



Reporting the Business Implications of Climate Change in Sustainability Reports

A survey conducted by the Global Reporting Initiative™ and KPMG's Global Sustainability Services™

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 are now used by over 1000 organisations worldwide, with many more organisations considering the guidelines 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 which are released in October 2006.

KPMG's Global Sustainability Services

KPMG's Global Sustainability Services™ is KPMG's multidisciplinary network of professionals in sustainability and corporate social responsibility working in more than 30 countries globally. KPMG services include assurance and advice on sustainability information and, corporate responsibility strategy and implementation. In the field of climate change these services comprise corporate climate change strategy and implementation, JI and CDM projects, assurance on greenhouse gas emissions and carbon credits and financial implications of climate change issues.

Research conducted by

Sandra Vijn, Cecilia Schrijver and Bastian Buck, GRI

Wineke Haagsma, Arnaud van Dijk and Monique Elsen, KPMG in the Netherlands

Kazuhiko Saito and Yoichi Mori, KPMG AZSA Sustainability in Japan

Lead editors

Stirling Habbitts, formerly KPMG, currently ING Wholesale Banking

Sean Gilbert, GRI

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Executive Summary

This report presents the results of a survey on *Reporting the Business Implications of Climate Change in Sustainability Reports*. This is a survey to catalogue types of reporting on climate change and was conducted by the Global Reporting Initiative™ (GRI) and KPMG's Global Sustainability Services™.

The survey found that while almost all companies reported on climate change in their sustainability reports, on closer examination companies reported far more on potential opportunities rather than financial risks for their companies from climate change.

This contrasts with recent new evidence that climate change presents serious global economic risks if measures are not taken. The Stern Report on the Economics of Climate Change states that our actions over the coming few decades related to climate change could create risks of major disruptions to economic activity, and that costs of extreme weather alone could reach 0.5-1% of world GDP per annum by the middle of the century. It warns that the scale of economic disruption could approach those associated with the great wars and the economic depression of the first half of the 20th century.

The low rate of reporting on risks from climate change may be because companies see climate change not only as a threat but also as an opportunity for new products, services and trading. Risks could be perceived to be beyond current business planning horizons, or companies may not have identified, explored or quantified risks associated with climate change and may therefore not be in a position to report on risks.

The survey revealed widespread reporting of basic information on climate change, for example company greenhouse gas emissions and the acknowledgement of climate change as an important issue. Nearly half of the reports also included a statement from the company chairman or CEO on climate change.

Most companies in the survey reported a target to reduce their greenhouse emissions and/ or energy use, and where companies reported financial implications of reductions, in almost all cases these showed savings or positive returns on investment.

A surprising two thirds of companies reported new business opportunities from climate change, and nearly half of the companies surveyed reported involvement in emissions trading. Reporting on business opportunities was common irrespective of whether or not the companies were based in countries that are party to the Kyoto Protocol.

Some companies reported opportunities for setting up carbon funds and engaging in emissions brokering, and a quarter of companies specifically reported on opportunities from the Clean Development Mechanism (CDM) of the Kyoto Protocol. A wide range of other types of new business opportunities related to climate change were reported, many fitting the category of energy efficient consumer products.

In comparison to opportunities, companies reported little on the business risks of climate change. Most commonly reported was the risk of increases in the cost of energy from measures to address climate change, reported by one fifth of companies surveyed.

Few companies reported on the risk of legal action such as class-action law suits related to climate change, and almost no companies reported on risks or business disruptions caused by extreme weather events such as floods, storms and droughts, increased forest fires, or long-term physical changes such as reduced water availability.

The most anticipated future regulation or legislation related to climate change was emissions trading, consistent with emissions trading being the most commonly reported business opportunity. In general companies did not quantify the financial implications of risks or opportunities, with the exceptions of some reporting on savings from reductions in energy use and emissions, and the purchase or sale of carbon credits.

Climate change was reported as an issue in stakeholder engagement and dialogue by nearly a third of the companies surveyed, an indication of its prominence among stakeholder concerns.

Reporting was most prevalent in the energy and financial services sectors. This is perhaps not surprising due to the link between energy and GHG emissions, and the emerging new opportunities to provide financial services related to climate change, for example emissions trading and carbon credit funds. Japan stood out as a region with a high rate of reporting on climate change, with all Japanese companies including a dedicated section on climate change, and most including a specific statement from the CEO or company chairman on climate change. Japan was closely followed by Europe.

This survey only assessed company sustainability reports. It is possible that the companies who issued reports used in the survey may have taken further steps to understand and quantify the implications of climate change for internal purposes or other documents, but have not reported these in their sustainability reports.

Introduction

This report presents the results of a survey on Reporting the Business Implications of Climate Change in Sustainability Reports. This is a survey to catalogue types of reporting on climate change and was conducted by the Global Reporting Initiative™ (GRI) and KPMG's Global Sustainability Services™.

The survey follows the release of the new GRI G3 Guidelines in late 2006, and the inclusion of the new core indicator in the guidelines "EC2 - Financial implications and other risks and opportunities for organization's activities due to climate change (core)". This survey analyses a sample of 50 sustainability reports published in 2006 for the year 2005 by leading international companies. The 50 reports were chosen by cross-referencing a list of organisations that use the GRI Guidelines with the Financial Times top 500 list (FT500), and adjusting the resulting sample to achieve a balance across each of five major geographical regions.

