climate change is part of it. The organisation should also be explaining what these risks are and how they are likely to affect the business' performance. This can include information on physical, regulatory, financial and reputational risks.

GHG EMISSIONS

Companies should be disclosing detailed trend data for GHG emissions, using both absolute figures and 'intensity'-based data (for example, CO_2 per tonne of product). The World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol is the most commonly used and referred-to guidance for greenhouse gas (GHG) emissions reporting and companies should be documenting its use as well as disclosing information in the right format (ie displaying Scope 2 and 3 emissions). Setting and disclosing quantitative, time-specific targets in both the short and long term is also important, to drive improvements and monitor progress. Performance against previous targets should also be included in company disclosures.

MITIGATION AND ADAPTATION

Organisational disclosures should include how the company is attempting both to mitigate its climate change impacts and emissions and to adapt to the risks posed by climate change through innovation. Supply-chain engagement for reducing the downstream carbon footprint is also a key issue that should be included in reports.

CREDIBILITY

Any disclosures on climate change and emissions should be as credible and robust as possible. This can be achieved by a number of mechanisms, including the independent verification/assurance of GHG-emissions data and claims, and the use of standards and guidance such as the GRI G3 environmental indicators, WBCSD GHG Protocol and ISO 14064 standards, to ensure that the information is credible, accurate and comparable.

1. Current climate change initiatives and the changing landscape ahead

This section was prepared by Alan Knight, Sustainability Consultant of Tayler Knight (www.taylerknight.co.uk).

1.1 Why carbon accounting and reporting?

Climate change headlines, based on compelling science and an increasing number of stories of devastating impact, are becoming increasingly urgent. The international body responsible for coordinating climate-change science, the Intergovernmental Panel on Climate Change (IPCC), has completed four comprehensive assessment reports to date, in 1990, 1996, 2001 and 2007. A sample of key messages from the 2007 report[1] make for stark reading:

> *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 average sea level.* (p. 2)
>
> *most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations. It is likely that there has been significant anthropogenic warming over the past 50 years averaged over each continent (except Antarctica).* (p. 5)
>
> *there is high agreement and much evidence that even with current climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades.* (p. 7)
>
> *continued GHG emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century.* (p. 7)

Phrases such as 'is very likely due' and 'high agreement' are about as definitive as scientists get. In non-scientific language, they wish to leave no doubt about the cause and significance of the impact and the need for action.

One of the most important actions to come out of the 1992 Rio Earth Summit (the United Nations Conference on Environment and Development) was the creation of the United Nations Framework Convention on Climate Change (UNFCCC).

The aim of this treaty is to stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

The treaty came into force in 1994 after ratification by 50 of the signatory countries. Since that time its implementation has been negotiated at an annual Conference of the Parties (COP), the first of which took place in 1995.

The UNFCCC treaty includes provisions for updates (called 'protocols') that would set mandatory emission limits. The principal update is the Kyoto Protocol, which was adopted at COP3 in 1997. The Kyoto Protocol did not, however, gain ratification in enough countries to come into force until 2005. The Kyoto Protocol sets emissions reduction targets for industrialised countries (called Annex I countries) for the period 2008 to 2012. Developing countries do not have targets under this protocol and are not expected to de-carbonise their economies unless developed countries supply enough funding and technology.

Annex I countries meet their targets by reducing their emissions (by allocating reduced annual allowances to the major operators within their borders), or by buying emission allowances to offset the amount by which they have exceeded their target. These allowances can only be produced by mechanisms agreed by all the parties to the UNFCCC. The mechanisms include emissions trading schemes, Joint Implementations (JIs) and the Clean Development Mechanism (CDM).

ANNEX I COUNTRIES

Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States.

1. *Climate Change 2007: Synthesis Report,* IPCC Secretariat, 7 bis Avenue de la Paix C.p. 2300 Geneva 2 CH – 1211, Switzerland.

Emissions trading schemes allow entities that operate below their allowed emissions to sell the excess allowances, and entities that operate above their allowed emissions to buy excess allowances. JI and CDM are mechanisms that allow operators in developed countries to acquire allowances by investing in emissions-reducing projects in other countries. At COP7, held in Morocco in 2001, the parties agreed to the operational rules for these mechanisms.

Since that time the meetings of the Conference of the Parties have focused on refining the technical approach to implementation and preparing for the period following 2012, when the current Kyoto agreement expires.

One of the first achievements of the UNFCCC was to establish a national GHG inventory. This requires all signatory nations, currently 190, to submit annual accounts of emissions within their jurisdiction. To do this, nations must be able to account credibly for the emissions and reductions within their boundaries.

To meet the national inventory requirements of the UNFCCC, we therefore need accounting, reporting and assurance at nation, entity and project levels. This requires the ability and capacity to:

- **identify GHG emissions** – including setting organisational boundaries; defining the scope for direct and indirect emissions; defining and categorising emissions sources (eg activities, machines, materials) and types (eg nitrogen oxides, sulphur dioxide, particulate matter (PM), carbon monoxide, carbon dioxide, etc); and defining the emissions-calculation methodologies

- **establish and manage GHG-emission inventories** – including defining quantification methods; identifying and collecting emissions data; estimating uncertainties; checking and validating the accuracy of data; conducting consistency checks on data; conducting quality control and generating auditable data; supporting trend analysis and forecasts; calculating and aggregating GHG emissions at any level of the organisation; and setting the reference baseline

- **set emission reduction objectives and targets** – including working with the GHG-emissions baseline and establishing projections; determining most material GHG sources; identifying legal requirements, emission reduction opportunities and good practice benchmarks; and negotiating emissions allowances

- **monitor and analyse performance** – including tracking performance and progress towards objectives and targets; training and motivating staff; tracking progress toward achieving compliance obligations; tracking, auditing and verifying data accuracy and integrity; and evaluating and managing abatement measures portfolios

- **report on and assure performance** – including preparing and communicating internal management reports; preparing and submitting compliance and registry reports; preparing and publishing external performance reports using verified data; and assuring external reporting.

To achieve these aims in a credible and comparable way requires rigorous, internationally accepted standards and guidelines. Much work has been done in this area since the signing of the UNFCCC in 1992 and the introduction of the Kyoto Protocol. The current international negotiations will lead to yet another, more globally encompassing mitigation and adaptation framework, which may yet again require new instruments. In the meantime, there is still much that can be done to improve the comprehensiveness, comparability and credibility of GHG-emissions accounting and reporting. This report looks at some of the most prominent current initiatives, the potential contribution of new initiatives and what is still needed.

1.2 Current initiatives in context

There is a wide range of initiatives related to GHG accounting and reporting: some are mandatory and some voluntary; some are international and some regional or local; some are for national accounts, some for organisational accounts and some for project accounts; some address the technical requirements of accounting and reporting and some are designed to compel or require accounting and reporting. The summary of initiatives (see Table 1.1) looks first at the most prominent standards and guidelines that address the technical requirements of accounting and reporting (be they international or local; required or voluntary), and then at initiatives designed to compel or require accounting, reporting and assurance.

Although these initiatives are the most prominent they are by no means the only ones. In a context in which much accounting, reporting and verifying of GHG data is still voluntary, in most cases there is still no compelling argument to standardise. A recent report from the Ethical Corporation Institute, based on a survey of FTSE500 companies, claims to have uncovered 34 different carbon-emission measurement methodologies, many of them proprietary. Such a large variation in practice cannot be helpful to markets and policymakers facing increasing exposure to carbon and climate change risk. We need to understand the quality and value of existing and proposed initiatives and how they can contribute to a more standardised, coherent and comparable future for measurement, reporting and verification (MRV).

1.3 Existing guidelines and standards

Table 1.1: Summary of initiatives

Initiative	National accounts	Organisational accounts	Project accounts	Reporting	Verification assurance
1. 2006 IPCC *Guidelines for National Greenhouse Gas Inventories*	X			X	
2. WBCSD-WRI GHG Protocol		X	X	X	
3. ISO 14064 *Greenhouse Gas Inventories and Verification*		X	X	X	X
4. GRI G3 GHG indicators that relate to energy use and GHGs		X		X	
5. Flexible mechanisms (JI, CDM) – project-based accounting and reporting			X	X	

2006 IPCC GUIDELINES FOR NATIONAL GREENHOUSE GAS INVENTORIES

The Intergovernmental Panel on Climate Change (IPCC) was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide the world with a clear scientific view on the current state of climate change and its potential environmental and socio-economic consequences. The IPCC is an intergovernmental scientific body open to all member countries of UN and WMO. It reviews and assesses the most recent scientific, technical and socio-economic information, produced worldwide, relevant to the understanding of climate change.

The 2006 IPCC *Guidelines for National Greenhouse Gas Inventories* were produced at the invitation of the United Nations Framework Convention on Climate Change (UNFCCC) to update the *Revised 1996 Guidelines* and associated *Good Practice Guidance*, which provide internationally agreed methodologies intended for use by countries to estimate GHG inventories to report to the UNFCCC.

The guidelines include methodological principles, actions and procedures that have achieved general acceptance around the world as the basis for inventory development.

Compiling a GHG inventory includes the collection of data, estimation of emissions and removals, checking and verification, uncertainty assessment and reporting. Further sector-specific guidance for good practice is provided on estimation methods. Since this guidance is for national accounts it also takes account of natural carbon sinks that exist within defined boundaries. In addition, it provides useful reference guidance on the different GHGs and their GWP (global warming potential), that is, their impact on climate change relative to carbon dioxide (CO_2), which has a GWP of 1.

WBCSD-WRI GHG PROTOCOL

The GHG Protocol Initiative arose when the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) recognised that an international standard for corporate GHG accounting and reporting would be necessary in light of evolving climate change policy. Together with large corporate partners such as British Petroleum and General Motors, WRI introduced a report titled *Safe Climate, Sound Business*,[2] which identified an action agenda to address climate change, including the need for the standardised measurement of GHG emissions.

In 1998 WRI and WBCSD convened a core steering group comprising members from environmental groups and from industry, to guide the multi-stakeholder standards development process. The first edition of *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Corporate Standard)* was published in 2001.[3] Since then the GHG Protocol has developed a suite of calculation tools[4] to assist companies in calculating their GHG emissions, and additional guidance for project accounting.[5]

2. www.wri.org/publications/safe-climate-sound-business-action-agenda
3. www.ghgprotocols.org/standards/corporate-standard
4. www.ghgprotocols.org/calculation-tools
5. www.ghgprotocols.org//standards/project-protocol

The GHG Protocol is the most widely used international accounting tool for understanding, quantifying, and managing GHG emissions. It serves as the foundation for most GHG standards and programmes – ranging from the International Standards Organization to The Climate Registry – as well as for hundreds of GHG inventories prepared by individual companies. The GHG Protocol consists primarily of two separate but linked standards, the *Corporate Accounting and Reporting Standards (Corporate Standard)* and the *Project Accounting Protocol and Guidelines*.

The Corporate Accounting and Reporting Standards (Corporate Standard) provides methodologies for businesses and other organisations to construct inventories and report all the GHG emissions they produce. The Calculation Tools are a complement to the Corporate Standard and assist businesses in quantifying emissions from their business activities and operations.

The Project Accounting Protocol and Guidelines are geared towards calculating reductions in GHG emissions from specific GHG-reduction projects. The Project Protocol is an accounting tool for quantifying the GHG reduction benefits of climate change mitigation projects.

It covers the accounting and reporting of the six GHGs covered by the Kyoto Protocol – carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF_6).

Although this standard is designed to develop a verifiable inventory, it does not provide a standard for conducting the verification process.

To complement the standard and guidance, a number of cross-sector and sector-specific calculation tools are available, including a guide for small, office-based organisations. These tools are consistent with those proposed by the Intergovernmental Panel on Climate Change (IPCC) for compilation of emissions at the national level.

In 2006, the International Organization for Standardization (ISO) adopted the Corporate Standard as the basis for its *ISO 14064-I: Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*. ISO, WBCSD, and WRI signed a Memorandum of Understanding in 2007 to promote both global standards jointly.

The 2007 *Corporate Climate Communications Report* of the Fortune 500 companies by CorporateRegister.com reported that 63% of these companies use the GHG Protocol.

EMISSIONS ARE REFERRED TO AS EITHER SCOPE 1, 2 OR 3

Scope 1

Direct GHG emissions occur from sources that are owned or controlled by the company, for example, emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc; emissions from chemical production in owned or controlled process equipment. Direct CO_2 emissions from the combustion of biomass shall not be included in Scope 1 but reported separately. GHG emissions not covered by the Kyoto Protocol, eg CFCs, NOx, etc shall not be included in Scope 1 but may be reported separately.

Scope 2

Electricity – indirect GHG emissions accounts for GHG emissions from the generation of purchased electricity consumed by the company. Purchased electricity is defined as electricity that is purchased or otherwise brought within the organisational boundary of the company. Scope 2 emissions physically occur at the facility where electricity is generated.

Scope 3

Other indirect GHG emissions form an optional reporting category that allows for the treatment of all other indirect emissions. Scope 3 emissions are a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Some examples of Scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.

ISO 14064 GREENHOUSE GAS INVENTORIES AND VERIFICATION

The development of the ISO 14064 series began in 2002 with the identification of the need for the harmonisation of diverse GHG programmes that were proliferating at the international, national, regional and local levels. The standard was completed and approved for use in March 2006.

ISO 14064 comprises three standards. They provide specifications and guidance for the organisational and project levels, and for validation and verification.

These standards can be used independently, or as an integrated set of tools to meet the varied needs of GHG accounting and verification.

ISO 14064 Part 1 is generally consistent and compatible with the GHG Protocol developed by the World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI).

ISO 14064 provides a foundation upon which additional requirements can be layered. It provides a consistent technical approach that simplifies verification, can facilitate emission trading and decrease transaction costs.

Implementing ISO 14064 is intended to:

- promote consistency, transparency and credibility in GHG quantification, monitoring, reporting and verification
- enable organisations to identify and manage GHG-related liabilities, assets and risks
- facilitate the trade of GHG allowances or credits, and
- support the design, development and implementation of comparable and consistent GHG schemes or programmes.

ISO 14064 GREENHOUSE GAS INVENTORIES

ISO 14064 Part 1
Greenhouse gases: specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals.

ISO 14064 Part 2
Greenhouse gases: specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emissions reductions and removal enhancements.

ISO 14064 Part 3
Greenhouse gases: specification with guidance for the validation and verification of greenhouse gas assertions.

REPORTING ON GRI CLIMATE-CHANGE-SPECIFIC PERFORMANCE INDICATORS

The GRI has developed a widely used sustainability reporting framework that sets out the principles and indicators that organisations can use to measure and report their economic, environmental, and social performance. The third version of the Guidelines – known as the G3 Guidelines – was published in 2006.[6]

GRI G3 includes eight indicators that relate to energy use and GHGs (see box). Each is supported by a technical protocol.

The technical protocols for these indicators make reference to the use of other existing technical guidance rather than offering an alternative. Reference is made to the WBCSD-WRI GHG Protocol, the International Energy Agency's (IAE) annual publication of Energy Balances, the United Nations Framework Convention on Climate Change (UNFCC), the Kyoto Protocol, and the work of the Intergovernmental Panel on Climate Change (IPCC).

Each protocol discusses the relevance of the indicator and the reported information, the process for compiling information to be reported, and the necessary documentation requirements. Each one also provides useful definitions and references.

The GRI G3 GHG Emissions Reporting Indicators are part of a broader ESG reporting framework. GRI recommends external verification: depending on the level of reporting (A, B or C) all reports that are externally verified carry a plus: A+, B+ and C+.

GRI G3 INDICATORS THAT RELATE TO ENERGY USE AND GREENHOUSE GASES

EN3	Direct energy consumption by primary energy source
EN4	Indirect energy consumption by primary source
EN5	Energy saved through conservation and efficiency improvements
EN6	Initiatives to provide energy-efficient or renewable-energy-based products and services, and reductions in energy requirements as a result of these initiatives
EN7	Initiatives to reduce indirect energy consumption and reductions achieved
EN16	Total direct and indirect greenhouse gas emissions by weight
EN17	Other relevant indirect greenhouse gas emissions by weight
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved

6. www.globalreporting.org/ReportingFramework/G3Guidelines

FLEXIBLE MECHANISMS (JI, CDM) – PROJECT-BASED ACCOUNTING AND REPORTING

The central feature of the Kyoto Protocol is its requirement that countries limit or reduce their GHG emissions. By setting such targets, the Protocol has given emission reductions economic value. To help countries meet their emission targets, and to encourage the private sector and developing countries to contribute to emission-reduction efforts, negotiators of the Protocol included two project-based mechanisms – the Clean Development Mechanism and Joint Implementation.

The Clean Development Mechanism (CDM) allows emission-reduction (or emission-removal) projects in developing countries to earn certified emission reduction (CER) credits, each equivalent to one tonne of CO_2. These CERs can be traded and sold, and used by industrialised countries to a meet a part of their emission reduction targets under the Kyoto Protocol.

Joint Implementation (JI) is designed to assist developed countries to meet their emission reduction targets by earning credits through investment in joint projects with other developed countries.

The UNFCCC has developed a wide range of baseline and monitoring methodologies for JI and CDM project activities. These methodologies allow the project proponents to calculate the difference between the carbon emissions in a business-as-usual scenario and the emissions that will be achieved on the basis of the innovations introduced by the project. The difference in emissions can be claimed as carbon credits (in this case CERs), which have a monetary value.

The methodologies are specific to the nature of the innovation. To date the UNFCCC CDM executive board has approved nine general methodologies, 67 specific methodologies and 14 consolidated methodologies. There are an additional 34 methodologies under consideration. Methodologies are specific and address such innovations as steam optimisation systems and water pumping efficiency improvements, or avoided emissions from organic waste or rapid transit projects.

1.4 Selected existing reporting and assurance schemes

CARBON DISCLOSURE PROJECT

The Carbon Disclosure Project (CDP) is a coordinating secretariat for the world's largest institutional investors. On behalf of 475 institutional investors, more than 35 purchasing organisations and UK government bodies, it requests, collects and distributes annual information on GHG emissions. Its requests go to more than 3,700 corporations across the globe. The CDP has assembled the largest corporate GHG emissions database in the world and its analyst reports, published annually, provide a detailed analysis of how the largest companies around the globe are responding to climate change. The data are made available to a wide audience, including policymakers and their advisers, investors, corporations, academics and the public.

The CDP information request is designed in consultation with investors, corporations and other experts in climate change related reporting. CDP also provides detailed guidance on how to respond to the information requests. The CDP stresses that while it believes the information contained in its guidance is correct, it is not a substitute for appropriate advice from relevant experts. Its main reference is *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* (Revised Edition), developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). It also accepts information prepared according to *ISO 14064-1: Specification with Guidance at the Organization Level for Quantification and Reporting of Greenhouse Gas Emissions and Removals*.

The CDP also provides the secretariat for a 2007 initiative called the Climate Disclosure Standards Board (CDSB), a consortium of business and environmental organisations focused on the development of a global framework to facilitate the corporate disclosure of data on climate change in mainstream reports.

EUROPEAN UNION EMISSION TRADING SYSTEM (EU ETS)

The European Union Emission Trading System (EU ETS) is the largest multinational emissions trading scheme in the world. The EU ETS currently covers more than 10,000 installations in the energy and industrial sectors, which are collectively responsible for almost half the EU's emissions of CO_2 and 40% of its total GHG emissions. The scheme covers electricity generation and the main energy-intensive industries – power stations, refineries and offshore installations, iron and steel, cement and lime, paper, food and drink, glass, ceramics, and engineering and vehicles.

The EU ETS works on a 'cap and trade' basis. EU member state governments are required to set emissions limits for all installations in their country that are covered by the scheme, and these limits have to be approved by the EU Commission. Each installation is then allocated allowances equal to that cap for the particular phase in question. The allocation of allowances is set out in the National Allocation Plan for the particular period. The first phase of the EU ETS ran from 2005 to 2007; the second runs from 2008 to 2012.

Installations may meet their cap either by reducing emissions below the cap and selling the surplus, or by letting their emissions remain higher than the cap and buying allowances from other participants in the EU emissions market in order to meet the cap.

Currently, the installations get the allowances at no charge from the EU member states' governments. Besides receiving this initial allocation, an operator may purchase EU allowances from others (installations, traders and the government.) If an installation has received more free allowances than it needs, it may sell them. CERs (CDM credits) can be used to meet EU ETS requirements.

Installations must track and validate the actual emissions against the assigned amount and retire the allowances after the end of each year. Monitoring and reporting methodologies are defined in Commission Decision 2007/589/EC – 'Monitoring and Reporting Guidelines'.