Particular trends across regions and sectors are presented for each of a set of risks, opportunities and other issues related to the implications of climate change. Examples of reporting in each of the categories are also presented in this report. This report begins with an overview of climate change, followed by an outline of the methodology used and then presentation of the findings.

A brief overview of climate change

The problem of climate change no longer needs an introduction. It is widely regarded as the most serious environmental challenge that the world faces.

At the centre of climate change science are the increasing concentrations of carbon dioxide (CO₂) and other greenhouse gases in the earth's atmosphere as a result of human activities. This has been shown to lead to increases in global atmospheric temperatures (global warming) and associated "changes in the earth's climatic system" (climate change).

Climate change at a glance

- The Intergovernmental Panel on Climate Change (IPCC) has found that concentrations of carbon dioxide (CO₂) in the atmosphere have increased by 35% in the past 250 years, by far exceeding natural variations over the past 650,000 years, and probably the past 10 million years.
- The IPCC has concluded that to a very high confidence level the global average net effect of human activities on the atmosphere has been one of warming.
- Evidence of warming includes observations of increases in average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level.
- Eleven of the last twelve years (1995-2006) rank among the 12 warmest years in the instrumental record of global surface temperature.
- New records were set for the highest temperatures reached during the summer of 2006 at locations across Europe, the UK and the USA, including the highest European mean temperature on record for July.

The potential economic impacts of climate change were brought into sharp focus in late 2006 with the publication of the *Stern Review on the Economics of Climate Change*¹. The report states that our actions over the coming few decades related to climate change could create risks of major disruptions to economic activity, and that costs of extreme weather alone could reach 0.5-1% of world GDP per annum by the middle of the century. The report states that at higher temperatures, developed economies face a growing risk of large-scale shocks, and provides examples such as increasing hurricane speeds, floods, heat waves and costs of insurance. It warns that if climate change is not addressed, it could create risks of major disruption to economic activity on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century.

Sustainability reporting and climate change

The potential financial implications of climate change on business are receiving increasing attention and recognition, with investors and other stakeholders encouraging companies to identify, assess and report publicly on the financial implications of climate change to their business. This is evident in numerous forums and initiatives, for example the Carbon Disclosure Project (CDP) and Institutional Investor Group on Climate Change (IIGCC), the UN and Coalition for Environmentally Responsible Economies (CERES) Investor Network on Climate Risk (INCR), the Global Framework for Climate Risk Disclosure, and initiatives of the World Economic Forum (WEF). There are also growing financial implications for companies from new regulations and markets designed to respond to climate change, for example the European Union's Emissions Trading Scheme and the trading mechanisms of the Kyoto Protocol. With increasing public awareness and concern, taking action on climate change is also starting to become a reputational and strategic issue for companies.

The demand for focused and effective reporting on the business implications of climate change has continued to grow over the last two years, with companies inter alia responding by increasing their reporting on climate change in their corporate sustainability reports. This increasing expectation that disclosure should include information about the business implications of climate change is reflected by the inclusion of a new indicator (EC2) in the GRI G3 Sustainability Reporting Guidelines, namely "Financial implications and other risks and opportunities for organization's activities due to climate change".

International legislation and regulation on climate change

- The Kyoto Protocol came into effect in early 2005, and over 165 countries have now ratified the protocol, with the notable exceptions of the USA and Australia.
- The European Union Emissions Trading Scheme (EU ETS) was launched in early 2005, and created an EU-wide market for emissions trading linked to the Kyoto Protocol.
- The so-called Linking Directive was introduced in the EU in 2005 to link the EU ETS to the Kyoto Protocol and allow credits generated under the protocol to be used in the EU.
- In mid-2005 six major countries signed the Asia-Pacific Partnership on Climate Change, an initiative aimed at deploying technology to constrain and reduce greenhouse emissions.
- The global greenhouse gas emissions trading market increased from almost zero in 2003 to approximately 18 billion Euros by 2006, according to data from PointCarbon.
- In the USA, the states of California and a group of nine states on the Eastern Seaboard (The Regional Greenhouse Gas Initiative) are introducing regulations on greenhouse gas emissions, and similar regulations have been proposed by state governments in Australia.

Survey methodology

Objective

Currently, there is a large amount of information available to stakeholders in sustainability reports covering a range of climate change related issues and implications. However, it ranges considerably in quality and focus. This report is an effort to catalogue the types of reporting on climate change in sustainability reports, identify trends, and offer some insights into the degree to which the reporting explains the implications of climate change for the reporting organization.

Approach

The approach to this survey consisted of the following stages:

- A literature survey of recent related reports and studies on climate change
- The selection of a sample of sustainability reports
- The design of criteria to identify reporting on issues related to climate change
- Assessment of the number of companies that report on each issue
- Identification of particular approaches and patterns to reporting, for example geographic and sector distribution, as well as specific examples of reporting

Criteria used to identify reporting

Reporting on the implications of climate change can be broadly classified into reporting on risks and reporting on opportunities. These two broad categories were used to structure this research. Some examples of risks and opportunities are given below.

Risks	Opportunities
<ul style="list-style-type: none">• Costs associated with complying with new emissions regulations• Increased energy costs related to climate change• Costs of direct damage from weather related events	<ul style="list-style-type: none">• Developing new carbon neutral or eco-friendly products or technologies• Process improvements that save energy and reduce greenhouse gas emissions• Enhanced reputation due to climate change performance

A detailed list of potential risks, opportunities and other relevant issues related to the implications of climate change was assembled through a literature survey and using in-house knowledge and experience. This list formed the basis of the survey, and is provided in Appendix B. It is referred to in this report as the “criteria” for the survey.