Table 1.2: Reporting and assurance schemes

Name	Mandatory or voluntary	National	Organisational	Verification assurance
1. Carbon Disclosure Project	V		X	
2. European Union Emission Trading System (EU ETS)	M	X	X	X
3. National Greenhouse Energy Reporting (NGER) System and the National Greenhouse Accounts (NGA) Factors (Australia)	M	X	X	
4. Greenhouse Challenge Plus (GCP) and Online System for Comprehensive Activity Reporting (OSCAR) (Australia)	V		X	
5. Facility GHG Emissions Reporting Program (Canada)	V (SMEs) M (larger companies)	X	X	X
6. The Climate Registry (US)	V		X	X
7. Regional Greenhouse Gas Initiative (RGGI) (US)	V		X	X
8. Chicago Climate Exchange (US)	V		X	X
9. Environmental Protection Agency (EPA) Climate Leaders (US)	V		X	
10. California Climate Action Registry (US)	V		X	X
11. Carbon Reduction Commitment (UK)	M		X	X

NATIONAL GREENHOUSE ENERGY REPORTING (NGER) SYSTEM AND THE NATIONAL GREENHOUSE ACCOUNTS (NGA) FACTORS (AUSTRALIA)

The *National Greenhouse and Energy Reporting Act 2007* (the NGER Act), which came into effect on 29 September 2007, establishes a national framework for Australian corporations to report GHG emissions, reductions, removals and offsets, and energy consumption and production, from 1 July 2008.

The first annual reporting period began on 1 July 2008, but businesses had until 31 August 2009 to register under the scheme, and had until 31 October 2009 to submit their first annual greenhouse and energy report.

Australian state and territory governments have agreed to a standard national approach to greenhouse and energy reporting, the National Greenhouse and Energy Reporting Streamlining Protocol.[7] Implementation of the Protocol was agreed through the Council of Australian Governments (COAG) and will be used by state and territorial governments to streamline reporting requirements for existing and future greenhouse and energy programmes. The Protocol covers reporting requirements relating to energy consumption and production, GHG emissions, intensity indicators, energy audits, action plans, energy savings, GHG reductions, and projections.

The *National Greenhouse Accounts (NGA) Factors* guidance has been prepared by the Department of Climate Change and is designed for use by companies and individuals to estimate GHG emissions for reporting under various government programmes and for their own purposes.

The methods for calculating emissions listed in this document are 'Method 1' from the *National Greenhouse and Energy Reporting (Measurement) Determination 2008,* and the *National Greenhouse and Energy Reporting (Measurement) Technical Guidelines June 2009*.

7. www.climatechange.gov.au/reporting/publications/pubs/08109-greenhouse-and-energy-protocol.pdf

GREENHOUSE CHALLENGE PLUS (GCP) AND ONLINE SYSTEM FOR COMPREHENSIVE ACTIVITY REPORTING (OSCAR) (AUSTRALIA)

Greenhouse Challenge Plus enables Australian companies to form working partnerships with the Australian government to improve energy efficiency and reduce GHG emissions. It is supported with tools to assist small and medium-sized businesses to calculate their GHG emissions, including an emissions calculator[8] and an energy audit tool.[9]

Members are required to report online using OSCAR – Online System for Comprehensive Activity Reporting. OSCAR is a Web-based data-gathering and benchmarking tool designed to enable organisations to input and update their energy and greenhouse data online. OSCAR standardises the calculation of GHG emissions to produce comparable datasets. Environmental performance for organisations, industry or government sectors can be measured and trends monitored over time.

OSCAR stores all the necessary conversion factors to derive GHG emissions, measured as carbon dioxide equivalent (CO_2-e), automatically from energy and fuel consumption data.

The methods for calculating emissions listed in the *National Greenhouse Accounts Factors* are 'Method 1' from the *National Greenhouse and Energy Reporting (Measurement) Determination 2008* and the *National Greenhouse and Energy Reporting (Measurement) Technical Guidelines 2008 v1.1*.

OSCAR can also be modified to calculate emissions using emissions factors that are specific to an industry sector that has adopted more sophisticated measurement practices.

OSCAR allows corporations to develop an online model, based around their corporate structure, and to enter and report data to meet their obligations under the NGER Act.

8. www.environment.gov.au/settlements/challenge/members/emissions.html

9. www.environment.gov.au/settlements/challenge/members/energyaudittools.html

FACILITY GHG EMISSIONS REPORTING PROGRAM (CANADA)

The federal government in partnership with the provinces and territories has developed a harmonised, 'single-window' domestic reporting system for GHG emissions to enhance the level of detail of the National GHG Inventory and to meet provincial and territorial reporting requirements for GHG emissions and related information.

Statistics Canada collects the information under the authority of the Statistics Act, as well as the Canadian Environmental Protection Act 1999 and the Climate Change and Emissions Management Act (Alberta Government).

Facilities with total GHG emissions that meet or exceed the reporting threshold of 100 kilotonnes of CO_2-equivalent are required to report. This captures only 350 facilities in Canada. Facilities with GHG emissions below the reporting threshold are encouraged to report.

The GHG types that are covered by the reporting requirement are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs) (13 individual species), perfluorocarbons (PFCs) (7 individual species) and sulphur hexafluoride (SF_6).

GHG emissions are reported on an Internet-based Electronic Data Reporting (EDR) system managed by Statistics Canada. The reporting period begins on 15 March and reports must be submitted by 1 June of each year.

Technical guidance on reporting GHG emissions is provided.

THE CLIMATE REGISTRY (US)

The Climate Registry is a non-profit collaboration between North American states, provinces, territories, and Native Sovereign Nations to record and track the GHG emissions of businesses, municipalities and other organisations. The Climate Registry's Board of Directors is made up of 39 states of the US, 13 provinces/territories of Canada, six states of Mexico, and three Native Sovereign Nations. The data are to be independently verified to ensure accuracy, but participation by organisations is voluntary. Data submitted to the Climate Registry is input to the Climate Registry Information System (CRIS).

The Registry, launched on 8 May 2007, is modelled on the California Climate Action Registry, which has been in operation since 2001. Its headquarters are in Los Angeles, California.

REGIONAL GREENHOUSE GAS INITIATIVE (RGGI) (US)

In 2003, New York State proposed and attained commitments from nine Northeast states to form a cap and trade CO_2 emissions programme for power generators, called the Regional Greenhouse Gas Initiative (RGGI). This programme was launched on 1 January 2009 with the aim of reducing the carbon 'budget' of each state's electricity generation sector to 10% below its 2009 allowance by 2018.

CHICAGO CLIMATE EXCHANGE (US)

In 2003, US corporations were able to trade CO_2 emission allowances on the Chicago Climate Exchange under a voluntary scheme. In August 2007, the Exchange announced a mechanism to create emission offsets for projects within the US that cleanly destroy ozone-depleting substances.

ENVIRONMENTAL PROTECTION AGENCY CLIMATE LEADERS (US)

Climate Leaders is an Environmental Protection Agency (EPA) industry–government partnership that works with companies to develop comprehensive climate change strategies. Partner companies commit to reducing their impact on the global environment by completing a corporate-wide inventory of their GHG emissions, based on a quality-management system; setting aggressive reduction goals; and annually reporting their progress to EPA. Through programme participation, companies create a credible record of their accomplishments and receive EPA recognition as corporate environmental leaders.

Companies must develop a corporate-wide inventory of the six major GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, SF_6) using the Climate Leaders GHG Inventory Guidance. They must then create and maintain an Inventory Management Plan to institutionalise the process of collecting, calculating and maintaining a high-quality, corporate-wide inventory. They must report inventory data annually and document progress towards their emissions-reduction goal.

There are 284 Climate Leaders partner companies (2009). Total annual revenue of Climate Leaders Partners represents 12% of the US gross domestic product (2007). Climate Leaders Partners have operations in all 50 states and provide more than 8 million jobs throughout the world (2008).

CALIFORNIA CLIMATE ACTION REGISTRY (US)

The California Climate Action Registry was established by California statute as a non-profit voluntary registry for GHG emissions. The purpose of the Registry is to help companies and organisations with operations in the state to establish GHG-emissions baselines against which any future GHG emission reduction requirements may be applied. The California Registry provides leadership on climate change by developing and promoting credible, accurate and consistent GHG reporting standards and tools for organisations to measure, monitor, third-party verify and reduce their GHG emissions consistently across industry sectors and geographical borders.

CARBON REDUCTION COMMITMENT (UK)

The UK Carbon Reduction Commitment (CRC) is a 'cap and trade' scheme applied to large-scale users of energy; it covers both electricity consumption and on-site actions that directly result in emissions. It is designed to encourage entities with sufficient resources and capital to take action to improve their carbon footprint, through increasing energy efficiency and the use of on-site renewables.

Organisations qualify for participation if their electricity bill for 2008 was for over 6,000 MWh. All fixed-point energy use is covered by the scheme. It is estimated that the 3,000 to 4,000 participants are likely to be spending over £1m per annum on their total energy bills.

Participants are required to hold enough permits at the end of a year to cover the total emissions associated with their energy use. Permits are allocated at the start of each year by auction. In the initial 'test phase' of the scheme running from April 2010 to 2012 there will be an unlimited supply of permits with a price fixed at £12 for each tonne of CO_2.

The money raised from the auction is then recycled back to participants, depending on the performance of the company. Organisations must compile and submit an evidence pack each year. They will carry out self-certification of their emissions, backed up by an independent risk-based audit regime (covering 20% of participants initially) – there is no requirement for everyone to use a third-party verifier.

OTHERS

In addition to these well-known initiatives, there are a number of others active in the marketplace. Sector-specific protocols have been developed by a number of industry associations, such as the International Aluminium Institute, the International Council of Forest and Paper Associations, the International Iron and Steel Institute, the WBCSD Cement Sustainability Initiative, and the International Petroleum Industry Environmental Conservation Association (IPIECA). Other voluntary GHG reduction programmes include the World Wildlife Fund (WWF) Climate Savers programme, the Climate Neutral Network programme, and the Business Leaders Initiative on Climate Change (BLICC) World Economic Forum Global GHG Registry. Other registry programmes include those run by the New Zealand Business Council for Sustainable Development, the Taiwan Business Council for Sustainable Development, and the Association des enterprises pour la réduction des gaz à effet de serre (AERES).

1.5 Changing landscape

NEW AND PROPOSED SCHEMES IN CONTEXT

Existing schemes are continually being updated and revised and new schemes are arising. There is continuous activity in the area of technical requirements but perhaps more so among the schemes that compel or require accounting and reporting.

The Steering Committee of the GHG Protocol's Product and Supply Chain Initiative recently gathered at the offices of the WBCSD in Geneva, Switzerland to review early drafts of two new GHG Protocol standards and make recommendations on the direction of the initiative.[10] The GHG Protocol is producing new standards on both product life cycle and corporate Scope 3 (value chain) accounting and reporting.

The CDP is involved in this collaborative development of the GHG Protocol. Although the results of the 2008 disclosure cycle demonstrated continued increase in awareness of the importance of Scope 3 emissions, there is still a large blind spot. The disclosure of these emissions and plans is key to enabling investors and other stakeholders to understand how well corporate leaders are managing the full range of risks associated with climate change.

And as mentioned above, the CDP is also involved in the Climate Disclosure Standards Board (CDSB). CDSB's goal is the development of a single framework designed to assist companies in compiling climate change related disclosures in their mainstream reports.

Numerous other standards and guidelines that depend on underlying GHG accounting and reporting are being developed. Standards are being developed on claims of carbon neutrality and carbon footprinting with the consumer, rather than the business and the policymaker, in mind. ISO is developing ISO 14067 for the carbon footprinting of products.

The accounting standards bodies are also active. The International Audit and Assurance Standards Board (IAASB) is developing an assurance standard on reporting on carbon emissions information. IFAC encourages climate change reporting in its new Sustainability Framework.

EPA is creating a nationwide database of GHG emissions, an important first step on the path to reducing US emissions. The Environmental Protection Agency released a proposed Mandatory Greenhouse Gas Reporting Rule for 60 days of public comment, with a final rule expected in late 2009. The proposal would cover 85% to 90% of US GHG emissions. This process is the result of legislation passed in December 2007 that directed the EPA to design a national, mandatory GHG-emissions registry.[11] EPA's work on a national registry lagged under the previous administration, but has now received fast-track priority. The plan would require 13,000 facilities to report their emissions. Reporting for sectors such as the utilities, oil and gas producers, and chemical refineries would start in 2011, while automobile manufacturers will start reporting for their 2011 models.

Unlike voluntary programmes such as the Climate Registry and Climate Leaders, which allow companies to demonstrate progress in reducing emissions across their entire business, the new federal reporting programme will track the emissions of individual facilities, rather than companies as a whole. Also, reporting from those facilities will be mandatory, not voluntary.

Since February 2007, seven US states and four Canadian provinces have joined together to create the Western Climate Initiative, a regional GHG emissions trading system. The WCI Partner jurisdictions are developing a joint strategy to reduce GHG emissions in the region. The centrepiece of the WCI strategy is a regional cap and trade programme. The WCI released the design of its programme on 23 September 2008. When fully implemented in 2015, this comprehensive programme will cover nearly 90% of the GHG emissions in WCI states and provinces.

On 4 June 2007, John Howard, then Australia's prime minister, announced an Australian Carbon Trading Scheme to be introduced by 2012, but opposition parties called the plan 'too little, too late.' On 24 November 2007 Howard's coalition government lost a general election and was succeeded by the Labor Party, with Kevin Rudd taking over as prime minister. He announced that a cap and trade emissions trading scheme would be introduced in 2010, but this scheme has been delayed by a year until mid-2011.

The New Zealand government introduced a bill for emissions trading schemes before a select committee. Various reports by a range of groups support the scheme but differ in opinion as to how it should be implemented. An interesting feature of the New Zealand Emissions Trading Scheme is that it includes forest carbon and creates deforestation liabilities for landowners.

The emissions trading bill passed into law on 10 September 2008. On 16 November 2008 the newly formed government, led by the National Party, announced that it would delay implementation of the ETS pending a full review of climate change policy.

10. www.ghgprotocol.org/standards/products-and-supply-chain-standard

11. www.wri.org/publications/designing-a-us-greenhouse-gas-emissions-registry

On 17 November 2008 President-elect Barack Obama clarified, in a talk recorded for YouTube, that the US would enter a cap and trade system to limit global warming. The 2010 United States federal budget proposes to support clean energy development with a 10-year investment commitment of US $15 billion each year, generated from the sale of GHG emissions credits. Under the proposed cap and trade programme, all GHG-emissions credits would be auctioned off, generating an estimated $78.7 billion in additional revenue in FY 2012, steadily increasing to $83 billion by FY 2019. The American Clean Energy and Security Act, a cap and trade bill, was passed on 26 June 2009 in the House of Representatives.

Meaningful emission reductions within a trading system can occur only if they can be measured at the level of operator or installation and reported to a regulator. There is an open-source tool (ie available to all, at no initial cost) for helping operators accurately measure and plan their emissions.

All trading countries maintain an inventory of emissions of GHGs at national and installation level; in addition, the trading groups within North America maintain inventories at the state level through the Climate Registry. For trading between regions these inventories must be consistent, with equivalent units and measurement techniques.

Another critical aspect is enforcement. Without effective measuring, reporting and verification (MRV), and enforcement, the values of allowances are diminished. Enforcement can be achieved by several means, including fines or sanctions against those that have exceeded their allowances. Concerns include the cost of MRV and enforcement and the risk that facilities may be tempted to mislead rather than make real reductions, or to make up their shortfall by purchasing allowances or offsets from another entity. The net effect of a corrupt reporting system or poorly managed or financed regulator may be a discount on emission costs, and a (hidden) increase in actual emissions.

WHERE NEXT?

Climate change is leading to the exposure of hundreds of millions of people to water stress; significant extinctions of species, an increase in the numbers of species at risk and vast ecosystem changes; complex localised negative impacts on subsistence farmers and fishermen; increased damaged due to floods and extreme weather events; as well as changing distribution of disease vectors and an increasing burden of malnutrition and infectious diseases.

It is projected that in Africa, by 2020, between 75 and 250 million people will be exposed to increased water stress due to climate change. In Asia climate change will compound the pressures on natural resources and the environment associated with rapid urbanisation, industrialisation and economic development. In Australia and New Zealand there will be significant loss in ecologically rich sites such as the Great Barrier Reef and the Queensland Wet Tropics. In Latin America increases in temperature and associated decreases in soil water are projected to lead to gradual replacement of tropical forest by savannah. In North America, cities that currently experience heat waves are expected to be further challenged by an increased number, intensity and duration of heat waves with potential adverse health impacts. In the polar regions reductions in the thickness and extent of glaciers, ice sheets and sea ice and changes in natural ecosystems will have detrimental effects on migratory birds, mammals and higher predators. Sea level rise will threaten the infrastructure, settlements and facilities that support life on small island-states.

It is clear that economic development cannot be sustained in the longer term unless the climate is stabilised. Leadership and action are urgently needed to avert the worst that climate change can deliver. The monitoring, accounting and reporting methodologies developed to enable science must now be brought to bear on managing the global response to the crisis.

It is clear that mitigation is not enough, and that huge efforts are needed in adaptation, hand in hand with mitigation.

Increasingly, governments are setting carbon reduction targets at the level of the national economy without providing the measurement tools to enable companies and other organisations to meet those targets. It is equally clear that we will not get there without credible and comparable measurement, reporting and verification standards.

So where do we go next? What is the impact and benefit of all this frenzied activity? Why are we still in the mess we are in?

To achieve the larger, more influential and more radical change that reflects the urgency of this issue, standard setters must engage at a higher level. We must move away from the proliferation of localised voluntary schemes that undermine the ability to develop the national accounts that the market and policymakers need to support better decision making.

International, generally accepted carbon reporting and carbon accounting standards are urgently needed. To achieve this on an international scale will require a concentrated, collaborative effort.

2. Trends in carbon reporting in high-impact sectors 2003 to 2008

This section was prepared by Vicky McAllister of Two Tomorrows (www.twotomorrows.com), based on analysis by Net Balance (www.netbalance.com) and Two Tomorrows.

2.1 Introduction

With the dramatic increase in climate change impacts, there is a pressing need for business to develop appropriate mitigation and adaptation strategies for the risks posed by the projected increase in temperatures. As a result, climate change disclosures have never been as important as they are today. In many regions, disclosures form a key component of regulatory requirements; for example, for the forthcoming trading schemes in Australia (where a cap and trade scheme is due to come into force in 2011) and the US (where the American Clean Energy and Security Act, instituting a cap and trade programme, was passed in June 2009). Investors are also increasingly using climate change disclosures to inform their investment decisions: if an organisation is not seen as adequately addressing and managing material risks posed by climate change (these can be regulatory, financial, reputational or physical) the result could be a reluctance to invest in the company until it has transparently brought climate change to the forefront of its business strategy.

Despite the increased pressure on companies to disclose information publicly on climate change policy, governance and strategy, along with risk-management practices, emissions data, targets and mitigation/adaptation strategies, there has been little assessment of how reporting has progressed in recent years. It was for this reason that ACCA and GRI decided to assess the standard of climate change disclosures across a range of companies, spanning 15 different industry sectors, from 2003 until 2008.

The analysis used a set of criteria developed by ACCA and GRI and the results are presented in this publication. The timely release of the results in December 2009 will act as a reminder to companies before the negotiations are concluded in Copenhagen (which may well have a knock-on effect on all such organisations from 2010 onwards) that reporting and transparency on an issue such as climate change cannot be avoided any longer, both for regulatory and reputational reasons. As the results demonstrate, it appears there is still a long way to go for before robust climate change disclosures become the norm.

2.2 Methodology

SAMPLE SELECTION

This part of the research assessed the standard of carbon reporting of a sample of 36 companies, across the 15 'high-impact' sectors (as classified by the FTSE4Good index), from the years 2003 to 2008. Companies whose reports were analysed were selected on the basis of the following criteria.

- They had published a sustainability report annually from 2003 to 2008.[12]
- They were from the FTSE4Good 'high-impact' sectors and among the largest companies in the world by market capitalisation.

The aim was to have four companies from each sector, from different geographical regions, but this was sometimes impossible because the number of companies publishing sustainability reports from 2003 was limited in some sectors. In addition, the 'Coal' sector only includes one reporter. ACCA's sample was finalised on 29 July 2009 and therefore does include 2008 reports published after that date. The list of companies and industries appears in Appendix 1 on page 80.

CRITERIA FOR ANALYSIS

Companies' reports from 2003 to 2008 were assessed against a set of 45 criteria developed by ACCA and GRI, using in-house knowledge and expertise as well as existing guidance from, for example, the G3 Guidelines and the GHG Protocol of the World Business Council for Sustainable Development (WBCSD).

These 45 criteria were split into six 'criteria groups':

- Policy
- Governance and strategy
- Risk
- GHG emissions
- Mitigation and adaptation
- Credibility.

See Table 3.19 (pages 64–5), for an overview of what was included in each group. Results for each group of criteria are provided in section 2.4.

SCORING THE REPORTS

Companies were allocated a score of either 1 or 0 for each criterion. A second researcher quality-controlled a proportion (around 50%) of the assessment to ensure accuracy and consistency of results. Criteria were equally weighted, and the total number of '1' scores added up for each year to get an overall percentage score.

INFORMATION USED

Information assessed in the research comprised publicly available sustainability reports, online sustainability reports, and integrated annual reports that clearly stated that sustainability disclosures were combined with financial information. If information online is referred to within a sustainability/annual report (for example, a policy or strategy), this has also been included.