Sample of reports considered

A total of 50 sustainability reports were analysed in this survey, divided into groups of approximately 10 reports for each of 5 geographical regions: (1) USA and Canada; (2) Europe; (3) Japan; (4) Asia-pacific [excluding Japan]; and (5) South America and Africa combined.

From each of these geographic regions, reports were chosen by selecting organisations that indicate that they use the GRI Guidelines, and that are also top companies in the Financial Times top 500 list (FT500) for their region. This resulted in a regional distribution across the 5 regions, with all companies in the FT500 and making use of the GRI Guidelines.

Applying a combination of the sector classification of the FT500 and the sector classification of the GRI to the sample gave the following sector breakdown:

- Energy (Oil, Gas and Electricity) – 10 companies;
- Financial Services – 12 companies;
- Telecommunications and Information Technology – 8 companies;
- Consumer Goods and Pharmaceutical – 7 companies;
- Industrial and Mining – 7 companies;
- and Other (including Transport, Real Estate and Support Services) – 6 companies.

All sustainability reports were published in 2006, with the exception of one company for which the report was not yet available and the report published in 2005 was used. It is possible that the companies that published reports analysed in this survey may have taken further steps to understand and quantify the implications of climate change for internal purposes or other documents, but may not have reported this in their sustainability report. As this survey only assessed company sustainability reports, activities not reported in sustainability reports are not reflected in the results presented here.

Baseline information related to climate change

The first category considered in this survey was reporting on baseline information related to climate change, for example reporting of greenhouse gas emissions and management responsibility for climate change issues. Trends in reporting on baseline information are outlined in this chapter, followed by separate chapters on reporting on risks and then opportunities arising from climate change.

The existence of climate change and its relevance was widely acknowledged by companies in the reports surveyed. The large majority of companies surveyed (45 out of 50) included the terms climate change or global warming in their sustainability reports. Two thirds (33 out of 50) of the companies surveyed went further than this, and included a dedicated chapter or section on climate change in their report. Of the five regions considered, reporting on climate change was most prevalent in reports from Japanese companies. All reports from Japanese companies in the survey (10 out of 10) included a dedicated section on climate change and reported greenhouse gas or CO₂ emissions. Most Japanese reports (8 out of 10) also included a statement from the company chairman or CEO on climate change.

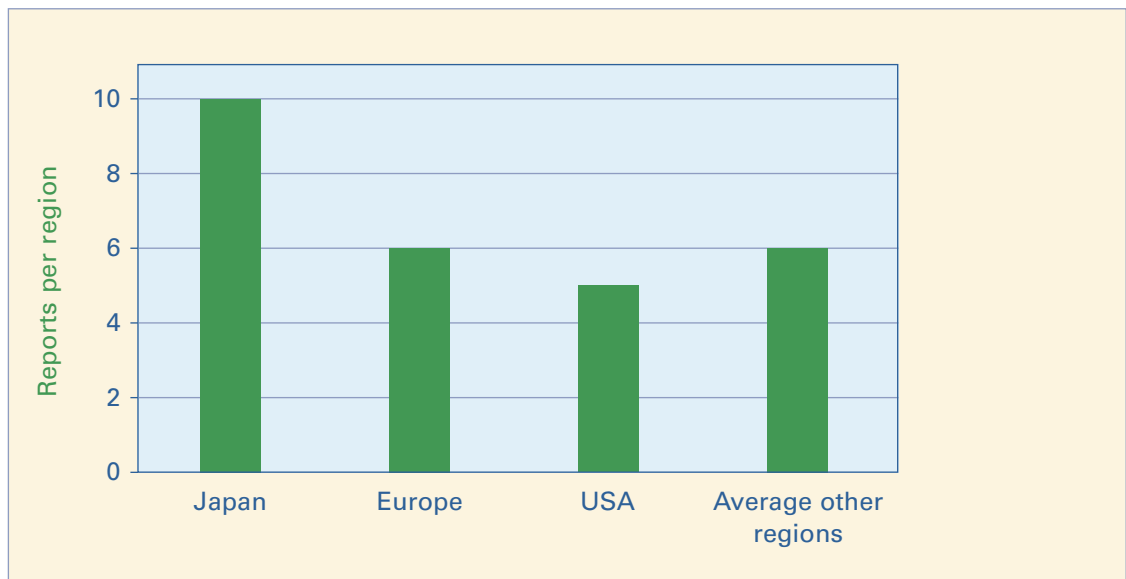


Figure 1: Number of companies that included a dedicated section on climate change or global warming

Greenhouse gas emissions and energy consumption patterns

With the growing significance of climate change, many companies are taking steps to quantify, report and reduce greenhouse gas emissions from their own operations. Many companies are also taking similar steps to disclose their energy use, which is also useful for assessing climate impacts. In many cases, reports make an explicit link between greenhouse gas emissions and energy.

Greenhouse gas emissions

The majority of companies (44 out of 50) reported greenhouse gas or CO₂ emissions from the company with quantities in units such as tonnes. Most companies (75%) that reported their greenhouse gas emissions or CO₂ emissions also reported a target to reduce their emissions. No examples were found of companies that quantify the financial cost (or benefit) of reducing greenhouse emissions, although examples were found where companies reported financial benefits from reductions in energy use, as outlined in the next sub-section.