A limitation of many companies' online disclosures is that they are not split into an annual update format, so it was impossible for the researcher to judge which year some of the information was added. In other cases, the Web links provided in the stand-alone reports were no longer active. In both these cases, the researcher used only the stand-alone information unless the online disclosures were clearly marked as being for that particular year.

Of the 36 companies analysed, a number used GRI reporting guidelines, as shown in Table 2.1. During the period under consideration, companies in the oil and gas and general mining sectors report most frequently using the GRI guidelines, with those in the airline, electricity, exploration and production of oil, and gold-mining sectors having the fewest GRI reporters.

As illustrated, there has been a 300% increase in the number of companies using the GRI guidelines as a basis for their reporting from 2003 to 2008, with 67% of those reporting in 2008 using the guidelines.

Table 2.1: Sample companies using GRI reporting guidelines

2003	2004	2005	2006	2007	2008
8	14	14	16	19	24

12. CorporateRegister.com's report database was used as a reference point for selecting companies. The results reported in this section describe reporting in 14 of the 15 high-impact sectors because there were no reports available for analysis in the 'Diamonds and gemstones' sector.

2.3 Overall results

Overall performance of the 36 companies was mixed, with scores ranging from 0% for certain companies in certain years up to 56% (which was the top score, achieved by Xstrata in its 2007 report). Encouragingly, performance of the companies analysed improved year on year from 2003 to 2008, which is demonstrated by Fig. 2.1.

Even so, the overall average of all companies was just 28% in 2008 (the highest-scoring year), which indicates there is still a lot of work to be done by the majority of companies on their climate change disclosures. Just two companies scored over 45%: BHP Billiton in 2007 (49%) and 2008 (47%) and Xstrata in 2007 (56%) and 2008 (51%). The majority (28 companies) did not score over 40% in any year's reporting. Of the five top-scoring companies, four are GRI reporters.

Analysis of year-on-year performance in each of the sectors can be viewed in Fig. 2.2.

Figure 2.1: Overall performance of all 36 companies from 2003 to 2008

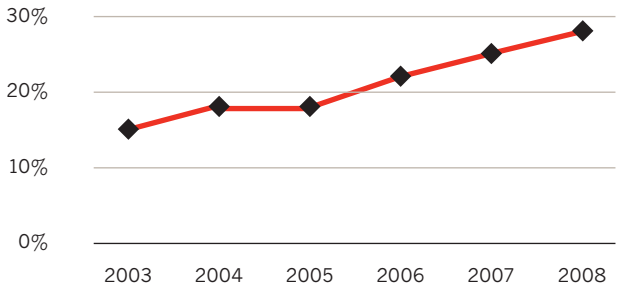


Table 2.2: Top five performers from 2003 to 2008 (by average score across the six years' reports)

Company	Sector	Overall average % score 2003–08
BHP Billiton	General mining	36
ANA	Airlines	34
La Farge	Construction	33
TEPCO	Electricity	33
Xstrata	General mining	32

Performance improved between 2003 and 2008 for all industry groups, although fluctuations in year-on-year scores were observed for some. The sector that improved the most (after 'Delivery', which had only one company so was not a representative sample) was 'General mining', the performance of which rose from an average of 19% in 2003 to 41% in 2008.

The results of this ACCA–GRI study were broadly consistent with those presented in other studies, such as the Carbon Disclosure Project[13] 2009 Global 500 report. For example, particular disclosure weaknesses highlighted by the CDP in its latest report included Scope 3 emissions, which are reported on by only a handful of companies in this study (see section 2.4), and lack of inclusion of supply chains in disclosures of mitigation activities (which was also lacking in the sample studied in this report). The overall picture painted by the CDP is more positive, however, as the information is based on the results of a questionnaire looking specifically at climate change issues, rather than publicly disclosed sustainability reporting, which covers a wider range of issues and tends to be less detailed.

A study published by ACCA in 2006, assessing the standards of climate change disclosures of entrants to the ACCA UK Awards for Sustainability Reporting,[14] had more positive results than this study in that a relatively high proportion of companies fulfilled certain criteria. For example, 80% of the high-impact companies assessed in 2006 were found to have a climate change position or policy statement whereas a smaller proportion of the sample assessed against the 'Policy' group of criteria in this study fulfilled a similar criterion (the average score of all companies assessed across the six years, against each criteria group, is shown in Fig. 2.3). This is probably because the reporting market in the UK is more mature and published reports tend to be of a higher quality than those produced in other regions.

13. The Carbon Disclosure Project is an independent not-for-profit organisation holding the largest database of primary corporate climate change information in the world. Over 2,000 organisations in 66 countries around the world now measure and disclose their GHG emissions and climate change strategies through the CDP, in order that they can set reduction targets and make performance improvements. These data are made available for use by a wide audience, including institutional investors, corporations, policymakers and their advisers, public sector organisations, government bodies, academics and the public. See www.cdproject.net for more information.

14. www.accaglobal.com/pubs/general/activities/library/sustainability/reporting_pubs/TECH-UK6-CC-150.pdf

Figure 2.2: Overall score by sector from 2003 to 2008

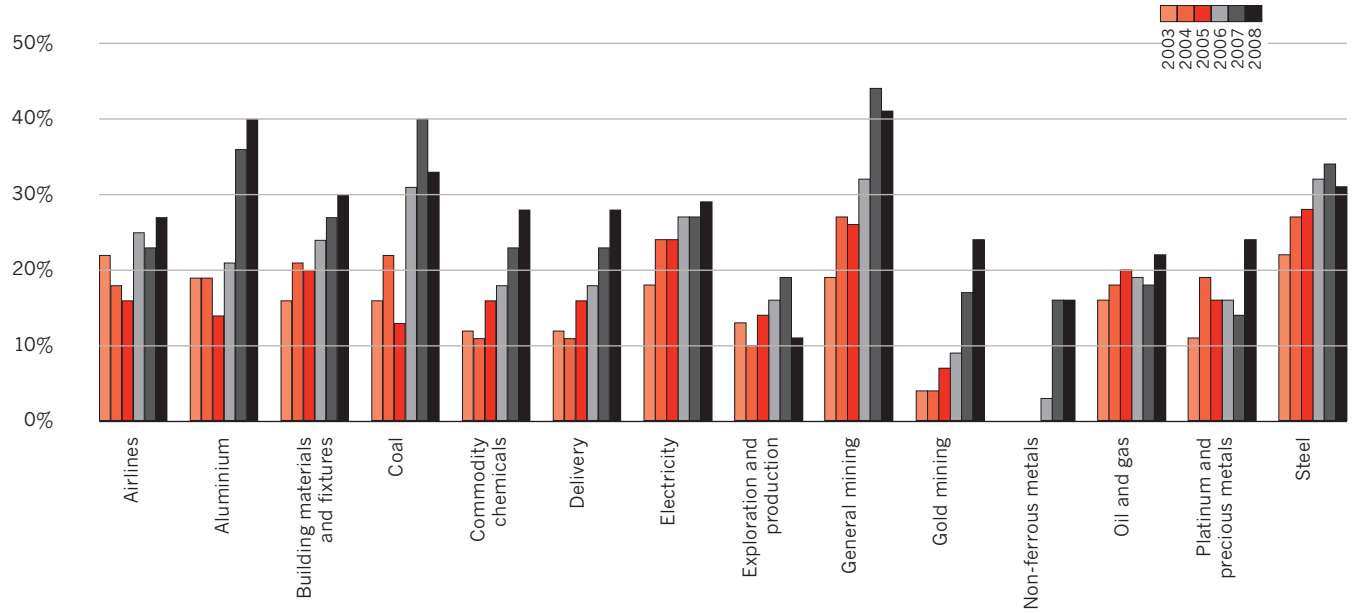
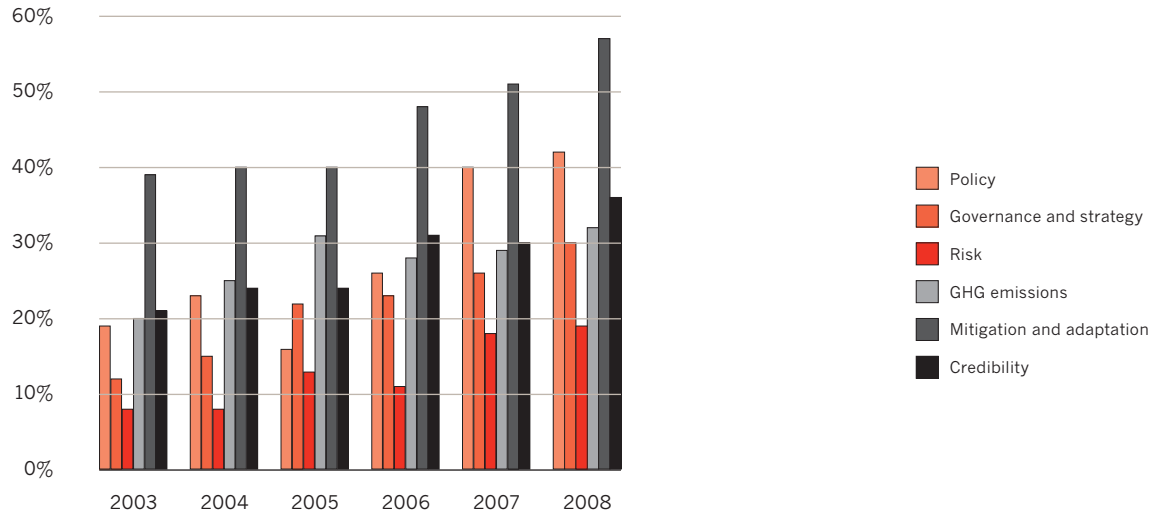


Figure 2.3: Average score achieved by the companies assessed against each criteria group, 2003 to 2008



2.4 Results for criteria groups

Table 2.3: Top five performers from 2003 to 2008 (in terms of average score across the six years' reports)

Company	Sector	Average % score 2003–08
ANA	Airlines	92
TEPCO	Electricity	75
Nippon Steel	Steel	71
Asahi	Construction	50
Posco	Steel	50

POLICY

The 'Policy' criteria group assessment was based on disclosures of organisational climate change policy – covering operations, products and the company's 'position' on binding climate change targets and the scientific consensus.

Performance in the 'Policy' criteria group has improved from an average of 20% across all companies in 2003 to 43% in 2008. The highest-scoring company over the five years was All Nippon Airways (ANA), which scored an average of 92% across the six years of reporting. Two companies did not disclose any information on climate change policy at all across the six years of reporting.

As an example of its policy disclosure, ANA's reports outline the 'Group Ecology Plan', which includes climate change and GHG reduction measures in its remit. This plan has been in place since 2003 and the company has reported on it year on year. It is aligned with and runs alongside the environmental policy. ANA also demonstrates its position on the science of climate change by citing IPCC predictions and findings in its reports, as well as stating a commitment to adherence to the Kyoto Protocol targets.

Dow Chemicals did not disclose anything on climate change policy from 2003–06 but in 2007 improved dramatically, providing detailed disclosures, including 'Dow's Position on Climate Change', which outlines the company's key 'promises', acting as a policy statement. Dow also publishes its own paper called *Working to Solve the World's Energy and Climate Challenges*,[15] which outlines the global challenges faced by the company (and the wider community) and how Dow intends to address them.

15. www.dow.com/commitments/pdf/OurPosition_EngClimate_FINAL.pdf

Figure 2.4 shows individual sectors' performance as measured against the 'Policy' criteria group, which indicates that the majority improved between 2003 and 2008. Two industries improved and then disclosures tailed off again – exploration and production, and non-ferrous metals (although the latter had only one company). This indicates a lack of consistency in climate change reporting for certain companies.

Figure 2.4: Individual sectors' overall performance assessed against the 'Policy' criteria group from 2003 to 2008

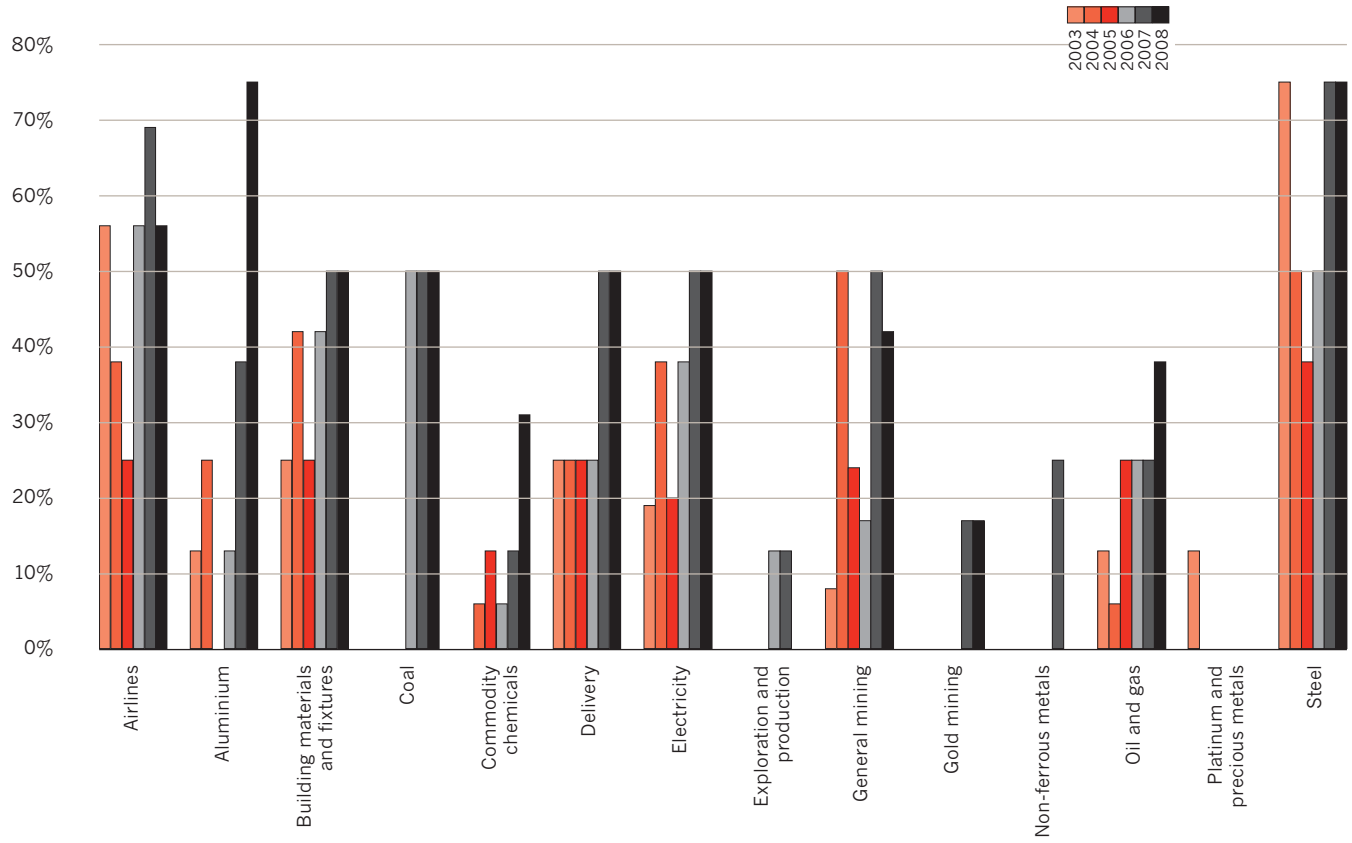


Table 2.4: Top five performers from 2003 to 2008 (by average score across the six years' reports)

Company	Sector	Average % score 2003–08
Posco	Steel	50
Nippon Steel	Steel	42
Alcoa	Aluminium	39
BHP Billiton	General mining	33
ANA	Airlines	31
Air Products	Commodity chemicals	31
Royal Dutch Shell Group	Oil and gas	31

GOVERNANCE AND STRATEGY

The 'Governance and strategy' criteria group is concerned with how companies disclose information on how climate change is managed internally, through board level ownership, committees and support from the CEO. It also covers whether the organisation has explained how climate change is aligned and integrated with core business strategy.

Performance assessed against the 'Governance and strategy' criteria group has improved between 2003 and 2008, with average scores for all companies ranging from 12% to 29%. Posco performed the best across the six reporting years, with an average of 50% (significantly lower than the highest scoring company assessed against the 'Policy' criteria). Eight of the 36 companies scored an average of under 10% across the six years, which was disappointing, and no company scored the maximum 100% in any of these years.

Posco scored highly as it was one of the few companies that described a management system put in place specifically to address climate change performance, which has been included in its disclosures since 2005. Commentary on this from its 2007 report is included below.

> *Posco launched a companywide greenhouse gas management system called Carbon Management System covering Pohang Works and Gwangyang Works in January 2006. Developed in accordance with the WRI-WBCSD Greenhouse Gas Protocol Guidelines, the Carbon Management System calculates CO_2 emissions by taking into account fuel/raw material consumption, electricity purchase, product output and byproduct generation. The system has enabled more efficient control over CO_2 emissions during the steelmaking process and is anticipated to facilitate implementation of the Kyoto Mechanism.*

Posco also includes climate change in its '2018 Vision' for future management of the company and the CEO discusses climate change in the opening statement in the report.

Figure 2.5 displays individual sectors' performance against the 'Governance and strategy' criteria group, which indicates that all but one improved between 2003 and 2008. The remaining industry – Airlines – improved and then disclosures tailed off, again indicating a lack of consistency in climate change reporting for certain companies.

Figure 2.5: Individual sectors' overall performance assessed against the 'Governance and strategy' criteria group from 2003 to 2008

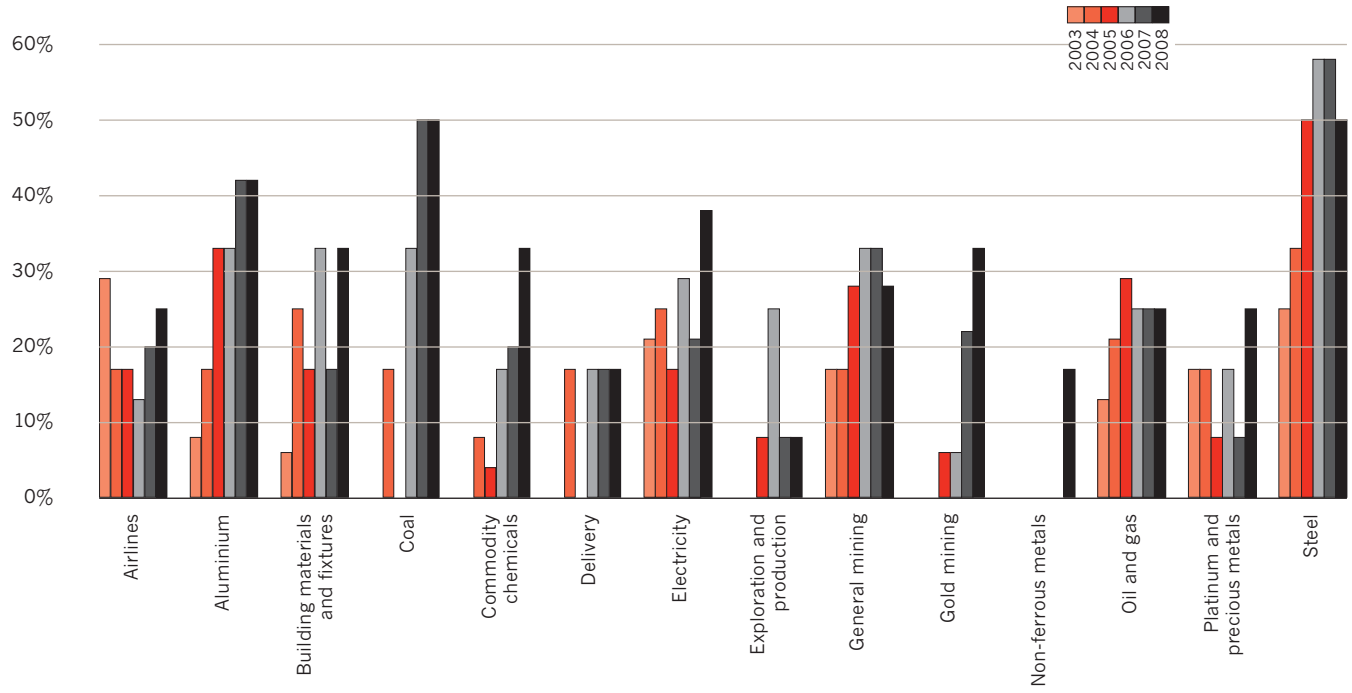


Table 2.5: Top five performers from 2003 to 2008 (by average score across the six years' reports)

Company	Sector	Average % score 2003–08
Xstrata	General mining	39
BHP Billiton	General mining	33
Norsk Hydro	Aluminium	26
La Farge	Construction	24
Anglo American	General mining	24

Figure 2.6: Allied Coal report includes a section on climate change risk assessment and management

Critical risk areas
A critical risk was summarised as a, "Risk high enough to require constant management and action planning (to secure opportunity or prevent a loss)".

Rating	Identified Risk	Proposed Action
IV	*Weather* Decreased rainfall in RTCA areas of operation, decreasing water security with potential to either close mine(s) or impact production.	▪ Assume reduced water supply in new projects. ▪ Include water impacts on capital requests and within BIP. ▪ Utilise the RTCA Business Improvement Process to identify, undertake and track projects
IV	*Operational* Coal Seam Gas accounts for 65 per cent of operation emissions. No practical means known to reduce. Cost exposure to operation >A$22 per million / year.	▪ Investigating opportunity with Macquarie Generation to capture CSM from Hunter Valley mines, including former underground mine for co-firing Liddell coal fired power station. ▪ Investigate mitigation options eg Hybrid gas and coal turbine for Kestrel Mine Extension (KME). ▪ Continue ACARP research into quantification of CSM emissions.
IV	*Operational* Energy metering, monitoring and reporting at operations not substantial enough to allow prioritisation of energy use and therefore potential improvements.	▪ Implement metering programme across all operations with common monitoring architecture. ▪ Utilise the RTCA Business Improvement Process to identify, undertake and track energy management projects.
IV	*Market* Future government policies will impact coal use. The risk of a reduction in coal sales depends on detail of policy. The risk of no coal business in the next 25 years is very low.	▪ Continue research in clean coal and carbon capture and storage technologies. ▪ Commission a project to understand at what point a price on carbon would impact our business in a material manner. Use this information to guide policy engagement with governments.

RISK

The 'Risk' criteria group is concerned with disclosures on climate change risk identification and management, spanning regulatory requirements, financial risks, reputational issues and physical risks.

Performance of all companies assessed against the 'Risk' criteria group has improved from an average of just 9% in 2003 to 18% in 2008, indicating that this was a challenging area for companies to report on. Xstrata was the highest-scoring company across the six years, with an average of 39%. Five companies did not disclose anything on climate change risks in any of their reports and a further 12 companies scored an average of under 10% across 2003–08 disclosures.

These were disappointing findings, indicating that despite apparent heightened awareness of the different risks faced by companies as a result of climate change, these are still not being included in annual sustainability reports, and this demonstrates a lack of systematic identification, management and monitoring of these issues.

Xstrata was one of the few companies analysed that did attempt to identify and quantify the risks faced by the company from 2006 onwards. In particular, it discloses the results of a study commissioned to assess the physical risks posed by climate change. The report[16] states:

> *It is anticipated that weather patterns will be affected by climate change, which may pose a risk to Xstrata operations. For example, a study completed in 2007 indicated that climate change could increase the frequency, length and severity of droughts, resulting in potential water shortages with a consequent impact on our operations in arid areas. Raglan, our site in the Canadian Arctic, will be affected by rising temperatures because it relies on permafrost for tailings storage...The transport networks we use will come under increasing pressure if extreme weather events become more common and sea levels rise.*

Allied Coal disclosed climate change risk information in its 2007 and 2008 reports through its 'climate change action plan',[17] which includes a section on climate change risk assessment and management (see Fig. 2.6). (Allied Coal does not appear in the 'top five', as reporting in 2003 to 2006 was sparse.)

16. *Xstrata 2008 Sustainability Report* – see www.xstrata.com

17. www.riotintocoalaustralia.com.au/ourapproach/1415_climate_change.asp

All three of the 'general mining' companies assessed appear in this top five, which perhaps is not surprising: mining companies tend to operate in areas that will be hardest hit by the physical impacts of climate change so it is logical that these companies would perhaps be 'ahead of the game' in terms of disclosing information on the risks and how they are being managed.

Figure 2.7 shows individual sectors' performance assessed against the 'Risk' criteria group, which indicates that most sectors improved between 2003 and 2008. Some industries improve and then tail off for 2008 – construction, commodity chemicals, exploration and production, and oil and gas, and the platinum and precious metals sector did not score at all in any of the years' reports.

Figure 2.7: Individual sectors' overall performance assessed against the 'Risk' criteria group from 2003 to 2008

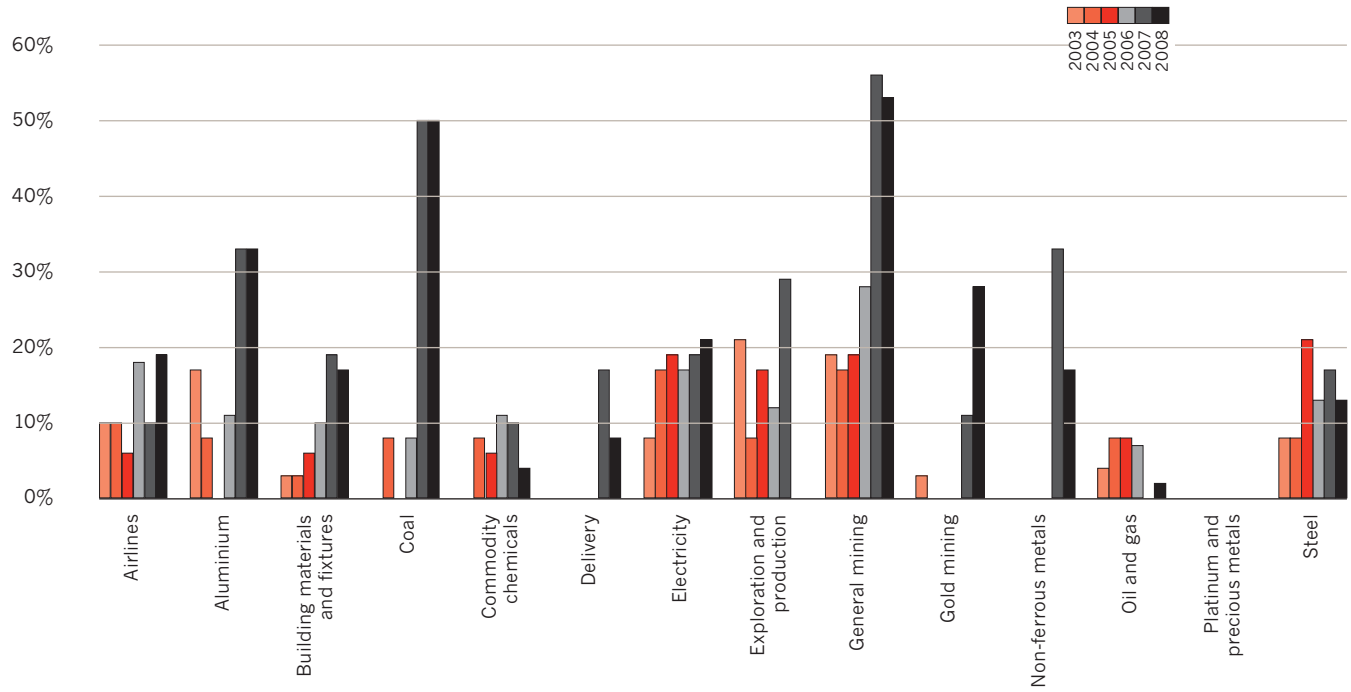


Table 2.6: Top five performers from 2003 to 2008 (by average score across the six years' reports)

Company	Sector	Average % score 2003–08
La Farge	Building materials and fixtures	46
BHP Billiton	General mining	45
Anglo American	General mining	41
ANA	Airlines	40
Lonmin	Platinum and precious metals	39

GREENHOUSE GAS EMISSIONS

The 'GHG emissions' criteria group is split into two parts: performance and targets. Disclosure requirements for assessment here included gross and intensity-based GHG emissions data spanning Scopes 1, 2 and 3 (as defined by the WBCSD GHG Protocol) and long-term and short-term targets for performance improvements.

The average performance of all companies assessed against the 'GHG emissions' criteria group has increased from 21% in 2003 to 33% in 2008 – so there is a better 'basic' performance across the companies in 2003 but the extent of improvement is not as marked. This indicates that most companies are reporting their GHG emissions but in varying degrees of detail.

La Farge was the highest-scoring company across the six years of reporting, with an average score of 46% from 2003 to 2008. It discloses total gross emissions of CO_2 equivalent and CO_2 per tonne of product from 2003 onwards, using the WBCSD GHG Protocol Guidelines. It is also one of the few companies that set a quantitative target early on in its reporting history. Setting both absolute and intensity-based targets for climate change was also a rarity among the companies assessed.

> *By 2010:*
> • *cut net CO_2 emissions per tonne of cement by 20% compared with 1990 levels*
> • *cut absolute net and gross emissions in industrialised countries by 15% and 10% respectively*
> (La Farge's sustainability report 2003)

One area on which very few companies report in the assessment was Scope 3 emissions. These are defined by the GHG Protocol as:

> *being a consequence of the activities of the company, but occur from sources not owned or controlled by the company. Some examples of Scope 3 activities are extraction and production of purchased materials; transportation of purchased fuels; and use of sold products and services.*

Those companies that did report tended to be from the oil and gas, and mining sectors. One example is BHP Billiton's 2008 sustainability report, which states:

> *An estimated 320 million tonnes (on an equity basis) of carbon dioxide equivalent were emitted as a result of our products' being used. This figure is estimated based on standard conversion rates for FY2008 production levels. Several parameters are estimates from our purchasers, and this figure is thus not verifiable.*

BP also discloses customer emissions (ie emissions arising as a result of the use of BP's products by customers) every year apart from 2007 (no reason was provided for the omission).

Again, three of the five companies are from the Mining sector, which has traditionally been active in the climate change mitigation arena, and La Farge is from the Building materials and fixtures sector, which is a major contributor to global carbon emissions.

Figure 2.8 shows individual sectors' performance in the 'GHG emissions' criteria group from 2003 to 2008. Nine of the industry sectors' average scores increased from 2003 to 2008 and five peaked during the research analysis period before dropping again in 2008.

Figure 2.8: Individual sectors' overall performance assessed against the 'GHG emissions' criteria group from 2003 to 2008

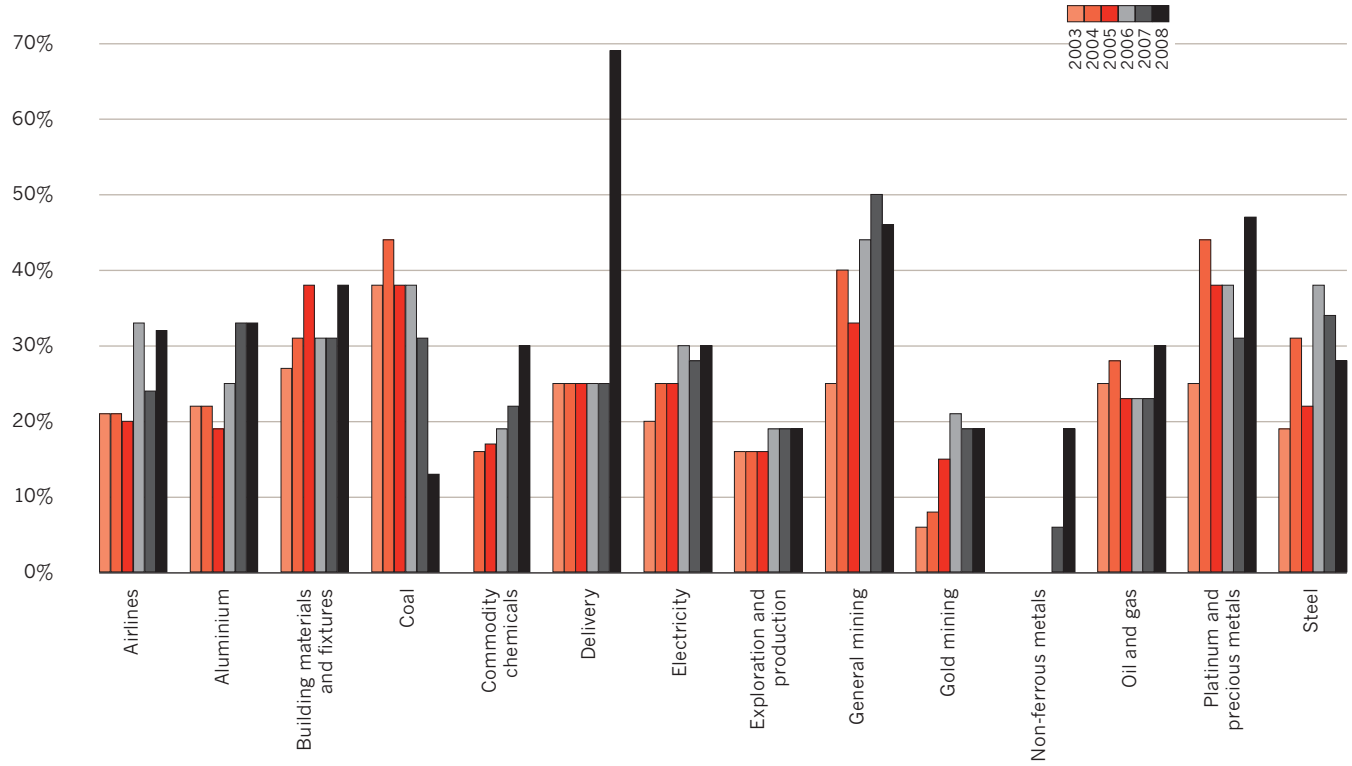


Table 2.7: Top five performers from 2003 to 2008 (by average score across the six years' reports)

Company	Sector	Average % score 2003–08
Exelon	Electricity	78
UPS	Delivery	72
Norsk Hydro	Aluminium	67
TEPCO	Electricity	67
BP	Oil and gas	67
Petrobras	Oil and gas	67
Nippon Steel	Steel	67

MITIGATION AND ADAPTATION

The 'Mitigation and adaptation' criteria group was concerned with disclosures on companies' climate change mitigation and adaptation activities, as well as their engagement with supply chains to encourage performance improvements downstream.

The average performance of all companies assessed against the 'Mitigation and adaptation' criteria group has increased from 39% in 2003 to 53% in 2008, so to some extent this was the criteria group against which they performed best overall. This indicates that most companies are reporting on their mitigation and adaptation activities (primarily mitigation). Many companies do not clearly distinguish between mitigation (taking actions to reduce GHG emissions and to enhance sinks aimed at reducing the extent of global warming) and adaptation (taking action to adapt to the effects and minimise the risks of global warming).

The highest-scoring company across all six reporting years was Exelon, with an average of 78%. The company started off with brief information in its 2003 report, primarily on energy efficiency measures to mitigate emissions, and showed progress each year to 2008, where detailed disclosures are provided on climate change progress within *2020: A Low Carbon Roadmap*, which is a separate document referred to within its sustainability report. This '2020 roadmap' outlines in detail the company's GHG abatement activities, operational energy efficiency improvements and commitment to low-carbon/renewable offerings to its customers. Exelon is also one of the few companies analysed that states within its reporting that supply-chain engagement and management of GHG emissions is a priority.

> *In 2008, Exelon became the first US-based utility to join the Carbon Disclosure Project's Supply Chain Leadership Collaboration. We began asking our top suppliers to disclose their GHG emissions and energy consumption... We now evaluate the environmental performance of prospective suppliers and encourage them to propose innovative solutions for reducing Exelon's carbon footprint. In December 2008, Exelon joined the US EPA/ Department of Commerce Green Supplier Network program as a corporate champion and committed to sponsor five of our suppliers through a 'lean and clean' assessment in 2009.*

Figure 2.9 shows individual sectors' performance assessed against the 'Mitigation and adaptation' criteria group from 2003 to 2008. Twelve of the industry sectors' average scores increased from 2003 to 2008 and one (Airlines) actually decreased from 2003 to 2008. The remainder peaked during the research analysis period and dropped again in 2008.

Figure 2.9: Top five performers from 2003 to 2008, assessed against the 'Mitigation and adaptation' criteria group (by average score across the six years' reports)

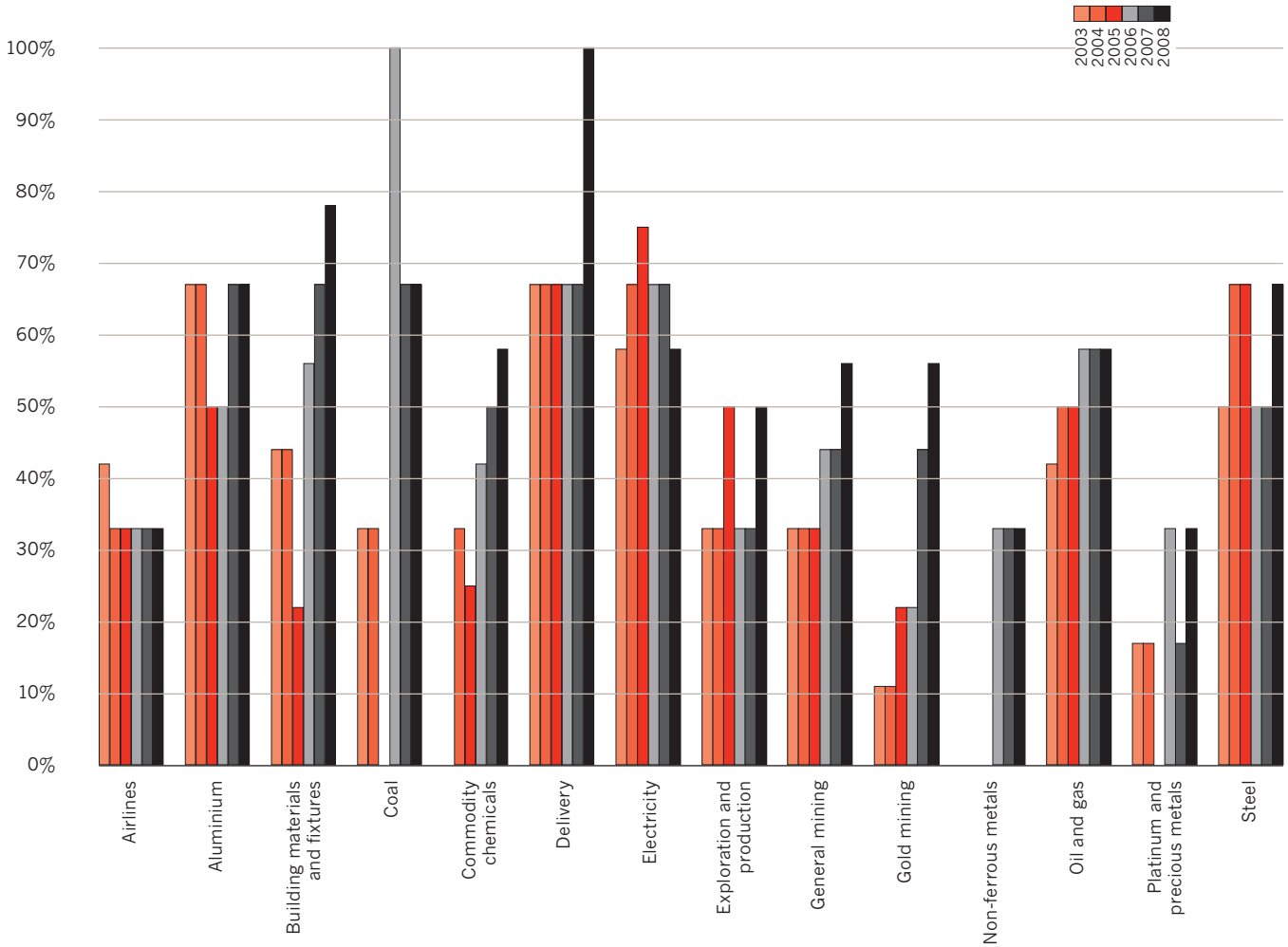


Table 2.8: Top five performers from 2003 to 2008 (by average score across the six years' reports)

Company	Sector	Score
Anglo American	General mining	75
La Farge	Building materials and fixtures	67
Posco	Steel	58
Anglo Platinum	Platinum and precious metals	54
Norsk Hydro	Aluminium	50
Lonmin	Platinum and precious metals	50

CREDIBILITY

The 'Credibility' criteria group was concerned with whether companies' climate change disclosures were a credible source of information, with independent assurance of GHG-emissions data, use of emissions guidance such as the ISO Standard and GHG protocol, and the GRI Guidelines.

The average performance of all companies assessed against the 'Credibility' criteria group has increased from 31% in 2003 to 36% in 2008, indicating that companies are (slowly) moving towards disclosing more credible information for stakeholders. Anglo American was the highest-scoring company with an average of 75% across all six reporting years, and five companies did not score anything against any criterion, in any year.

Anglo American has had its GHG-emissions information (among other disclosure items) independently assured every year since 2003, uses the GRI (2002 then G3) Guidelines' greenhouse-gas-related indicators as a guide, and refers to the GHG Protocol in its emissions reporting.