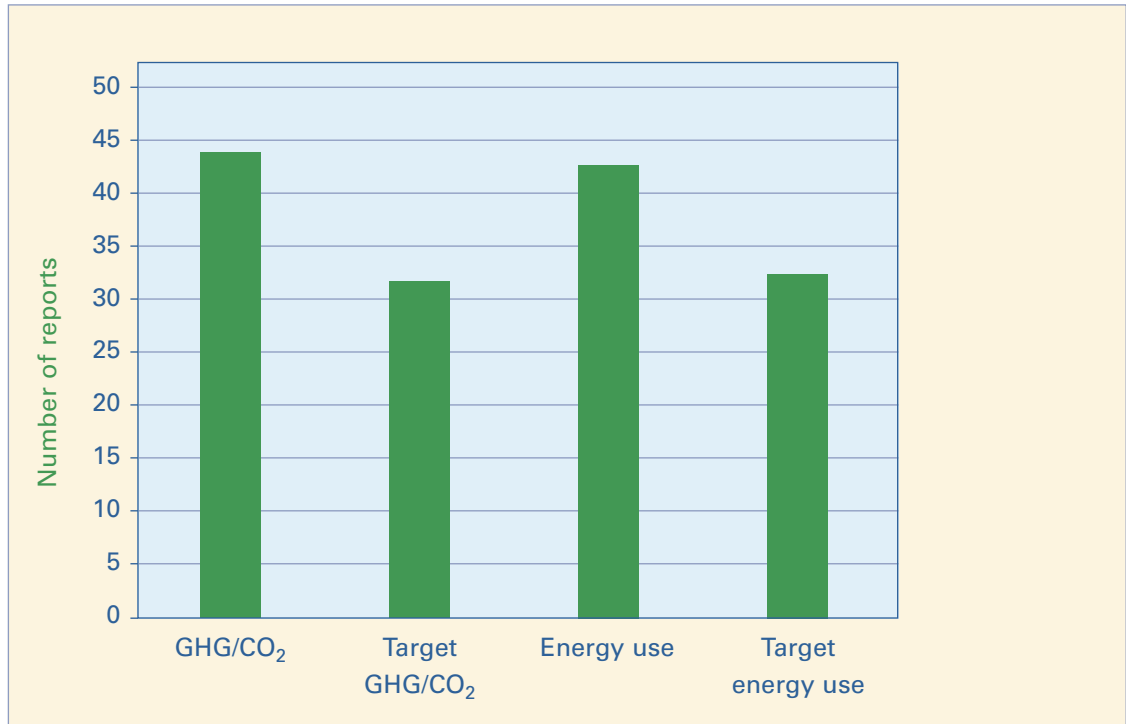


Figure 2: Number of companies that reported GHG or CO₂ emissions and energy use, and targets

Energy use

The majority of companies (43 out of 50) reported energy use (as electricity use and fuel use - Coal, Diesel, Petrol, Gas, etc) with quantities in units such as litres, tonnes, kWh, MWh or GJ, and 75% of these companies also reported a target to reducing energy use. The frequency of reporting on energy use and greenhouse gas emissions are very similar (44 out of 50 compared with 43 out of 50) and frequency of reporting targets for the two are also very similar.

A handful of companies (5) reported on the financial implications of targets. In all cases these companies reported financial savings or positive returns on investment from their actions to achieve their targets, such improving energy efficiency. These companies were in the oil and gas, pharmaceutical and information technology sectors.

A large US based industrial and electronics group reported that it undertook nearly 500 energy conservation projects within its global operations in 2004 and 2005. This was part of the company's commitment to reduce the intensity of greenhouse gas emissions by 30% and improve energy efficiency by 30% within the next six years. The company reported the reduction in total tonnes of greenhouse gas emissions, and converted this into removing an equivalent number of cars (in thousands of cars) from the roads. The company also reported a total annual cost saving in million US\$ from its energy conservation projects.

Less than half of the companies (17 out of 50) included an assurance statement that covers greenhouse emissions and/or statements on climate change. Assurance was most common among European companies, while none of the ten reports from the USA included assurance on reporting related to climate change.