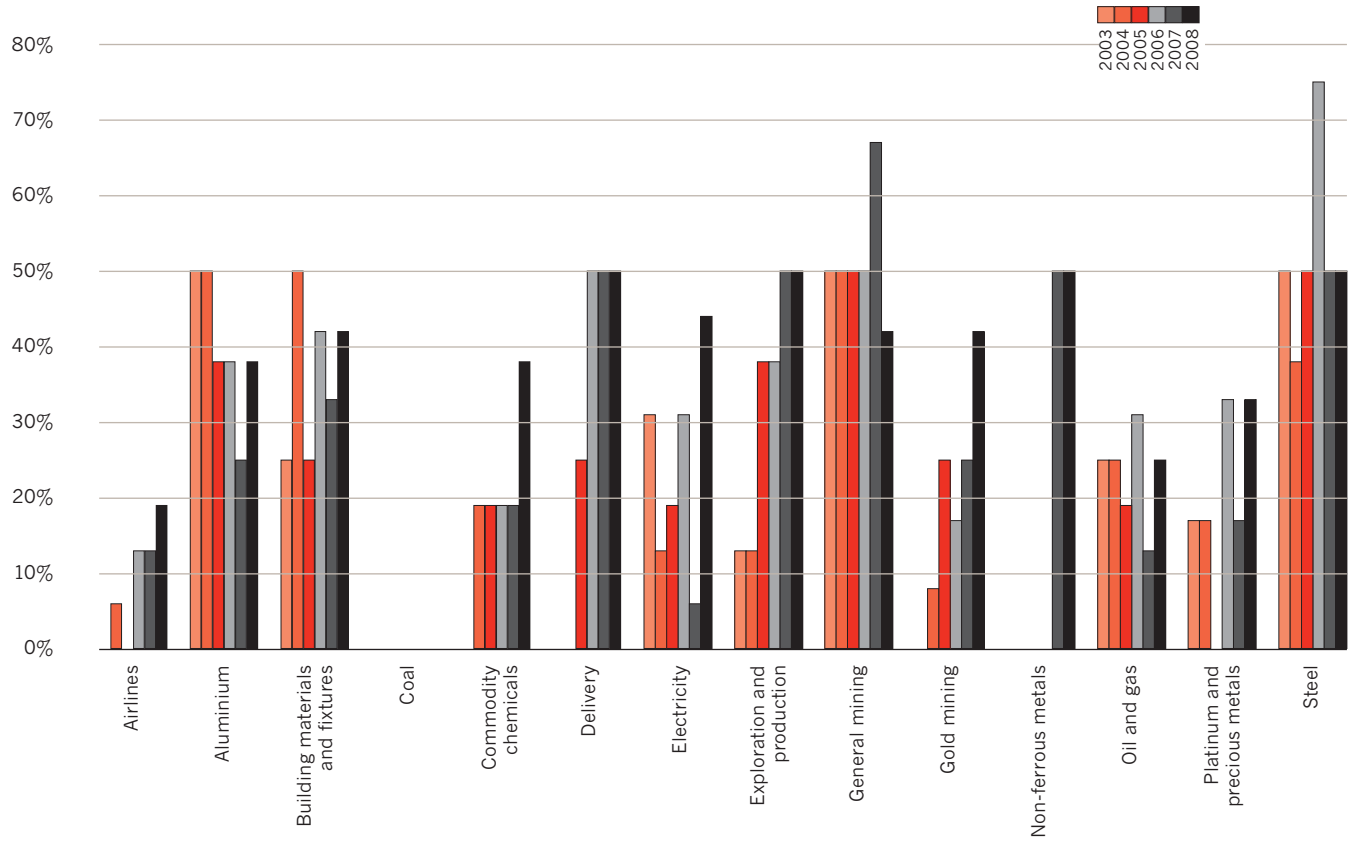
Exelon is the only company that refers to the ISO 14064 standard, stating that:

> *In October 2008, Exelon retained a third party to verify our 2001 through 2008 GHG inventories in accordance with the International Organization for Standardization (ISO) standard, ISO 14064-3.*

No other company refers to it in any context, indicating that this standard is not yet a widely used climate change reporting/verification standard.

Figure 2.10 shows individual sectors' performance assessed against the 'Credibility' criteria group from 2003 to 2008. Eight of the industry sectors' average scores increased from 2003 to 2008 and two (Aluminium and General mining) actually decreased from 2003 to 2008. The remainder peaked during the research analysis period and dropped again in 2008.

Figure 2.10: Individual sectors' overall performance assessed against the 'Credibility' criteria group from 2003 to 2008



3. Focus: BRIC+SA countries' reporting practices

This section was developed by GRI's team members: Teresa Fogelberg, Nelmara Arbex, Ásthildur Rutten-Hjaltadóttir and Katja Kriege.

3.1 Introduction

When ACCA and GRI started to prepare this publication, it became clear that Brazil, Russia, India, China, and South Africa (BRIC+SA countries) would increasingly become the focus for discussion of impacts of the activities of critical sectors and climate change, particularly in the context of the United Nations Climate Change Conference (COP15), 7–18 December 2009.

Although it is true that today's industrialised economies are responsible for the vast majority of GHG emissions already in the atmosphere, developing countries are expected to account for 75% of GHG emissions over the next 25 years, with China alone responsible for one-third of the global total. China is already the world's second-largest emitter of CO_2, and is expected to overtake the US within a decade. It is not a coincidence that some of the giant companies in the critical sectors discussed in this publication are based in these countries.

BRIC+SA already face a host of environmental problems, including air and water pollution, increasing restrictions on water supplies, and resources depletion. Urbanisation, industrialisation and intensive agriculture mean that environmental pressures in BRIC+SA are unlikely to abate for decades.

BRIC+SA are particularly vulnerable to the effects of global warming in urban areas, as they are the sites of most of the largest cities in the world, which are often growing in an unplanned way in areas of strong climate change impact, such as coasts or river valleys; for example, Shanghai, Mumbai, St Petersburg, Rio de Janeiro, among hundreds of others. Actually, 60% of the population of these countries currently lives on the coast, where rising sea level would have most impact. The number of people who need to be relocated could be immense.

Higher global temperatures are also expected to change rainfall patterns and growing seasons. Agriculture, which accounts for 5%–20%[18] of GDP in these countries, would be especially vulnerable, creating a local and a global emergency issue.

In the last decade, the government representatives of these countries – with the exception of Russia – have reacted to this scenario, as one can see from the facts described below.

- Brazil is the world leader, by far, in the use of renewable fuels, which represent 38% of its total energy mix now, and are planned to supply 44% of energy by 2030. Hydroelectricity already accounts for more than 80% of Brazil's electricity consumption; most of the increase is expected to come from biofuels and other renewable sources. Around 75% of Brazilians' carbon emission is related to deforestation.

- India announced on 1 October 2009 that climate change mitigation needs to be measured, thereby for the first time indicating a willingness to set targets and to measure.

- China is the only BRIC country with rising forestation; from 2000 to 2005 it made a significant contribution to a net gain of forests in Asia. China announced major measures during the UN General Assembly in September 2009. China also announced, in January 2008, that all state-owned companies should become more environmentally friendly and report on their environmental work. In February 2009 China published its Program for Action for Sustainable Development and, in November 2009, announced its plans to reduce the intensity of CO_2 emissions per unit of gross domestic product in 2020 by 40% to 45%, compared with its 2005 level.

- The South African government is preparing a green paper on climate change to be launched in 2010, in which new taxes on carbon emissions will be presented, as well as regulations under which carbon emission cuts and inventory would become mandatory.

Are BRIC+SA-based companies ready to talk about their impacts on climate change, to take their responsibilities publicly and present their plans for the future?

To explore answers to this question we have analysed reports from BRIC+SA companies, belonging to the 15 'critical industrial sectors – with high impact on climate change' as defined by the FTSE4Good index.

18. Agriculture remains an important sector of the BRIC economies, accounting for an average 11% of GDP in 2005. This is especially true in India (19% of GDP) and China (12% of GDP), where the majority of the population lives in the countryside (roughly 70% in India and 60% in China).

3.2 Methodology

SAMPLE SELECTION

This part of the research examined the reporting on climate change impacts of the largest[19] companies in the high-impact sectors.[20] The focus is on companies[21] that have their headquarters located in Brazil, Russia, India, China[22] or South Africa (BRIC+SA countries).

In total, 73 companies from the 15 high-impact sectors fulfilled the selection criteria[23] (see Appendix 2 for a complete list of the companies' names).

Out of the 73 companies, 32 (44% of the total) issued a report covering sustainability-related issues.[24]

The countries and sectors of the sample of reporting companies is shown in Table 3.2.

CRITERIA FOR SPECIFIC ANALYSIS

Companies' reports were assessed against a set of 45 criteria developed by ACCA and GRI, using in-house knowledge and expertise as well as existing guidance, for example, from the G3 Guidelines and the Greenhouse Gas Protocol (GHG Protocol) of the World Business Council for Sustainable Development (WBCSD).

These 45 criteria were split into six 'criteria groups':

- Policy
- Governance and strategy
- Risk
- GHG emissions
- Mitigation and adaptation
- Credibility.

See Table 3.19 (pages 64–5) for a list of the 45 criteria.

The most recent reports were analysed, provided they did not date back further than 2007. (Some companies have a biennial reporting cycle – three reports are from 2007 and for one of those a 2008 update is available on the website).

SCORING THE REPORTS

Companies were allocated a score of either 1 or 0 for each criterion. A second researcher 'quality-controlled' a proportion (around 50%) of the assessment to ensure accuracy and consistency of results. Criteria are equally weighted, and the total number of '1' scores added together for each year to get an overall percentage score.

INFORMATION USED

Information assessed in the research comprised publicly available sustainability reports, online sustainability reports and integrated annual reports that clearly state that sustainability disclosures have been combined with financial information. If information online is referred to within a sustainability/annual report (for example, a policy or strategy), this has also been included.

A limitation of many companies' online disclosures is that they are not split into an annual update format, so it has been impossible for the researcher to judge in which year some of the information was added. In other cases, the Web links provided in the stand-alone reports are no longer active. In both these cases, the researcher has used only the stand-alone information unless the online disclosures are clearly marked as being for that particular year.

19. By market capitalisation.

20. This classification is taken from the FTSEGood index.

21. When selecting samples for this analysis, GRI used its own Reports List <www.globalreporting.org/GRIReports/GRIReportsList>.

22. 'China region' also includes companies based in Hong Kong.

23. This number was achieved from the five largest companies within each high-impact sector located in the BRIC+SA countries, provided that they belonged to the 35 largest companies worldwide per sector. The compilation on the sample closed 26 August 2009.

24. For the purpose of this research, the term 'sustainability reports' covers reports named Sustainability Report (6), Sustainable Development Report (7), Corporate Social Responsibility Report (4), Corporate Citizenship Report (1), Social Responsibility Report (1), Social Report (1), Social and Environmental Report (1), Report to Society (1), sections within annual reports (6), Sustainability & Annual Report (1), Environment Protection Environmental Report (1), Communication on Progress on Global Compact (1), a company brochure with a CSR chapter(1) and a brochure called Climate Vision, in addition to the annual report(1).

Table 3.1: Distribution of sample companies by sector and country (n=73)

	Airlines	Aluminium	Building materials and fixtures	Coal	Diamonds and gemstones	Commodity chemicals	Delivery	Electricity	Exploration and production	General mining	Gold mining	Non-ferrous metals	Oil and gas	Platinum and precious metals	Steel
Brazil						1		1	1				1		2
China	5	4	3	5	2	3	3	3	1	1	2	2	2	1	2
India		1	2				1	1	2	2		2			1
Russia									1		1	1	2	1	
South Africa					3					2	2			3	

Table 3.2: Distribution of reports by sector and country (n=32)

	Airlines	Aluminium	Building materials and fixtures	Coal	Diamonds and gemstones	Commodity chemicals	Delivery	Electricity	Exploration and production	General mining	Gold mining	Non-ferrous metals	Oil and gas	Platinum and precious metals	Steel
Brazil						1		1					1		2
China	2					1		1	1				2		1
India		1	2						2			2			
Russia									1			1	2	1	
South Africa					1					1	2			3	

3.3 Results: general

OVERVIEW OF THE 32 REPORTS

- All reports are available online as PDF documents.[25] (In addition, one report refers to more details online, one offers a 'web-based update' for a year after publication, as the company issues the report every two years).

- The content under investigation in the report is either separate from or included in the company's annual report (for details please see footnote 24) as a complete report, a section or a chapter. In nine cases the reporting is in sections within: the annual report (6), Sustainability & Annual Report (1), company brochure with a CSR chapter (1), and a brochure called *Climate Vision* in addition to the annual report (1). The remaining 23 reports are presented separately from the annual report.

- Of the reports analysed, 16 of 32 declare themselves to be GRI reports. The scope of the reports varies greatly from self-declared, GRI-checked and third-party-checked reports across all GRI Application Levels (external verification is indicated by a + sign). These levels are:

  - A+ GRI checked: three reports
  - A+ third-party checked: two reports
  - B+ third-party checked: four reports
  - B self-declared: two reports
  - C+ third-party checked: one report
  - G3 self-declared (with reference to GRI performance indicators and including GRI content index), but no application level indicated: four reports.

- One report refers to GRI but explains that it is not a GRI report yet.

- Thirteen reports have their data externally assured by an auditing organisation.

- Out of 32 reports, 29 refer to climate change issues as a specific topic.

25. China Shenhua Energy Company, in the coal sector, added a sustainability report link to its website after this research was completed. However, this link is not currently accessible through its website.

3.4. Results: trends per sector

AIRLINES: 2 REPORTS

KEY TRENDS

Strong score on policy disclosure.

Strong score on governance and strategy disclosure.

Relatively strong score on GHG-emissions performance disclosure.

Strong score on GHG targets disclosure.

Strong score on mitigation and adaptation disclosure.

Strong score on credibility related issues.

Weak on disclosure on all risks.

Table 3.3 Airline sector performance against the six groups of criteria

1. Policy	One company reports on all points.
2. Governance and strategy	One company reports on all points except 2.4 (Remuneration at executive and board level is linked to climate change performance/ issues) and 2.6 (Overview/statement of company management system for climate change).
3a. Risks – General	One company reports on point 3.1 only (Identifying financial risk arising from climate change).
3b. Risks – Physical	No reporting.
3c. Risks – Regulatory	One company reported on 3.10 only (Details of the business implications of existing or prospective legislation to reduce GHG emissions are given)
4a. GHG – Performance	One company reports on points 4.1 (Total gross emissions in CO_2 -equivalent metric tons), 4.2 (Report differentiates between Scope 1 and Scope 2 emissions), 4.4 (A measure of GHG intensity by reference to the company's revenue), 4.6 (A measure of GHG intensity by reference to non-financial output) and 4.8 (GHG emissions are prepared using one or more standards, national, regional or industry-specific programmes).
4b. GHG – Targets	One company reported on all points except 4.13 (Progress against previously set targets).
5. Mitigation and adaptation	One company reported on all points.
6. Credibility	One company reported on all points except 6.4 (Significant reference to ISO 14064-1).

ALUMINIUM: 1 REPORT

One company issues a sustainability report, but does not report on climate change issues at all.

BUILDING MATERIALS AND FIXTURES: 2 REPORTS

KEY TRENDS

Strong score on policy disclosure.

Relatively strong score on governance and strategy. disclosure.

Relatively strong score on GHG-emissions performance disclosure.

Strong score on disclosure on GHG targets.

Strong score on mitigation and adaptation disclosure.

Very strong score on disclosure of credibility related issues.

Weak score on analysis of all risks.

Table 3.4 Building materials and fixtures sector performance against the six groups of criteria

1. Policy	Both companies report on 1.1 (Policy statement on operations and climate change) and 1.3 (Public position on commitment to binding targets) and one of them on 1.2 (Public position on climate-change science) in addition.
2. Governance and strategy	Both report on 2.1 (CEO/directors articulate views on climate change and GHG emissions) and one of them on 2.5 (Information on how climate change trends are linked into future company strategy) and 2.6 (Overview/statement of company management system) as well.
3a. Risks – General	One of the companies reports on 3.1 only (Identifying financial risk arising from climate change).
3b. Risks – Physical	No reporting.
3c. Risks – Regulatory	One of the companies reports on 3.10 (Details of climate change-related regulations and policies) and 3.12 (Details of the business implications).
4a. GHG – Performance	Both companies report on 4.6 (A measure of GHG intensity by reference to non-financial output) and 4.8 (GHG emissions are prepared using one or more standards, national, regional or industry-specific programmes). One of them also reports on 4.1 (Total gross emissions in CO_2-equivalent metric tons), 4.2 (Report differentiates between Scope 1 and Scope 2 emissions) and 4.7 (Information in 4.6 split out in Scope 1 and Scope 2 emissions).
4b. GHG – Targets	Both report on 4.14 (targets apply to operational data) and one of them reports on 4.9 (Quantified targets set), 4.11 (Short-term targets), 4.12 (Long-term targets) and 4.16 (Process-driven targets) as well.
5. Mitigation and adaptation	Both companies report on 5.1 (Climate change mitigation actions taken and discussed) and one of them also on 5.3 (Climate-change-adaptation measures taken and discussed).
6. Credibility	Both companies report on 6.1 (Independent assurance of GHG emissions), 6.2 (Significant reference to WBCSD-WRI GHG protocol) and 6.3 (Use of GRI climate-change-specific indicators).

COAL: 0 REPORTS

COMMODITY CHEMICALS: 2 REPORTS

KEY TRENDS

Strong score on regulatory risks disclosure.

Relatively strong score on mitigation and adaptation disclosure.

Relatively weak score on policy disclosure.

Weak score on governance and strategy disclosure.

Relatively weak score on GHG targets disclosure.

Very weak score on general and physical risks disclosure (ie no reporting).

Relatively weak score on GHG performance disclosure.

Weak disclosure on credibility related issues.

Table 3.5 Commodity chemicals sector performance against the six groups of criteria

1. Policy	One of the companies reports on policy; on points 1.1 (Policy statement on operations and climate change) and 1.3 (Public position on commitment to binding targets).
2. Governance and strategy	One company reports on Governance, point 2.1 only (CEO/directors articulate views on climate change and GHG emissions).
3a. Risks – General	Neither of the companies reports on General risks.
3b. Risks – Physical	Neither of the companies reports on Physical risks.
3c. Risks – Regulatory	Both companies report on Regulatory risks. Both report on 3.10 (Details of climate change related regulations and policies) and one on 3.11 (Details are given of how those regulations, policies or initiatives affect the business) and 3.12 (Details of business implications of existing or prospective legislation to reduce GHG emissions) as well.
4a. GHG – Performance	One of the companies reports on the following points of GHG-emissions performance: 4.1 (Total gross emissions in CO_2-equivalent metric tons), 4.2 (Report differentiates between Scope 1 and Scope 2 emissions) and 4.8 (Use of standards).
4b. GHG – Targets	One of the companies reports on GHG targets, on the following points: 4.9 (Quantified targets set), 4.11 (Short-term targets), 4.12 (Long-term targets) and 4.14 (Targets apply to operational data).
5. Mitigation and adaptation	Both companies report on 5.1 (Climate change mitigation actions taken and discussed) and one on 5.3 (Measures taken).
6. Credibility	Only one company reports on credibility related issues, on point 6.2 only (Reference to WBCSD-WRI GHG protocol).

DELIVERY SERVICES: 0 REPORTS

DIAMONDS AND GEMSTONES: 1 REPORT

One company issues a sustainability report, but does not report on climate change issues at all.

ELECTRICITY: 2 REPORTS

KEY TRENDS

Strong score on policy disclosure.

Strong score on governance and strategy disclosure.

Relatively strong score on disclosure of all risks.

Relatively strong score on GHG-emissions performance disclosure.

Strong score on GHG targets disclosure.

Strong score on mitigation and adaptation disclosure.

Very weak score on credibility related issues – no reporting.

Table 3.6 Electricity sector performance against the six groups of criteria

1. Policy	Both companies report on 1.1 (Policy statement on operations and climate change) and one company reports on all the additional points.
2. Governance and strategy	Both companies report on points 2.3 (Existence of a board committee with specific responsibility/remit for climate change or evidence that the board is engaged in these issues), 2.5 (Information on how climate change trends are linked into future company strategy) and 2.6 (Overview/statement of company management system for climate change). One company reports on point 2.1 (CEO/directors articulate views on climate change and GHG emissions).
3a. Risks – General	Both companies report on point 3.2 (Mention of climate-change risks). One of them also reports on 3.1 (Financial risks arising from climate change).
3b. Risks – Physical	One company reports on all points expect 3.9 (The effect of physical risks on the company's supply chain and customers).
3c. Risks – Regulatory	One company reports on 3.12 (Details of the business implications).
4a. GHG – Performance	One company reports on points 4.1 (Total gross emissions in CO_2-equivalent metric tons), 4.2 (Report differentiates between Scope 1 and Scope 2 emissions), 4.6 (A measure of GHG intensity by reference to non-financial output), 4.7 (Information in 4.6 split out into Scope 1 and Scope 2 emissions) and 4.8 (GHG emissions are prepared using one or more standards, national, regional or industry-specific programmes).
4b. GHG – Targets	One company reports on all points except 4.10 (Targets set using both absolute and intensity-based units).
5. Mitigation and adaptation	Both companies report on 5.1 (Climate change mitigation actions taken and discussed) and one company on points 5.2 (Assessment of, and engagement with, supply-chain GHG emissions) and 5.3 (Climate change adaptation measures taken and discussed).
6. Credibility	No reporting.

EXPLORATION AND PRODUCTION: 4 REPORTS

KEY TRENDS

High score on policy disclosure.

High score on climate change mitigation and adaptation actions disclosure.

Low score on disclosure on risks: general, physical and regulatory.

Low score on target-setting disclosure.