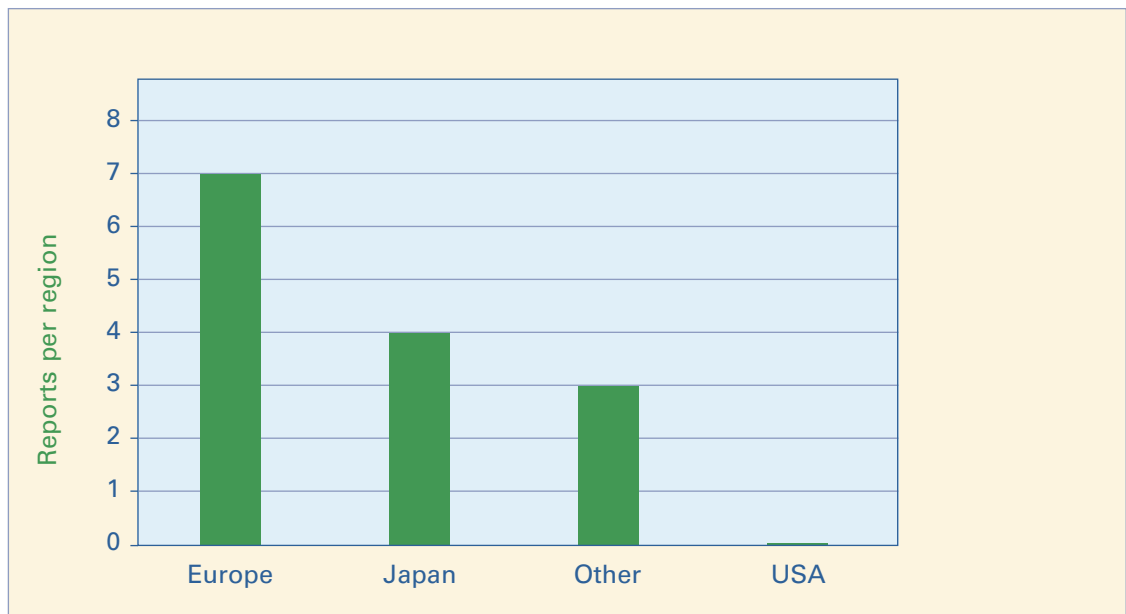


Figure 3: Number of companies that included assurance on greenhouse emissions or on statements on climate change

Board and senior management responsibility

Report readers often assess management commitment to issues such as climate change in part by the seniority of the managers responsible for the issue. Only 6 companies reported on the allocation of management responsibility for climate change, and only 4 companies reported discussions by the board of directors. Examples of reporting on consideration of climate change by the board were generally brief such as a mention in the report's section on corporate governance that greenhouse gas emissions was one of the topics discussed by the board during the year, or mention that the board endorsed a new product related to emissions trading (and therefore related to climate change).

This contrasts with statements from the CEO or company chairman, in which climate change was specifically mentioned in nearly half of the reports (24 out of

50 companies). In Japan the rate was much higher than the average, with 8 of the 10 reports including statements on climate change from the CEO or chairman.

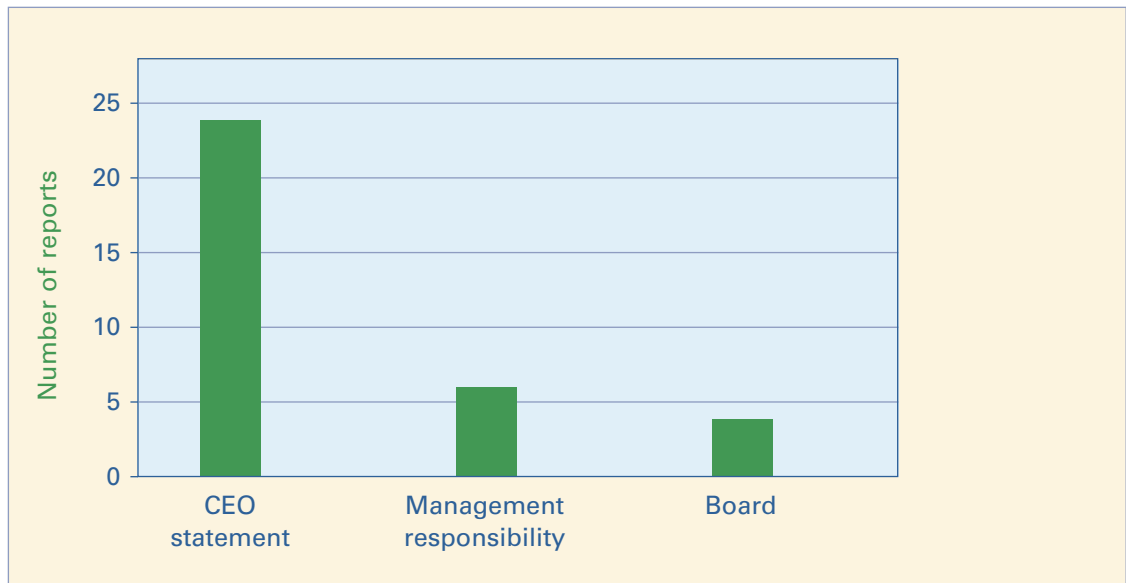


Figure 4: Number of companies that reported on board and/or senior management responsibility for climate change

A large European electricity utility reported on the involvement of the company chairman and CEO in the process of updating the company environmental policy to focus on global warming. The updated policy includes offering energy efficiency services to customers, considering global warming in investment choices, investing in research and development and developing renewable energy. The company also reported on the involvement of the company chairman and CEO in an industry led initiative to fight global warming.

Only 2 examples were found where reports included discussion of shareholder resolutions or shareholder action related to climate change. This number excludes reporting related to the Carbon Disclosure Project (CDP), which is the largest shareholder initiated project on climate change globally. The CDP is a collaboration of a group of large institutional investors who collectively sign requests to each company listed on the Financial Times 500 (FT500) list. The requests ask companies to publicly disclose information on their greenhouse gas emissions and associated commercial considerations, such as the projected impact of carbon credit prices on net income.

All companies surveyed for this report are also surveyed by the CDP because both sets of companies are taken from the FT500 list, and many mentioned their participation in the CDP in their sustainability reports.

Opportunities arising from climate change

Climate change is creating new business opportunities for companies, from new regulatory frameworks and from changing consumer demand. This chapter on reporting opportunities arising from climate change begins with explanations of the two key concepts of emissions trading and carbon credits, and then describes trends in reporting other new business opportunities such as carbon funds, emissions brokerages and carbon neutral products and services.

Key concept: Emissions Trading and the Kyoto Protocol

In recognition of the significant negative impacts of climate change, legislative based emissions trading schemes have been created in certain regions (for example the EU Emissions Trading Scheme), and globally under the United Nations (the Kyoto Protocol), based on the concept of tradable carbon credits.

The Kyoto Protocol was created under the United Nations Framework Convention on Climate Change (UNFCCC), and is a combination of country-specific greenhouse gas emissions reduction targets and emissions trading mechanisms. It is based on the recognition that the atmosphere is a shared resource, and that countries have “common but differentiated responsibilities” take action to control emissions. This is interpreted as all countries having a responsibility to take action, but that industrialized countries have a specific responsibility to take the lead. To date 167 countries have ratified the Kyoto Protocol, with the two exceptions among industrialised countries of the USA and Australia.

To meet its Kyoto Targets, the EU introduced the EU Emissions Trading Scheme in 2005. The scheme sets limits on emissions from over 12000 installations across Europe. If installations exceed the limits, they must purchase carbon credits (see below) or pay a fine. Carbon credits can be purchased from within the EU or from countries that have ratified the Kyoto Protocol and are participating in its mechanisms for international emissions trading.

Limited emission trading has taken place in the USA and Australia to date, in the form of the Chicago Climate Exchange and the NSW Greenhouse Gas Abatement Scheme. Additional national and state-based emissions trading schemes are currently under development or consideration in both countries.

Key concept: Carbon Credits

Carbon credits are reductions in greenhouse gas emissions that can be traded and have a financial value, and are created under a legal framework for emissions trading such as the Kyoto Protocol or the EU Emissions Trading Scheme, or generated by voluntary action outside of legal frameworks, for example credits traded on the Chicago Climate Exchange.

Carbon credits have names depending on the scheme and region in which they were created. These are shortened to acronyms, usually three or four letters, which may be thought of as different currencies for trading in different regions. The most common include:

Type of Carbon Credit		Emissions trading scheme
European Union Allowance	EUA	EU Emissions Trading Scheme
Certified Emissions Reductions	CER	Clean Development Mechanism (CDM) projects under the Kyoto Protocol
Emission Reduction Units	ERU	Joint Implementation (JI) projects under the Kyoto Protocol
Assigned Allowance Unites	AAU	International Emissions Trading under the Kyoto Protocol
Verified Emissions Reductions	VER	Voluntary action to reduce emissions that has been verified by a third party
New South Wales (NSW) Greenhouse Abatement Credits	NGAC	NSW Greenhouse Gas Abatement Scheme in Australia

Carbon credits and emissions trading

Most reporting on opportunities related to climate change fitted the category of carbon credits, for example reporting on opportunities for generation of carbon credits, setting up carbon funds and for brokerage and trading of credits. This included significant reporting on the carbon credits generated under the mechanisms of the Kyoto Protocol, particularly the CDM (referred to above). This is not surprising, since carbon credit generation and trading are the most market-oriented opportunities arising from climate change, and therefore the most financially tangible.

Emissions trading

Nearly half of the companies surveyed (20 out of 50) reported involvement in emissions trading, such as trading carbon credits under the Kyoto Protocol, EU Emissions Trading Scheme or other schemes, or activities such as engaging in the public policy debate.

Of the 50 companies in this survey, 15 are based in the USA and Australia which have not ratified the Kyoto Protocol and do not yet have national emissions trading schemes. However, half (7) of these 15 companies still reported on emissions trading. Reasons for this appear to be that multinational companies based in the USA and Australia often have overseas operations in regions that are involved in emission trading. New emissions trading regulations are also in discussion or

under development in both the USA and Australia, and this may also provide incentive to engage early in emissions trading.

Generation of carbon credits

Of the companies surveyed, 20% (11 out of 50) reported opportunities for generating carbon credits as opposed to buying and selling credits. Carbon credits are generated in a separate and distinct process from trading credits by reducing emissions at an installation, and then verifying and registering the reductions. In general companies did not report the financial revenue from the generation or sale of the credits, but in some cases enough detail was provided (the type of credit generated and the amount of reductions) to estimate the potential annual revenue by applying a market based carbon credit price per tonne of reductions.

A Japanese based industrial group with operations in Europe reported that it will accumulate know-how in emissions trading and emissions-credit projects to become an innovator in this new industry. The company reported on its participation in the World Bank Prototype Carbon Fund, and that it has invested in a major American greenhouse gas brokering company, which has since set up a branch in Japan. The company also reported on participation in other carbon credit projects and carbon funds, and stated that it recognizes that pursuing business opportunities that anticipate future market needs is a strategic investment of management resources.

Carbon funds and emissions brokerages

A fifth of the companies surveyed (9 out of 50) reported opportunities for setting up a carbon fund or engaging in emissions brokering (refer to the box below), both of which are services related to emissions trading. Most of these companies were in the Energy or Financial Services sectors. For the most part, these reports offered very little information about the funds in terms of size, scope, or role in overall portfolios.

Key concept: Carbon funds and emissions brokerages

Carbon funds are pooled funds set up to purchase carbon credits, usually on behalf of companies and other investors that will use the credits for compliance under an emissions trading scheme, or sell the credits at a later date. The term emissions brokerage is used to describe an organisation that mediates between buyers and sellers of carbon credits, for example between carbon funds and companies.