Low score on credibility related disclosure.

Table 3.7: Exploration and production sector performance against the six groups of criteria

1. Policy	All four companies report on policy issues, and all on criterion 1.1 (Policy statement on operations and climate change). One company reports on 1.2 (Public position on climate-change science). One company reports on 1.3 (Public position on commitment to binding targets). None of the four companies reports on 1.4 (Policy on addressing product impacts).
2. Governance and strategy	Only two companies report governance-related issues. Both report on 2.1 (CEO/directors articulate views on climate change and GHG emissions) and 2.6 (Overview/statement of company management system for climate change). One company reports on 2.3 (Existence of a board committee with specific responsibility/remit for climate change or evidence that the board is engaged in these issues) and 2.5 (Information about how climate change trends are linked into future company strategy in some way). There is no reporting on 2.2 (Individual with specific responsibility for climate change performance/issues) and 2.4 (Remuneration at executive and board level is linked to climate change performance/issues).
3a. Risks – General	Only one company reports on 3.1 (Financial risk arising from climate change). No further reporting on general risks.
3b. Risks – Physical	No company reports on physical risks.
3c. Risks – Regulatory	Only one company reports on regulatory risks and then on only 3.10 (Details of the climate change-related regulations, policies or government sponsored initiatives that affect the company).
4a. GHG – Performance	Two companies report on 4.1 (Total gross GHG emissions in CO_2-equivalent metric tons), 4.2 (Report differentiates between Scope 1 and Scope 2 emissions and splits these out in reporting of 4.1) and 4.8 (GHG-emissions reporting is prepared using one or more standards, national, regional or industry-specific programmes). One company reports on 4.6 (A measure of GHG intensity by reference to non-financial output).
4b. GHG – Targets	Two companies report on GHG targets, one of them covering all points except 4.10 (Targets set using both absolute and intensity-based units) and 4.15 (Targets apply to product data).
5. Mitigation and adaptation	All four companies report on 5.1. (Climate change mitigation actions taken and discussed). None of them reports on 5.2. (Assessment of and engagement with supply-chain GHG emissions) and half of them on measures taken, 5.3 (Climate change adaptation measures taken and discussed).
6. Credibility	Only one company reports on issues related to credibility, on 6.3 (Use of GRI climate-change-specific indicators).

GENERAL MINING: 1 REPORT

KEY TRENDS

High score on policy disclosure.

Relatively high score on GHG-emissions targets disclosure.

Relatively weak reporting on governance and strategy issues.

Very low reporting on related risks.

Table 3.8: General mining sector performance against the six groups of criteria

1. Policy	The company reports on 1.1 (Policy statement on operations and climate change), 1.2 (Public position on climate-change science) and 1.3 (Public position on commitment to binding targets).
2. Governance and strategy	In Governance there is reporting on 2.1 (CEO/directors articulate views on climate change and GHG emissions), and 2.2 (Individual with specific responsibility for climate change performance/issues).
3a. Risks – General	No reporting.
3b. Risks – Physical	No reporting.
3c. Risks – Regulatory	Reporting on point 3.10 (Details of climate change related regulations and policies).
4a. GHG – Performance	Reporting on 4.1 (Total gross emissions in CO_2-equivalent metric tons).
4b. GHG – Targets	Reporting on 4.9 (Quantified targets set), 4.11 (Short-term targets), 4.14 (Targets apply to operational data) and 4.16 (Process-driven targets set).
5. Mitigation and adaptation	Reporting on 5.1 (Climate change mitigation actions taken and discussed).
6. Credibility	Reporting on 6.3. (Use of GRI climate-change-specific indicators).

GOLD MINING: 2 REPORTS

KEY TRENDS

High score on policy disclosure.

Relatively high score on governance and strategy disclosure.

High score on regulatory risks disclosure.

Relatively strong score on setting GHG targets.

Relatively strong score on disclosure on mitigation and adaptation.

Relatively strong score on credibility related issues.

Relatively weak score on general and physical risks analysis.

Table 3.9: Gold mining sector performance against the six groups of criteria

1. Policy	Both companies report on policy: both on 1.1 (Policy statement on operations and climate change), one also on 1.2 (Public position on climate-change science) and the other on 1.3 (Public position on commitment to binding targets).
2. Governance and strategy	Only one of the companies reports on governance and then on all points except 2.4 (Remuneration at executive and board level) and 2.6 (Overview/ statement of company management system).
3a. Risks – General	One of the companies reports on General risks and then only on 3.3 (Process and systems described for risk identification – operations).
3b. Risks – Physical	One of the companies reports on details of the physical risks to which the company is exposed (3.5).
3c. Risks – Regulatory	Both companies report on all points of regulatory risks.
4a. GHG – Performance	Both companies report on 4.1 (Total gross emissions in CO_2-equivalent metric tons).
4b. GHG – Targets	Both companies report on 4.11 (Short-term targets set) and 4.16 (Process-driven targets set), and one of them on 4.12 (Long-term targets), as well as 4.14 (Targets on operational data).
5. Mitigation and adaptation	Both companies report on 5.1 (Climate change mitigation actions taken and discussed) and one of them also on 5.3. (Climate change adaptation measures taken and discussed).
6. Credibility	One of the companies reports on the following issues related to credibility: 6.1 (Independent assurance of GHG emissions), 6.3 (Use of GRI climate-change-specific indicators) and 6.4 (Significant use of ISO 14064-1).

NON-FERROUS METALS: 3 REPORTS

KEY TRENDS

High score on policy disclosure.

Relatively strong score on GHG-emissions performance disclosure.

Strong score on Mitigation and adaptation disclosure.

Weak score on Governance and strategy disclosure.

Weak score on General risks analysis.

Weak score on Physical risks analysis.

Weak score on Regulatory risks analysis.

Relatively weak score on GHG-emissions targets disclosure.

Relatively weak score on disclosure on credibility related issues.

Table 3.10: Non-ferrous metals sector performance against the six groups of criteria

1. Policy	All companies in this sector report on policy: all on 1.1 (Policy statement on operations and climate change) and one also on 1.3 (Public position on commitment to binding targets).
2. Governance and strategy	Only one company reports on Governance and then on only points 2.1 (CEO/directors articulate views on climate change and GHG emissions) and 2.6 (Overview/statement of company management system).
3a. Risks – General	Only one of the companies reports on General risks, on points 3.1 (Identifying financial risk arising from climate change) and 3.3 (Process and systems described for risk identification cover operation – without any details).
3b. Risks – Physical	Only one of the companies reports on Physical risks and then on point 3.5 only (Details of the physical risk to which the company is exposed).
3c. Risks – Regulatory	Only one of the companies reports on Regulatory risks – on point 3.12 only (Details of the business implications).
4a. GHG – Performance	All three companies report on point 4.1 in GHG-emissions performance (Total gross emissions in CO_2-equivalent metric tons). In addition, one company also reports on 4.2 (Report differentiates between Scope 1 and Scope 2 emissions), 4.3 (Indirect emissions from sources not owned or controlled by the reporting organisation) and 4.6 (A measure of GHG intensity by reference to non-financial output).
4b. GHG – Targets	Only one company reports on GHG targets, on points 4.11 (Short-term targets), 4.14 (Targets apply to operational data) and 4.16 (Process-driven targets set).
5. Mitigation and adaptation	All companies report on 5.1. (Climate mitigation actions taken and discussed). One also reported on 5.3 (Measures taken).
6. Credibility	One of the companies reports on credibility, points 6.2 (Significant reference to WBCSD-WRI GHG protocol) and 6.3 (Use of GRI climate-change-specific indicators).

OIL AND GAS: 5 REPORTS

KEY TRENDS

High score on policy disclosure.

High score on total gross emissions in CO_2-equivalent metric tons, but low on other GHG-emissions performance criteria.

Very high score on reporting on GHG-emissions targets.

High score on disclosure of climate-change mitigation and adaptation actions.

Relatively high score on credibility related issues (reporting on use of climate-change-specific indicators).

Very low score on reporting of risks except regulatory risks (3.10 Details of the climate change related regulations, etc).

Table 3.11: Oil and gas sector performance against the six groups of criteria

1. Policy	All five companies report on policy-related issues and all on 1.1 (Policy statement on operations and climate change). One company reports on all four points.
2. Governance and strategy	Only two companies report on governance-related issues and one of those on all points except 2.4 (Remuneration at executive and board level).
3a. Risks – General	Only one company reports on general risks, but not on issues related to processes (3.3 and 3.4).
3b. Risks – Physical	There is no reporting on physical risks.
3c. Risks – Regulatory	Three of the companies report on regulatory risks, in all cases on 3.10 (Details of the climate change-related regulations).
4a. GHG – Performance	Four of the companies report on their GHG-emissions performance, in each case on 4.1 (Total gross emissions in CO_2-equivalent metric tons)
4b. GHG – Targets	All the companies report on GHG targets, four of them on 4.11 (Short-term targets) and three on 4.12 (Long-term targets). All report that targets apply to operational data (4.14) and four on process-driven targets set (4.16).
5. Mitigation and adaptation	All the companies report on 5.1. (Climate change mitigation actions taken and discussed). None report on 5.2. (Supply-chain GHG emissions) but two report on measures taken (5.3).
6. Credibility	Three companies report on issues related to credibility, all of these on 6.3 (Use of GRI climate-change-specific indicators).

PLATINUM AND PRECIOUS METALS: 4 REPORTS

KEY TRENDS

High score on policy.

Relatively high score on governance and strategy disclosure.

Relatively high score on GHG performance.

Relatively high score on mitigation and adaptation disclosure.

Weak disclosure on general risks.

Relatively weak disclosure on related physical risks.

Relatively weak disclosure of regulatory risks.

Relatively weak disclosure of GHG-emissions targets.

Weak disclosure on credibility related issues.

Table 3.12: Platinum and precious metals sector performance against the six groups of criteria

1. Policy	Three companies report on policy, all on 1.1 (Policy statement on operations and climate change). In addition one of them reports on 1.3 (Public position on commitment to binding targets) and two on 1.4 (Policy on addressing product impacts).
2. Governance and strategy	Three companies report on Governance. Two on 2.1 (CEO/directors articulate views on climate change and GHG emissions), three on 2.3 (Existence of a board committee with specific responsibility/remit for climate change or evidence that the board is engaged in these issues) and 2.5 (Information on how climate change trends are linked into future company strategy). No companies report on 2.2 (Individual with specific responsibility for climate change performance/issues), 2.4. (Remuneration at executive and board level), or 2.6 (Overview/statement of company management system).
3a. Risks – General	Only one company reports on General risks, on 3.1 (Identifying financial risk arising from climate change) and 3.3 (Process and systems described for risk identification cover operations).
3b. Risks – Physical	Three companies report on Physical risk, all on only 3.5. (Details of physical risks to which the company is exposed).
3c. Risks – Regulatory	Two companies report on Regulatory risks, both on only 3.12 (Details of the business implications of existing or prospective legislation to reduce GHG emissions).
4a. GHG – Performance	Three companies report on GHG performance. Two of them on total gross emissions in CO_2 -equivalent metric tons (4.1) and 4.8 (Use of standards), three on 4.2 (report differentiates between Scope 1 and Scope 2 emissions), and one on 4.3 (Indirect emissions from sources not owned or controlled by the reporting organisation), 4.6 (A measure of GHG intensity by reference to non-financial output) and 4.7 (Information in 4.6. split into Scope 1 and Scope 2 emissions).
4b. GHG – Targets	Two companies report on GHG targets, both on 4.15 (Targets apply to product data) and 4.16 (Process-driven targets set), and one on 4.9 (Quantified targets set), 4.11 (Short-term targets), 4.12 (Long-term targets) and 4.13 (Progress against previously set targets).
5. Mitigation and adaptation	Three companies report on 5.1 (Climate change mitigation actions taken and discussed) and one on 5.3 (Measures taken).
6. Credibility	Two companies report on credibility related issues, both of them on 6.3 (Use of indicators) and one on 6.2 (Significant reference to protocols).

STEEL: 3 REPORTS

KEY TRENDS

Relatively strong score on policy disclosure.

Strong score on regulatory risks analysis.

Relatively strong score on mitigation and adaptation disclosure.

Weak score on governance and strategy disclosure.

Weak score on general and physical risks analysis.

Relatively weak score on GHG-emissions performance disclosure.

Relatively weak score on GHG targets disclosure.

Weak score on disclosure of credibility related issues.

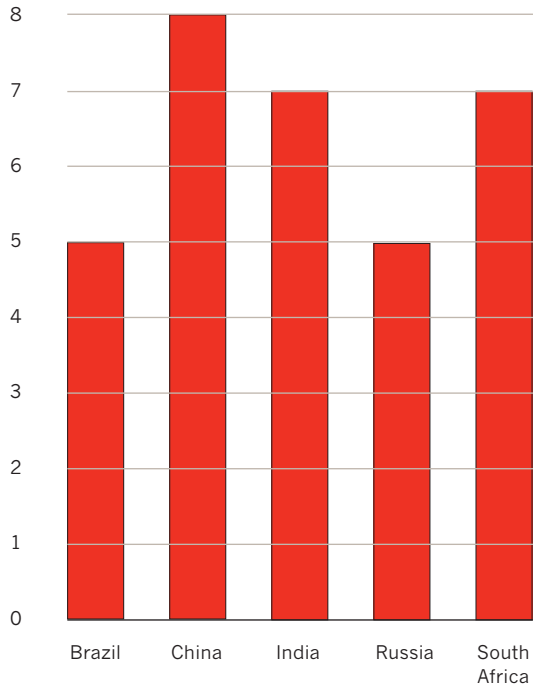
Table 3.13: Steel sector performance against the six groups of criteria

1. Policy	All companies report on policy, on 1.1 only (Policy statement on operations and climate change).
2. Governance and strategy	One company reports on Governance as follows: 2.1 (CEO/directors articulate views on climate change and GHG emissions), 2.3 (Existence of a board committee with specific responsibility/ remit for climate change or evidence that the board is engaged in these issues), 2.5 (Information on how climate change trends are linked into future company strategy) and 2.6 (Overview/statement of company management system).
3a. Risks – General	Two companies report on General risks, point 3.2 (Mention of climate-change risks such as litigation and reputational risks) only.
3b. Risks – Physical	One company reports on Physical risk, point 3.8 (Regions or locations affected) only.
3c. Risks – Regulatory	Two companies report on regulatory risks, points 3.10 (Details of climate change related regulations and policies) and 3.12 (Details of the business implications). One company reported on 3.11 (Details are also given of how those regulations, policies or initiatives affect the business.)
4a. GHG – Performance	One company reported on 4.1 (Total gross emissions in CO_2-equivalent metric tons), 4.2 (Report differentiates between Scope 1 and Scope 2 emissions), 4.5 (Information in 4.4. split out into Scope 1 and Scope 2 emissions) and 4.8 (Use of standards).
4b. GHG – Targets	One company reports on targets – on points 4.11 (Short-term targets), 4.12 (Long-term targets), 4.14 (Targets apply to operational data) and 4.16 (Process-driven targets set).
5. Mitigation and adaptation	Two companies reported on 5.1 (Mitigation actions taken and discussed) and one on 5.3 (Climate change adaptation measures taken and discussed).
6. Credibility	One company reported on 6.2 (Significant reference to protocols) and two on 6.3 (Use of climate-change-specific GRI indicators).

3.5 Results: trends per country

Fig. 3.1 shows the country distribution of the 32 reports by location of the company headquarters.

Figure 3.1: Distribution of the 32 reports by location of company headquarters



BRAZIL: 5 REPORTS

KEY TRENDS

Strong score on policy disclosure.

Relatively strong score on governance and strategy disclosure.

Strong score on regulatory risks analysis.

Relatively strong score on disclosure of GHG-emissions performance.

Strong score on mitigation and adaptation disclosure.

Weak score on general and physical risks analysis.

Relatively weak score on disclosure of GHG targets.

Table 3.14: Brazilian companies' performance against the six groups of criteria

1. Policy	Four companies report on policy, all on 1.1 (Policy statement on operations and climate change), two on 1.3 (Public position on commitment to binding targets) and one on 1.4 (Policy on addressing product impacts).
2. Governance and strategy	Three companies report on Governance, one on 2.1 (CEO/directors articulate views on climate change and GHG emissions), two on 2.3 (Existence of a board committee with specific responsibility/remit for climate change or evidence that the board is engaged in these issues) and three on 2.5 (Information on how climate-change trends are linked into future company strategy) and 2.6 (Overview/statement of company management system for climate change). No company reports on 2.2 (Individual with specific responsibility for climate change identified or evidence of how responsibility for climate change is delegated) or 2.4 (Remuneration at executive and board level is linked to climate change performance/issues).
3a. Risks – General	Four companies report on 3.2 (Mention of climate change risk such as litigation and reputational risk). There was no further reporting in this category.
3b. Risks – Physical	Only one company reports on Physical risk and then only on 3.8 (The affected regions or locations).
3c. Risks – Regulatory	Four companies report on regulatory risks, all on 3.10 (Details of the business implications of existing or prospective legislation to reduce GHG emissions are given) and two on 3.11 (Details are given of how those regulations, policies or initiatives affect the business) and one on 3.12 (Details of the business implications).
4a. GHG – Performance	Three companies report on GHG performance. All reported on 4.1 (Total gross emissions in CO_2 -equivalent metric tons); two on 4.3 (Indirect emissions from sources not owned or controlled by the reporting organisation), 4.4 (A measure of GHG intensity by reference to the company's revenue), 4.6 (A measure of GHG intensity by reference to non-financial output) and 4.8 (GHG emissions prepared using one or more standards, national, regional or industry-specific programmes). One company reports on each of the following: 4.2 (Report differentiates between Scope 1 and Scope 2 emissions), 4.5 (Information in 4.4. split out into Scope 1 and Scope 2 emissions) and 4.7 (Information in 4.6 split out into Scope 1 and Scope 2 emissions).
4b. GHG – Targets	Two companies report on 4.1 (Quantified targets set), 4.3 (Short-term targets), 4.4 (Long-term targets), 4.6 (targets apply to operational data), and one company on 4.7 (targets apply to product data) and 4.8 (Process-driven targets set). No company reports on 4.2 (targets set by using both absolute and intensity based units) and 4.5 (Progress against previously set targets).
5. Mitigation and adaptation	Four companies report on 5.1 (Climate change mitigation actions taken and discussed), none on 5.2 (Assessment of, and engagement with, supply-chain GHG emissions) and three on 5.3 (Climate change adaptation measures taken and discussed).
6. Credibility	Two companies report on 6.2 (Significant reference to WBCSD-WRI GHG protocol) and 6.3 (Use of GRI climate-specific indicators).

CHINA: 8 REPORTS (INCLUDING 3 FROM HONG KONG)

KEY TRENDS

Strong score on policy disclosure.

Strong score on governance and strategy disclosure.

Strong score on regulatory risks analysis.

Strong score on GHG targets disclosure.

Strong score on mitigation and adaptation disclosure.

Relatively weak score on general risks analysis.

Very weak score on physical risks analysis.

Relatively weak score on GHG-emissions performance disclosure.

Weak score on credibility related issues.

Table 3.15 Chinese (including Hong Kong) companies' performance against the six groups of criteria

1. Policy	Six companies report on 1.1 (Policy statement on operations and climate change), four on 1.2 (Public position on climate-change science), two on 1.3 (Public position on commitment to binding targets) and three on 1.4 (Policy on addressing product impacts).
2. Governance and strategy	Six companies report on 2.1 (CEO/directors articulate views on climate change and GHG emissions), one reports on 2.2 (Individual with specific responsibility for climate change identified or evidence of how responsibility for climate change is delegated), three on 2.5 (Information on how climate change trends are linked into future company strategy) and two on 2.6 (Overview/statement of company management system for climate change).
3a. Risks – General	Three companies report on 3.1 (Identifying financial risks) and one report on 3.2 (Mention of climate change risks such as litigation and reputational risks) without any details provided.
3b. Risks – Physical	One company reports on the following: 3.5 (Details of physical risk to which the company is exposed), 3.6 (Details of how those climate change risks are assessed and managed), 3.7 (The timescales over which climate-change risks are expected to materialise) and 3.8 (The regions and locations affected).
3c. Risks – Regulatory	Six companies report on 3.10 (Details are given of the business implications of existing or prospective legislation to reduce GHG emissions), one on 3.11 (Details are given of how those regulations, policies or initiatives affect the business) and 3.12 (Details of the business implications).
4a. GHG – Performance	Three companies report on 4.1 (Total gross emissions in CO_2-equivalent metric tons), one on 4.2 (Report differentiates between Scope 1 and Scope 2 emissions) and 4.4 (A measure of GHG intensity by reference to the company´s revenue), two on 4.6 (A measure of GHG intensity by reference to non-financial output), one on 4.7 (Information in 4.6 split out into Scope 1 and Scope 2 emissions) without any details. Three companies reported on 4.8 (GHG emissions prepared using one or more standards, national, regional or industry-specific programmes).
4b. GHG – Targets	Two companies report on 4.1 (Quantified targets set), four on 4.3 (Short-term targets), five on 4.4 (Long-term targets), two on 4.5 (Progress against previously set targets), six on 4.6 (Targets apply to operational data), three on 4.7 (targets apply to product data) and six on 4.8 (Process-driven targets set).
5. Mitigation and adaptation	Seven companies report on 5.1 (Climate change mitigation actions taken and discussed), two on 5.2 (Assessment of, and engagement with, supply-chain GHG emissions) and three on 5.3 (Climate change adaptation measures taken and discussed).
6. Credibility	One company report on 6.1 (Independent assurance of GHG emissions), two on 6.2 (Significant reference to protocols), three on 6.3 (Use of GRI climate-change-specific indicators) and one on 6.4 (Significant reference to ISO 14064-1.