The World Bank set up one of the first carbon funds (the Prototype Carbon Fund, PCF) to stimulate development of the emissions trading market and assist companies and governments to invest in carbon credits generated under the Kyoto Protocol. The investors in the PCF receive a pro-rata share of the carbon credits in return for their investment. Most European governments (and some non-European ones such as Japan) have since also set up carbon funds to assist in meeting their targets under the Kyoto Protocol, and a growing number of private funds have been created, to purchase carbon credits on behalf of other companies, or on a speculative basis for selling later at a profit. Several of these funds have been listed on London's Alternative Investments (AIM) market, and some have been set up by large banks.

A large European electricity utility reported on a new product and service that assists its customers to manage their emissions allocations under the EU Emissions Trading Scheme. The product includes trading services, assessment of emissions and information on investment costs in € per tonne of CO₂, that can be used to assist companies in choosing between making the investment to pollute less or buying credits. The company included details in the report on how many customers have taken up the product.

Mechanisms of the Kyoto Protocol

Key concept: The Clean Development Mechanism & Joint Implementation

Under the Kyoto Protocol, countries are divided into two categories, developed (industrialised) countries and developing countries. In the first commitment period of the protocol, developed countries have targets to reduce emissions, and developing countries do not. A mechanism to promote reductions in developing countries is however provided in the form of the Clean Development Mechanism (CDM), which allows credits generated from emissions reduction projects in developing countries to be used in developed countries to assist in meeting their targets.

The Joint Implementation (JI) mechanism is a similar mechanism, with the difference that credits are generated in developed countries or countries with economies in transition (such as countries that were formerly part of the USSR) as opposed to in developing countries. Both the CDM and JI create opportunities for companies to reduce emissions and sell the reductions as carbon credits.

Clean Development Mechanism (CDM)

A significant number of companies (13 out of 50) reported opportunities for generating carbon credits from the Clean Development Mechanism of the Kyoto Protocol in their sustainability reports, with a particularly high ratio of companies reporting in Korea and India (4 out of the 5 reports from these regions in the survey). No companies directly reported on the financial implications, although where companies reported the size of the project and the expected reductions, the financial benefit could be estimated for example by applying average prices for electricity and carbon credits.

A large Asian steel manufacturer reported that it is investing in small hydroelectric power plants that will become CDM projects. The company provided details of two plants that are currently under construction, including the size of the plants in kWh and the start date. The company will sell the power generated via a national electricity exchange, and intends to expand generation once the units have become profitable.

A European electricity company reported on an agreement with the government of the country in which it is based and the government of an African country, to identify and carry out CDM projects. The company described a CDM project that it has developed in the African country, including the size of the project and the projected emissions reductions, and stated that it is developing a portfolio of reduction projects based on the mechanisms of the Kyoto Protocol.

Joint Implementation

Only 2 reports included activities for generating carbon credits from Joint Implementation (JI) projects under the Kyoto Protocol, from companies in Europe and Japan respectively. This could be expected, as the framework for generating JI projects under the Kyoto Protocol is much more recent than that of the CDM.

A European company reported that it has launched a study of opportunities for JI projects in the most promising countries, and that the prospects are very encouraging since there are many countries where emission reductions can be achieved through increasing efficiency in energy systems. It did not provide any further details about the study or potential future benefits to the company.

A Japanese company explained what JI is, and reported that it has a priority target to identify projects permitting implementation of the CDM and JI. It also reported that it has made a decision to provide capital to the Japan Greenhouse Reduction Fund (JGRF), but did not provide any further details.

Most reporting on opportunities for generating carbon credits were based on the CDM and JI, although examples were found of other types of credits (such as voluntary emission reduction credits, VERs) and cases where companies did not specify a type of credit.

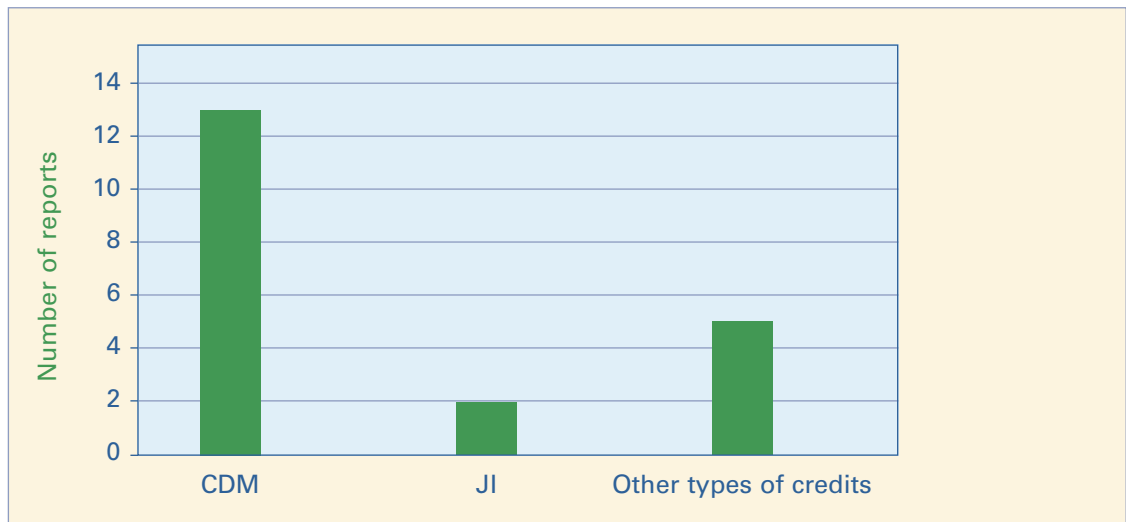


Figure 5: Number of companies that reported on opportunities for generating carbon credits