INDIA: 7 REPORTS

KEY TRENDS

Strong score on policy disclosure.

Strong score on governance and strategy disclosure.

Strong score on GHG-emissions performance disclosure.

Relatively strong score on GHG targets disclosure.

Strong score on mitigation and adaptation disclosure.

Relatively strong score on credibility related issues.

Weak score on disclosure of all risks.

Table 3.16 Indian companies' performance against the six groups of criteria

1. Policy	Five companies report on 1.1 (Policy statement on operations and climate change) and 1.3 (Public position on commitment to binding targets). Two report on 1.2 (Public position on climate-change science).
2. Governance and strategy	Four companies report on 2.1 (CEO/directors articulate views on climate change and GHG emissions), one on 2.2 (Individual with specific responsibility for climate change identified or evidence of how responsibility for climate change is delegated), two on 2.5 (Information on how climate-change trends are linked into future company strategy) and three on 2.6 (Overview/statement of company management system for climate change).
3a. Risks – General	Two companies report on 3.1 (Identifying financial risks) and one reports on 3.3 (Process and systems described for risk identification cover operations), but no details were provided.
3b. Risks – Physical	One company reports on 3.5 (Details of physical risks to which the company is exposed). No further reporting.
3c. Risks – Regulatory	One company reports on 3.10 (Details of the business implications of existing or prospective legislation to reduce GHG emissions are given) and 3.12 (Details of the business implications).
4a. GHG – Performance	Five companies report on 4.1 (Total gross emissions in CO_2-equivalent metric tons), three on 4.2 (Report differentiates between Scope 1 and Scope 2 emissions), one on 4.3 (Indirect emissions from sources not owned or controlled by the reporting organisation), four on 4.6 (A measure of GHG intensity by reference to non-financial output), one on 4.7 (Information in 4.6 split out into Scope 1 and Scope 2 emissions) and six on 4.8 (GHG emissions prepared using one or more standards, national, regional or industry-specific programmes).
4b. GHG – Targets	Three companies report on 4.1 (Quantified targets set), three on 4.3 (Short-term targets), two on 4.4 (Long-term targets), one on 4.5 (Progress against previously set targets), four on 4.6 (Targets apply to operational data) and three on 4.8 (Process-driven targets set).
5. Mitigation and adaptation	Six companies report on 5.1. (Climate change mitigation actions taken and discussed) and three on 5.3 (Climate change adaptation measures taken and discussed).
6. Credibility	Two companies report on 6.1 (Independent assurance of GHG emissions), three on 6.2 (Significant reference to WBCSD-WRI GHG protocol) and four on 6.3 (Use of GRI climate-change-specific indicators).

RUSSIA: 5 REPORTS

KEY TRENDS

Relatively strong score on policy disclosure.

Relatively strong score on mitigation and adaptation disclosure.

Very weak score on governance and strategy disclosure – no reporting.

Weak score on all risks analysis.

Weak score on GHG-emissions performance disclosure.

Relatively weak score on GHG targets analysis.

Very weak score on credibility related issues disclosure.

Table 3.17 Russian companies' performance against the six groups of criteria

1. Policy	Four companies report on 1.1 (Policy statement on operations and climate change), one company reports on 1.2 (Public position on climate-change science).
2. Governance and strategy	No reporting.
3a. Risks – General	One company reports on 3.1 (Identifying financial risks). No further reporting.
3b. Risks – Physical	No reporting.
3c. Risks – Regulatory	One company reports on 3.10 (Details of climate-change regulations).
4a. GHG – Performance	Three companies report on 4.1 (Total gross emissions in CO_2-equivalent metric tons), one company reports on 4.2 (Report differentiates between Scope 1 and Scope 2 emissions). No further reporting on performance.
4b. GHG – Targets	Three companies report on 4.3 (Short-term targets set); one of those did not give any further details. Two companies report on 4.6 (targets apply to operational data), one company reports on 4.4 (Long-term targets) and 4.8 (Process-driven targets set). Also, one company reports on 4.5 (Progress against previously set targets) but without any details.
5. Mitigation and adaptation	Four companies report on 5.1 (Climate change mitigation actions taken and discussed), one company reports on 5.3 (Climate change adaptation measures taken and discussed).
6. Credibility	One company reports on 6.3 (Use of GRI climate-change-specific indicators). No further reporting.

SOUTH AFRICA: TOTAL 7 REPORTS

KEY TRENDS

Strong score on policy disclosure.

Relatively strong score on governance and strategy disclosure.

Relatively strong score on regulatory risks analysis.

Relatively strong score on GHG-emissions performance disclosure.

Relatively strong score on GHG targets disclosure.

Relatively strong score on mitigation and adaptation disclosure.

Relatively strong score on credibility related issues.

Weak score on general risks analysis.

Relatively weak score on physical risks analysis.

Table 3.18 South African companies' performance against the six groups of criteria

1. Policy	Six companies report on 1.1 (Policy statement on operations and climate change), two on 1.2 (Public position on climate-change science), three on 1.3 (Public position on commitment to binding targets) and two on 1.4 (Policy on addressing product impacts).
2. Governance and strategy	Four companies report on 2.1 (CEO/directors articulate views on climate change and GHG emissions), two on 2.2 (Individual with specific responsibility for climate change identified or evidence of how responsibility for climate change is delegated), four on 2.5 (Information on how climate change trends are linked into future company strategy).
3a. Risks – General	One company reports on 3.1 (Identifying financial risks) and two on 3.3 (Process and systems described for risk identification cover operations).
3b. Risks – Physical	Four companies report on 3.5 (Details of physical risk to which the company is exposed). No further reporting.
3c. Risks – Regulatory	Three companies report on 3.10 (Details of climate change regulation that affect the organisation), two on 3.11 (Details are given of how those regulations, policies or initiatives affect the business) and four on 3.12 (Details of the business implications).
4a. GHG – Performance	Five companies report on 4.1 (Total gross emissions in CO_2-equivalent metric tons), three on 4.2 (Report differentiates between Scope 1 and Scope 2 emissions), one on 4.3 (Indirect emissions from sources not owned or controlled by the reporting organisation), two on 4.6 (A measure of GHG intensity by reference to non-financial output), one on 4.7 (Information in 4.6 split out into Scope 1 and Scope 2 emissions) and two on 4.8 (GHG emissions prepared using one or more standards, national, regional or industry-specific programmes).
4b. GHG – Targets	Two companies report on 4.1 (Quantified targets set), four on 4.3 (Short-term targets), two on 4.4 (Long-term targets), three on 4.6 (Targets apply to operational data), two on 4.7 (Targets apply to product data) and five on 4.8 (Process-driven target set).
5. Mitigation and adaptation	Five companies report on 5.1 (Climate change mitigation actions taken and discussed) and two on 5.3 (Climate change adaptation measures taken and discussed).
6. Credibility	One company reported on 6.1 (Independent assurance of GHG emissions) and 6.2 (Significant reference to WBCSD-WRI GHG protocol). Four companies reported on 6.3 (Use of GRI climate-change-specific indicators) and one on 6.4 (Significant reference to ISO 14064-1).

3.6 Results: criteria analysed

Table 3.19 shows there are some criteria on which almost all reporters preferred to disclose.

1. Of 32 companies, 27 (85%) disclose their 'policy statement on operations and climate change' and 'Climate change mitigation actions taken and discussed', making these the most reported topics in the analysis.

2. More than 50% of the reporters reported on 'targets apply to operational data' and 'Process-driven target set'.

3. From 30% to 50% of the reports disclose items such as:

    - the CEO (or directors) views on climate change and GHG emissions
    - the existence of a board committee with specific responsibility or remit for climate change, or evidence that the board is engaged in these issues
    - information about how climate change trends are linked into future company strategy in some way
    - the details of the climate change related regulations, policies or government sponsored initiatives that affect the company
    - GHG emissions data using one or more standards, national, regional or industry-specific programmes
    - short-term targets (less than five years)
    - long-term targets (more than five years)
    - the use of GRI climate-change-specific indicators (2002 – EN8, G3 – EC2, EN16, EN17, EN18)
    - the climate change adaptation measures that have been taken.

4. The following criteria achieved no score or almost no score.

    - Remuneration at executive and board level is linked to climate change performance/issues.
    - Process and systems described for risk identification cover products and services.
    - The effect of physical risks (arising from climate change) on the company's supply chain and customers are explained.
    - Targets set using both absolute AND intensity-based units.
    - A measure of GHG intensity by reference to the company's revenue.
    - The timescales are given over which climate change risks are expected to materialise.
    - Details are given of how those climate change risks are assessed and managed.

Table 3.19: Disclosure practices of sample companies measured against the 45 criteria

		Total reporting per topic
1.	**POLICY**	
1.1	Policy statement on operations and climate change	27
1.2	Public position on climate-change science	9
1.3	Public position on commitment to binding targets	12
1.4	Policy on addressing product impacts	6
2.	**GOVERNANCE AND STRATEGY**	
2.1	CEO/directors articulate views on climate change and GHG emissions	15
2.2	Individual with specific responsibility for climate change identified or evidence of how responsibility for climate change is delegated	4
2.3	Existence of a board committee with specific responsibility/remit for climate change, or evidence that the board is engaged in these issues	11
2.4	Remuneration at executive and board level is linked to climate change performance/issues	0
2.5	Information about how climate change trends are linked into future company strategy in some way	12
2.6	Overview/statement of company management system (information and control systems) for climate change	8
3.	**RISK**	
3a.	**General risks**	
3.1	Identifying financial risk arising from climate change: the financial implications of climate change and related regulation	7
3.2	Mention of climate change risks (other than physical or regulatory) such as litigation and reputational risks	5
3.3	Process and systems described for risk identification cover operations	3
3.4	Process and systems described for risk identification cover products and services	0
3b.	**Physical risks**	
3.5	Details of the physical risks (arising from climate change) to which the company is exposed are given	6
3.6	Details are given of how those climate change risks are assessed and managed	1
3.7	The timescales are given over which climate change risks are expected to materialise	1
3.8	The regions or locations that are affected are given	2
3.9	The effects of physical risks (arising from climate change) on the company's supply chain and customers are explained	0
3c.	**Regulatory risks**	
3.10	Details of the climate change related regulations, policies or government sponsored initiatives that affect the company are given	15
3.11	Details are given of how those regulations, policies or initiatives affect the business	5
3.12	Details of the business implications of existing or prospective legislation to reduce GHG emissions are given	10

		Total reporting per topic
4.	**GHG EMISSIONS**	
4a.	**Performance**	
4.1	Total gross GHG emissions in CO_2-equivalent metric tons	19
4.2	Report differentiates between Scope 1 and Scope 2 emissions and splits these out in reporting of 4.1	13
4.3	Indirect (Scope 3) emissions from sources not owned or controlled by the reporting organisation but which are a consequence of the activities of the reporting organisation	2
4.4	A measure of GHG intensity by reference to the company's revenue	1
4.5	Information in 4.4 split out into Scope 1 and Scope 2 emissions	1
4.6	A measure of GHG intensity by reference to non-financial output	8
4.7	Information in 4.6 split out into Scope 1 and Scope 2 emissions	3
4.8	GHG emissions are prepared using one or more standards, national, regional or industry-specific programmes	13
4b.	**Targets**	
4.9	Quantified targets set	8
4.10	Targets set using both absolute AND intensity-based units	0
4.11	Short-term targets set (less than five years)	16
4.12	Long-term targets set (more than five years)	12
4.13	Includes progress against previously set targets	3
4.14	Targets apply to operational data	17
4.15	Targets apply to product data	6
4.16	Process-driven targets set	17
5.	**MITIGATION AND ADAPTATION**	
5.1	Climate change mitigation actions taken and discussed, eg: • energy-efficiency measures • purchasing energy from low-carbon sources • transport and travel changes, increased use and development in low-carbon technologies	27
5.2	Assessment of, and engagement with, supply-chain GHG emissions	2
5.3	Climate change adaptation measures taken and discussed, eg: • generation of renewable energy • product innovation/change • new business model • relocation	12
6.	**CREDIBILITY**	
6.1	Independent assurance of GHG emissions	4
6.2	Significant reference to, or use of, WBCSD-WRI GHG protocol	8
6.3	Use of GRI climate-change-specific indicators (2002 – EN8, G3 – EC2, EN16, EN17, EN18)	14
6.4	Significant reference to, or use of, ISO 14064-1	2

3.7 Conclusions

CONCLUSIONS OF THIS ANALYSIS

The analysis per sector shows that disclosure on existing policies related to GHG emissions is a common practice.

Other criteria are also frequently chosen to be described in the reports, in particular 'mitigation actions' to reduce the climate change impact from the GHG emissions created during their activities.

Disclosures on risk analysis related to climate change is the criteria least reported. This suggests that:

- companies are not yet ready to analyse criteria such as: policy; governance and strategy; risks; GHG emissions; migration and adaptation; and credibility, and/or
- companies are not yet linking 'carbon emission issues' to their own risks.

The reader could have expected that the influence of local regulations and social pressure would be easily identifiable in the analysis per country. In this sample, however, such relationships were not found.

4. Expert perspectives on the corporate response to climate change

Paul Dickinson, CEO and founder of the Carbon Disclosure Project

The business world's response to climate change so far has been a bit sleepy. The world is about to completely change the way it produces and consumes energy. This is going to make a lot of people a lot of money. Smart businesses are realising that and acting accordingly.

Climate change is like the Internet. It arrives one day, it grows bigger every day, it never goes away. Organisations that fail to see this put themselves at risk. George Bush said that having to come to terms with energy efficiency for Kyoto would cost American jobs. Vehicle manufacturers like Ford, General Motors and Chrysler – who chugged on without doing anything to increase the fuel efficiency of their vehicles – went bust. That did cost jobs. In contrast, Toyota produced the Prius car, which Leonardo DiCaprio famously drove, and has built a successful green business.

Think about business travel and the video conferencing market, in which I have an interest. The video conferencing market is worth $1 billion today. The business travel market is worth around $900 billion. If the computer/video conferencing industry could take some of that business, it could double its market capitalisation. There is a lot of money to be made here.

South Korea is one example of a country that 'gets it' – the potential of the green economy. The government offered reduced property tax where broadband was provided, and now it has the highest broadband penetration of any country. This year South Korea's economic stimulus package was 80% focused on the green economy.

The best way to promote climate change business opportunities is to highlight the success stories – Toyota's green business or Cisco's billion dollar telepresence. When people can see profits, that is the best possible promotion.

The Carbon Disclosure Project has certainly helped to focus corporate attention on energy usage and emissions. Every year since 2003 we have sent a request for information from a group of shareholders to the world's largest companies by market capitalisation. This year we represented 475 institutional shareholders representing combined assets under management of $55 trillion, across all asset classes. This gives us significant authority. This year 82% of the world's 500 largest companies by market cap answered our questions. In total, 2,500 companies responded in 2009. So the CDP is feeding information to investors and purchasing organisations, enabling them to make better decisions. Some companies, such as Dell, Wal-Mart and PepsiCo, send our questions to their suppliers.

A number of other impressive initiatives are encouraging changes in corporate behaviour. The Global Reporting Initiative covers many different sustainability issues. I am also impressed with the Investor Network on Climate Risk, which has done a great deal of work lobbying the Securities and Exchange Commission to recognise that climate change data is something that should intrinsically be part of the report and accounts.

The GHG Protocol currently provides a standard for companies to follow in their emissions accounting and reporting. The work of the Climate Disclosure Standards Board, for which we provide secretariat support, is also valuable. The CDSB issued its exposure draft of a reporting framework at the Copenhagen climate conference in May. Readers can find out more about that online (www.cdsb-global.org). The CDSB is bringing another level of consistency to the requirements of organisations in terms of their statutory report and accounts.

At governmental level, the Kyoto Protocol is the biggest show on Earth on terms of a global climate change agreement. It's a shame that the US did not ratify it. Where Kyoto has not been ratified it has been less effective. The Emissions Trading Scheme is one of the more successful outcomes of Kyoto. It involves some 11,000 facilities in Europe in a statutory solution. I think history will see Kyoto as the first wave of a comprehensive global system for responding to climate change.

GHGs are valueless pollutants, so in may respects, government action is necessary to trigger the response we need. But governments have been appallingly slow to introduce legislation on climate change. At COP15 we need to see a binding commitment to emissions reduction.

Politicians also need to do more to explain the impact of climate change. Without doubt the public need to be told about the severity of the situation. There will be opposition from some companies to climate change legislation. That's the nature of the business world – companies do what they need to do to make their profits. Faced with that opposition, politicians will need the support of the public to implement logical climate change policies. But the public won't back them unless they know how serious the situation is. This is where history may judge politicians harshly – for failing to alert the public to the danger they are in.

Even so, I am very optimistic that the corporate world will rise to the climate change challenge – because corporates can make so much money out of it. The essence of my book *Beautiful Corporations*,[26] published in 2000, was about sustainability product marketing. I don't believe people will put their money into companies that are damaging their children's futures. People increasingly realise they don't want to give money to people who are part of the problem; they want to give it to people who are part of the solution. The real economy can turn on a sixpence if people spend their money differently.

Business has an optimistic vision. It has a candid spirit. So I am very optimistic we can work this out. I am optimistic because the opportunities for 'dematerialising' energy are enormous. Apple iTunes is a favourite company of mine, because it generates millions of dollars of sales using virtually no energy at all. There are no limits to the potential growth in dematerialising goods – whether in the field of art, music, science, etc.

I foresee a great flowering of digital industry. Humans are very inventive. When consumers, governments and industry get together, anything is possible.

26. P. Dickinson, *Beautiful Corporations*, Financial Times/Prentice Hall, 2000.

Martin Hiller, Head of Communications and Campaigns, WWF Global Climate Change Initiative

When participants gather in Copenhagen for COP15, they need to give the planet a direction – how we will develop our societies to deal with climate change. That direction is critical.

In the end, investors and governments need to know there is a common understanding for the direction in which the planet should develop. Not all the fine print will be considered in Copenhagen – that can be worked up in 2010, but the direction needs to become clear.

The Kyoto Protocol did have some effect on changing corporate behaviour. It wasn't enough, because we have learnt so much more about the climate change threat since then. It is bigger than most of us understood it to be in the mid 1990s. But Kyoto developed the instruments and the understanding for making pollution a commodity one can pay for. For the first time it put a price on carbon emissions. That's a huge change. We have also seen climate change coming to the top of the political agenda. So the Kyoto Protocol has been effective in changing some corporate behaviour, but not yet effective enough.

KYOTO WEAKNESSES

The Kyoto Protocol had several weaknesses, first of all in compliance. There is very little threat for governments who do not comply with the targets they have set. Another weakness was that the threshold set for the treaty to come into force was too high. When George Bush declined to ratify the protocol, everything depended on one country – Russia. Only when Russia ratified the protocol did it come into force. It wasn't a very good system.

Another issue is that adaptation is not covered in the Kyoto Protocol. Adaptation is an issue that has a much higher profile than it used to have, because we are seeing the first countries being threatened with disappearance. Small islands like Tuvalu or Kiribati are already planning their exodus. Adaptation needs to be addressed at Copenhagen – it is a very important part of the negotiations. For almost a decade countries have been waiting for governments to provide a $2 billion adaptation fund for the poorest countries. The money is still not there. They haven't done it because it isn't a big enough political issue.

One feature of Kyoto that needs to change at Copenhagen is the lack of emissions goals for developing countries. There should be an aim for the big developing countries to divert from a 'business as usual' emissions pathway – to start to reduce emissions per capita.

OTHER INITIATIVES

In terms of other initiatives that have had an effect on corporate behaviour, Al Gore has played a pivotal role. Even before the movie *An Inconvenient Truth* he gave a lot of presentations and put himself behind the climate change message.

There are also a number of business programmes that have had some impact, including our WWF Climate Savers programme. We demand of companies that they really reduce their absolute emissions. The programme was started in 2001, at about the time that George Bush said he wouldn't be signing up to the Kyoto Protocol. Even so, some American companies signed up to our programme. They realised it was a way of looking at their resource management and cost savings and doing something that makes them fit for the future. IBM and Nike, for example, have joined the programme. There are other companies from Japan and Europe, such as Sony and La Farge. With the Climate Savers programme, we get a technical consultant to go in and work with the company to scope where they could reduce emissions. That takes between six to 12 months. Then we agree a level of commitments with them and the company signs a memorandum of understanding with us, before the company starts implementing their programme. We have regular reporting every half year to see how it is working and whether the company is reaching its goals. It's quite a straightforward system.

LOW-CARBON ENCOURAGEMENT

If we can get the right signals from Copenhagen, then it should become clear to companies that investment needs to go into low-carbon sectors.

There needs to be cooperation between industry and government, with legislative developments to help businesses move into low-carbon sectors. Staying below the two degrees Celsius threshold – the target global warming limit – requires a massive investment push. Government needs to bring in funding to help investors push into low-carbon technologies. This needs to be a time of radical change, moving away from oil.

At the WWF we are working frequently with information and communications technology companies. They are used to massive technological change, and rapid change, so they are interesting to us, and they have applications that are helpful for low-carbon strategies. I think these technology-heavy companies will engage much more intensely with the climate change issue now. Companies like Nokia and HP are looking more at the opportunities.

BUSINESS RESPONSE

So far the business world's response to climate change has been, if put into one word, timid. There are some sectors like renewable energies, that are pushing ahead and trying to grow their businesses. But then you have obvious enemies to change – the oil and coal industries mainly. There are also a lot of people somewhere in between, who sit on the fence. Those on the fence need legislation to encourage them to take action. Investors need clarity beyond 2012 about what climate change regimes will look like. This is now a question for heads of state and heads of government to address. Climate change is not a matter of purely environmental policy. It's a prime ministerial issue. They need to take the lead and prepare the ground for action.

Looking to the future, the corporate world has to rise to the climate change challenge. There is no choice. The ones who respond early will have the advantage of the early bird. Those who are late will starve.

Tim Jackson, Professor of Sustainable Development, University of Surrey

The business world's response to the climate change challenge has been very varied so far. There is a split between bigger businesses and SMEs, and within those categories a split between those who are fairly proactive and those who do little more than window dressing. Companies range from those who do the best they can to those who will resist until they are required to reduce carbon. Within SMEs, for example, there are some visionary companies who 'get it' and try to reconstruct the business model. But there are also some people for whom the debate is remote. In general, businesses with high energy costs will get it faster than businesses with low energy costs. If your business depends on its public profile, you will get it faster.

This is partly because climate change is not the only message businesses are facing. They are facing challenges around the economy and in relation to their supply chain, and trying to negotiate all these issues while operating their companies day to day. That's the space in which the climate change message is received, or not received.

Some research suggests that money on above the line advertising is better spent in the personal sector, rather than the corporate.

This is about people getting the message personally and then bringing it into their business – rather than them responding to regulation or a compliance message to the business. Some people are exposed to the personal message, receive it, understand its importance and then begin to think about the implications for their business.

BUSINESS OPPORTUNITIES

The business opportunities arising from climate change could perhaps be better communicated to business. It's partly about understanding what the opportunities are and where, in which sector, and providing support. Businesses respond to signals in their business market, whether from consumers or government.

One business opportunity, in principle, relates to cost savings from better energy efficiency or resource productivity. There are long-standing issues about why there hasn't been better take up. These are to do with the relative prices of resources and labour, the relative connectedness of energy costs with capital costs, and the rates of return. Energy-efficiency investments are still competing for capital with other investments with higher rates of return. Because there isn't full cost accounting across the business or industry, the benefits of the energy-efficiency investments are not seen. There are similar issues with renewables technology. There needs to be support for these sectors at the stage where they don't have critical momentum. If the money is not visible, people won't rush to that sector. This is about creating the conditions in which there is a viable model. Sometimes that will mean public sector subsidy, particularly in the early stages because of the inertia around changing business models and the need for capital investment to be ring-fenced and protected, as learning and costs come down. This is about creating conditions, structures and incentives, and leveraging capital where capital is needed. These are all tasks for government.

KYOTO IMPACT

I am not sure that the Kyoto Protocol has been hugely effective in changing corporate behaviour. However, people are more aware of carbon because they are to some extent engaged in trading mechanisms, and the general idea of trading carbon was set in place in The Kyoto Protocol. In the UK, there has been an impact on national policy, which has resulted in the Climate Change Act and the Carbon Reduction Commitment. These will impact on industry. It's a long process and it's interesting that there hasn't been more mainstream business change, given that it is 12 years since the Kyoto Protocol was drawn up.

The greatest strength of Kyoto was that it tried to establish emissions reduction targets and put that on the map in political terms. The principal weakness was the inclusion of the trading mechanism, which reduced the emphasis on reducing emissions. Global emissions have risen by 40% since 1990, the Kyoto Protocol baseline. That's the opposite of what we were hoping might be achieved. The Protocol also bent over backwards to accommodate the US in terms of including a trading mechanism, and the US didn't ratify it. So arguably the most important economy isn't included.

An obvious other weakness was that developing economies were not brought in in a way that made a lot of sense, so there was incomplete coverage. It is essential at Copenhagen that emerging economies are brought into the agreement. However, there has to be a sense of justice between developed and less developed economies – I don't think negotiations will be possible without that. Developing economies will hold out for something that suits them. Developed economies will have to deal with that if they want to reach an agreement that has a global cap on emissions in it.

Funding mechanisms will also be an important issue at Copenhagen, particularly for funding carbon mitigation in developing countries. We need to define mechanisms through which these funds are raised, and then those funds will largely have to come from developed economies.

POLITICAL LEADERSHIP

There is more that politicians can do to counter climate change. There is a need for leadership. It's about someone having the political courage to accept the latent permission of business and the public to take really bold action.

UK climate change secretary Ed Miliband has perhaps gone further than most. John Prescott was a figurehead at Kyoto, but the task was easier then. Now the emissions cuts need to be deeper.

To some extent there is a lack of courage in government to create structural change in the way that's necessary. We still don't have in place the mechanisms that will lead to business and household behaviour changing, to make people get out of their cars, or regulation on issues like stand-by power consumption, to encourage people to live in more sustainable ways. This requires targeted programmes, investment, regulation and leading by example in the government's own estate.

Professor Mervyn King, SC, Chair of GRI Board

Climate change and sustainability issues generally have to be seen in the context of business opportunities. Otherwise companies are not going to respond. This is about a change of mindset in company leadership. I believe the corporate world is realising that we have to start thinking strategically about sustainability issues, because the customer of tomorrow is thinking about it.

Three recent events suggest that the business world will respond, or is doing so. First, in quarter three of 2009, 500 companies and other business organisations, including 12 from South Africa, signed the Copenhagen Communiqué requiring the G20 leaders in December to do something positive about climate change, because of the impact they are sure that it will have on their businesses. Secondly, in September around 5,000 citizens of the world joined in a telephone call in which they told political leaders in one voice to do something about climate change. These citizens are customers and stakeholders.

IMPACT OF CODES

Thirdly, governance codes around the world have recognised that governance standards and sustainability have become inseparable. The Companies Act in the UK says that companies must report and disclose the impact they have on society and the environment, when such disclosures are significant for an understanding of the financial performance of an organisation. There are similar requirements in the German commercial code. Denmark has recently passed a law requiring the largest companies to report on how they are dealing with corporate social responsibility (CSR) issues pertinent to their business.

In South Africa, the *King III Report*, being the latest code of governance principles, comes into effect in March 2010. Listed companies will be required to issue integrated reports which will include how they impact on society and the environment. King III also recommends that companies adopt the G3 Guidelines of the GRI. Rather than triple bottom line reporting, I talk about reporting in the context of the impact of the business on the community and the environment in which it operates and its financial impact. There must be one report, with these three factors seen to be integrated into the strategy of the company.

So there is a realisation around the world that boards that do not take account of sustainability issues pertinent to their business are not going to have sustainable businesses, and they will lose the confidence of their stakeholders and customers.

Even more important than a corporate governance code is, I believe, an investor's code. The majority of investors are financial institutions. There should be a code saying that, before they invest, they should check the quality of governance, the quality of management, the strategy of the company and whether it has dealt with sustainability issues pertinent to the business, the impact on the environment and community. In South Africa we are developing an investor code that we hope will be out next year.

KYOTO AND COPENHAGEN

The Kyoto Protocol was helpful, but its weakness came from the lack of following. Look at America. The most important country in the world said, No. You could take the Kyoto Protocol and improve it tenfold but it would be almost irrelevant. What is more helpful is what has been happening in Denmark and elsewhere.

Looking ahead to Copenhagen and COP15, I would be quite astounded if the G20 were to arrive at a worldwide agreement which was legislatively enforceable or had adequate sanctions. Setting targets is fine; it's the enforceability and getting everybody involved which is difficult. But I think they could agree to do what Denmark has done and to say to all companies: We want you to report on a 'report or explain why not' basis how your business has impacted on society and the environment. That would be a vast improvement.

The Japanese have a wonderful saying: If you are going to open your kimono, make sure you have had a bath. If companies are compelled to report or explain how they are impacting on society and the environment, that will bring CSR issues to the fore. The compulsion to report will help people change.

So if governments followed the Danish example, that would be fantastic. It's immediately achievable. Imagine if every government passed one law requiring every company to report from June 2010 on the impact the business has on the community in which it operates and on the environment, or to explain if they don't.

This is also where the Global Reporting Initiative comes in. Let's assume a company is carrying on as a good, sensible company. Unless they tell their stakeholders, they won't get the trust and confidence that they need. Having got that trust, they have to maintain it. They have to persuade customers that they have regard to the impact they are having on the community and the environment – certainly if they are to maintain a sustainable business over the long term.

INDIVIDUAL RESPONSIBILITY

I don't think you can point the finger solely at governments or companies when it comes to climate change and our response. What about yourself? You are the person who votes governments in, or the trustee of a pension fund. What are you doing about climate change and sustainability issues?

I have just written a book, *Transient Caretakers: How to Make Life on Earth Sustainable*.[27] My theory is that we were put on this earth to take care. Whether you believe in the Darwinist theory or the Bible is irrelevant. We are the dominant species and we are here to take care of the flora and fauna – and we have not taken care. However, we have become the providers of capital to companies – the greatest shareholders are the pension funds. That's your money and my money. The individual has become the provider of capital to companies. We are also customers – we choose to buy from company A or company B. We vote governments in or out. One reason for President Obama's victory was that he spoke positively about climate change action. So we all have an impact.

27. Mervyn King with W. Lessidrenska, *Transient Caretakers: How to Make Life of Earth Sustainable*, Pan Macmillan, 2009.

Rory Sullivan, Head of Responsible Investment, Insight Investment

The drivers for corporate action in response to climate change are clear. There is wide agreement that significant reductions in global GHG emissions are needed to mitigate the worst effects of climate change. The growing consensus is that these reductions will need to be of around 20–30% by 2020 and 60–80% by 2050 against a 1990 baseline. Companies in all sectors – not just those in high-impact areas – will therefore face increasing regulatory pressure to reduce their emissions. Consumer interest in environmentally friendly products and services is also growing, as is stakeholder pressure for credible, transparent information on GHG emissions.

How well are companies responding? A study, published as *Taking the Temperature* by Insight Investment in 2008, which looked at 125 large European companies, found that most have now developed management systems and processes to manage their GHG emissions. They generally score quite highly on governance. But there are some weaknesses that suggest the corporate response may not yet be sufficient for the climate change challenge.

CORPORATE POLICY AND OTHER WEAKNESSES

As I see it, there are four specific issues.

First, the quality of inventory data is mixed. There is often a lack of clarity around the scope of reporting, such as whether all GHGs are covered and whether the reporting applies to all activities and operations. Other issues include doubts about the quality of the emissions calculations and limitations of data verification. And while reporting on direct and indirect GHG emissions is now reasonably well developed, reporting on emissions from supply chains or product use and disposal remains limited.

There are a number of reasons for this, such as inconsistencies in definitions of scope and boundaries, data not being readily available, and the often increased costs of gathering data as companies move down the supply chain.

Second, most companies appear not to have conducted thorough assessments of climate change related risks and opportunities. Although the majority publish their views on risks and opportunities, much of this reporting seems to have been triggered by questions in the Carbon Disclosure Project questionnaire rather than internally inspired, rigorous analysis.

Third, companies' climate change policies are generally weak. Most acknowledge that climate change is a business risk and/or that their activities contribute to GHG emissions. Many have a policy commitment to reducing emissions. But few have made explicit commitments to achieving significant reductions in emissions over the longer term. Reflecting the limitations in corporate policies, the GHG-emissions targets that companies are setting themselves also appear weak. While many companies expect to improve the efficiency or emissions intensity of their business activities, most expect their total emissions to increase as their business grows. This seems in conflict with the likely direction of future governmental climate change policy.

Finally, while almost half of the companies we surveyed in *Taking the Temperature* express support for market-based instruments such as emissions trading, this support is frequently qualified by comments about not harming the company's competitive position. The overall impression is that the level of corporate support for strong and effective public policy action on climate change remains weak.

IS REPORTING DRIVING THE WRONG BEHAVIOURS?

Many companies are investing a lot of time and resources in data acquisition across the supply chain. But, paradoxically, this focus on measuring or gathering definitive emissions data for the purposes of reporting or labelling may be moving companies away from the core objective of reducing emissions in a practical and cost-effective manner. This is an issue explored in detail in *Managing Greenhouse Gas Emissions Across the Value Chain: the New Agenda* produced by Insight Investment and Acona in April 2009.

Companies may be focusing on aspects where numbers – even if uncertain – can be gathered and performance tracked, rather than concentrating on areas where they have the greatest influence on emissions. This is a concern. Reporting should not drive corporate action. Companies need to think about their corporate objectives – such as financial or responsibility objectives – and then identify and implement the actions they need to take as a result.

POLICY/ACTION DISCONNECT

Overall, there appears to be a major disconnect between the messages sent by policymakers and the actions taken by companies. The vast majority of companies perceive climate change as having minimal impact on their business strategy or business model – reflected, for example, in the relatively modest targets for emission reductions.

A key reason for this is that there are many uncertainties in climate change policy, including the degree of government support for international action, the specific targets and policy instruments that will be adopted, and the relationship between climate policy goals and other policy goals, such as energy security and diversity of supply. In the face of such uncertainty, the rational business response is to wait for new information about future developments.

But there are some reasons to be optimistic. The EU Emission Trading Scheme (EU ETS) is one example of how a well-designed policy with strong support from government can be effective. The contribution of the EU ETS was not confined to its direct effect on corporate GHG emissions. Perhaps more significantly, the EU ETS was the key catalyst for European investor interest in climate change because it gave GHG emissions a financial value. It also gave a clear signal that governments can and will act to regulate GHG emissions.

There are clear implications for policymakers. They need to communicate post-2012 ambitions clearly, even if policy mechanisms remain unclear. They also need to accept that action on climate change will cost money, at least over the short and medium term, and be clear about who will meet that cost. Without that explicit acceptance, companies will not take government commitments seriously.

The COP15 Climate Change Conference in Copenhagen has an important role in helping to reduce policy uncertainty. By itself, COP15 will not solve current problems. But without international agreement on emissions reduction targets, national governments will struggle to develop and implement policies that companies will take seriously enough.

Lord Turner, Chair of the UK Committee on Climate Change

The Kyoto Protocol has played a role in changing corporate behaviour because people are aware that there is an overall framework for addressing climate change and a set of legally binding commitments to which many governments have signed up. So, the protocol has helped to convince business that change is inevitable. It has been part of the process of making business believe that the authorities are committed to climate change action.

The crucial thing for COP15 to achieve is a global agreement to encourage countries to start making substantial cuts in their emissions. We need an agreement to make it absolutely clear that the developed countries are committed to strengthening their reduction targets from current levels and committed to begin constraining the growth of their emissions, followed by more significant reductions thereafter.

The most crucial thing that politicians have to do is to set out a clear legal framework. The UK Climate Change Act, for example, commits us in the UK to emissions reductions with legal certainty. There is no escaping from our obligations, which are to reduce emissions of all GHGs by 80% in 2050. The Act also sets carbon budgets which place a limit on emissions that can be produced across the economy over five year periods. The Committee on Climate Change (CCC),[28] which I chair, is responsible for advising on the level of these budgets and for monitoring Government's progress towards meeting these, thereby enforcing these commitments. We are in a unique position in the UK in having an independent expert committee on climate change that has the authority to do this.

A lot of businesses in Europe are responding to the climate change challenge. There is a real distinction between some American businesses, which have spent a lot of time lobbying against any action, and European businesses, which have in last five years largely accepted that they have to do something and focused on how to do it.

You still get lobbying to try and avoid action, but most businesses are getting on with their plans. They could of course do more. Retailers, for example, could have done more on the switchover to energy-efficient light bulbs. You often get a minimal reaction in order to satisfy your customers or employees that you are doing something. On the whole I would give business a mid-range score in terms of their response, but it varies from business to business.

I am not sure that much more could be done to communicate to businesses the climate change opportunities that exist. Most are aware or should be reasonably aware of the energy-efficiency opportunities they face, for example. There are mechanisms to make people aware of these opportunities.

The fact that there will be climate change in 50 years should worry people as citizens and in terms of their children's future. The risks associated with climate change are having a large impact on businesses like insurance companies that need to plan over the long-term. For most businesses though, climate change is not having a huge impact at present.

However, there are still uncertainties that can hamper business decision-making. It is therefore important that Politicians create a clear, irreversible commitment to reductions and a certain environment in which business can operate. There needs to be clear policy, certainty, and a clear framework of future taxes and emissions trading schemes – a clear sense of the future price system. We should be setting more certain prices for the future. That's something that the Committee on Climate Change will be considering.

28. The Committee on Climate Change (CCC) is an independent body established under the Climate Change Act to advise the UK Government on setting carbon budgets, and to report to Parliament on the progress made in reducing GHG emissions.

Appendices

Appendix 1: list of industries and companies included in Section 2

Sector	Company	Country
1. Airlines	All Nippon Airways (ANA)	Japan
	Cathay Pacific	Hong Kong
	Deutsche Lufthansa AG	Germany
	Japan Airlines	Japan
2. Aluminium	Alcoa Inc	US
	Norsk Hydro ASA	Norway
3. Building materials and fixtures	La Farge	France
	Cemex	Mexico
	Asahi Glass	Japan
4. Coal	Allied Coal	Australia
5. Commodity chemicals	BASF	Germany
	Air Liquide	France
	Dow Chemicals	US
	Air Products and Chemicals Inc	US
6. Delivery	UPS	US
7. Electricity	ENEL	Italy
	Tokyo Electric Power Company	Japan
	Exelon	US
	EDF	France
8. Exploration and production	Occidental Petroleum	US
	Encana	US
9. General mining	BHP Billiton	Australia/UK
	Anglo American	UK
	Xstrata	Switzerland/UK
10. Gold mining	Newmont Mining	US
	Newcrest Mining	Australia
	Barrick Gold Corporation	Australia
11. Non-ferrous metals	Freeport McMoRan Copper and Gold	US
12. Oil and gas	Petrochina	China
	BP	UK
	Petrobras	Brazil
	Royal Dutch/Shell Group	UK
13. Platinum and precious metals	Anglo Platinum	South Africa
	Lonmin	UK
14. Steel	Nippon Steel	Japan
	Posco	Korea

Appendix 2: list of companies considered in Section 3

ACC Limited
Air China
Angang Steel Company Limited
Anglo Platinum Group
Anglogold Ashanti
Anhui Conch Cement Company Limited
Aquarius Platinum Limited
Baoji Titanium Industry Company Limited
Baosteel Group Corporation
Blue Dart Express
Braskem
Cathay Pacific
Chalco Aluminim Corporation of China Limited
Cheung Kong Infrastructure Holdings Limited
China Coal Energy Company Limited
China Eastern
China Molybdenum Company Limited
China National Building Material Company Limited
China Petroleum & Chemical Corporation (Sinopec Corp)
China Shenhua Energy Company Limited
China Southern
China Yangtze Power Company Limited
China Zhongwang Holdings Limited
Citic Offshore
CLP
CNOOC Limited
Companhia Siderugica Nacional
Elektrobrás
Exxaro
Gazprom
Gold Fields
Grasim Industries Limited
Hainan Airlines
Henan Huanghe Whirlwind Company Limited
Hindustan Zinc Limited
Huaneng Power International Inc
Impala Platinum Holdings Limited
Jiangxi Copper Corporation
Jinduicheng Molybdenum Group Mining Corp
Kumba Iron Ore
Man Sang International Limited
MMTC Limited
Namakwa Diamonds
National Aluminium Company Limited India
Nmdc Limited
Norilsk Nickel
NTPC
Ogx Petróleo E Gás Participações Sa
Oil And Natural Gas Corporation Limited
Orient International Enterprise Limited
Petrobras
Petrochina Company Limited
Polymetal
Polyus Gold
Relience Industries Limited
Rosneft
Shandong Nanshan Aluminium Company Limited
Shanxi Coking Coal Group Company Limited
Shanxi Lu'an Environmental Energy Development Company
Sinopec Shanghai Petrochemical Company Limited
Sinopec Yizheng Chemical Fibre Company Limited
Sinotrans Air Transportation Development Company Limited
Steel Authority of India
Sterlite Industries (India) Limited
TNK-BP
Trans Hex
Vale
White Water Resources
Yantai Wanhua Polyurethanes Company Limited
Yanzhou Coal Mining Company Limited
Yunnan Aluminium Company Limited
Zhongjin Gold Corporation Limited
Zijin Mining Group Company Limited

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