Carbon neutral and offset activities

Key concept: Carbon Neutral

The term Carbon Neutral means that emissions of carbon dioxide and/ or other greenhouse gases into the atmosphere from the manufacture of a product, a company, or another activity have been offset by removing an equal amount of gas from the atmosphere.

This can be achieved through the purchase of carbon credits or financing other projects to reduce or remove emissions. Examples of activities that have been made carbon neutral include recent G8 Summits, tours and albums by singers and bands, consumer products, rental car contracts and air tickets. Some companies have also become carbon neutral in all their activities. A number of companies and organisations offering carbon neutral products and services have recently been set up around the world, with such companies now operating in the UK, Netherlands, USA and Australia.

The survey found relatively few examples of companies that reported on carbon neutral activities or activities to offset emissions from part or all of their operations. Of the companies surveyed, 4 reports were found where companies specifically referred to the term “carbon neutral”. The reported activities varied widely, from just one activity such as publishing a carbon neutral annual report, to making all the activities of a company (a multinational bank) carbon neutral. Companies also reported different approaches to achieving carbon neutrality, for example planting trees, buying Kyoto compliant carbon credits or investing in improvements in energy efficiency.

A multinational bank based in the UK reported on its group-wide commitment for the company to become carbon neutral. It reported that it has put in place a carbon management plan consisting of three parts: manage and reduce direct emissions; reduce the carbon intensity of its purchased electricity, and offset the remaining emissions. The company reported the amount of carbon offset credits and also reported the average price per tonne that the company paid for the credits.”. It provided details of the projects that credits were purchased from, including a windfarm in New Zealand and organic waste gas capture projects in Australia, Germany and India, and included an external assurance statement on the projects.

An Australian company reported that will ensure that its annual financial reporting is ‘carbon neutral’, meaning that it will result in no net carbon emissions. It reported that it will achieve this by planting trees or by investing in climate friendly carbon credits, which offset these emissions.

Investment and asset management services

Companies’ exposure and response to climate change can be used by the financial services sector as a differentiator in investment decisions and asset allocations. Companies that anticipate regulatory developments and changes in consumer demand related to climate change, and that respond by developing new products, services and other opportunities may provide fund managers and other investors with higher returns.

Of the financial services companies surveyed, 4 companies reported on new products and services to exploit the link between investment value or asset management and companies' exposure and response to climate change. Reporting ranged from setting up specific climate-change related funds, to undertaking research to understand climate change risk and opportunities in particular sectors, which will help to develop opportunities to assist clients in managing this risk going forward. Reference was also made to participation in the UNEP Finance Initiative (UNEP FI) Climate Change Working Group.

A large UK-based international bank reported briefly on their development of a global research model that integrates the growing importance of climate change and related low-carbon technologies into research and trading services to institutional and pension clients. The bank did not provide any further detail on the model, or provide an indication of the expected financial benefit to the bank.

A Canadian Bank reported that climate change represents commercial risks to the company and its clients, but that there are also short- and long-term investment and business development opportunities to be found in adaptive technologies, such as renewable energy, energy efficiency and clean technologies. The bank reported that it has a subsidiary that is a lead investor in a global Clean Technology Fund, and that it has maintained its own Alternative Energy Venture Fund.

Other new business opportunities

Two thirds of the reports (31 out of 50) from a wide range of sectors described other business opportunities related to consumer products, services or technologies arising from climate change. These tended to relate to energy efficiency and products with reduced carbon emissions. Examples varied from new energy efficient computer chips and air conditioning for buses (and thereby reduced emissions), new components for hybrid electric vehicles, and developing new cold-water washing powder that saves energy and emissions.

The highest regional rate of reporting in this category was among Japanese reporters, with 8 of the 10 Japanese reports including other new business opportunities from climate change.

In general, the reporting on new products identified the type of product, but provided little further detail on revenues, role in the product portfolio, or importance for further business development. The reporting was generally useful for indicating that innovations were taking place, but offered little insight into the financial implications of such new opportunities.

A Korean electronics group reported on new business opportunities for producing improved batteries for hybrid electric vehicles. The company stated that faced with global warming caused by air pollution and greenhouse gases from car exhausts, climate change, and high oil prices, the development of hybrid electric vehicles is accelerating. The company has undertaken development of a new battery that is small and light and has higher power output than existing batteries in widespread use, which allows cars to be more compact and assists in increasing fuel efficiency and cutting emissions.

Another Korean company in the energy sector reported that it is focusing on two areas of technology development related to climate change, namely CO₂ reduction technology and renewable energy development. The company has researched and developed CO₂ separation technology based on absorption processes, and is currently in the process of researching practical applications. The company reported that it has filed patents for its CO₂ absorption technology at home and abroad. The company also reported on its promotion of new technology development in renewable energy, in the areas of solar photovoltaic systems, wind power, and fuel cells.

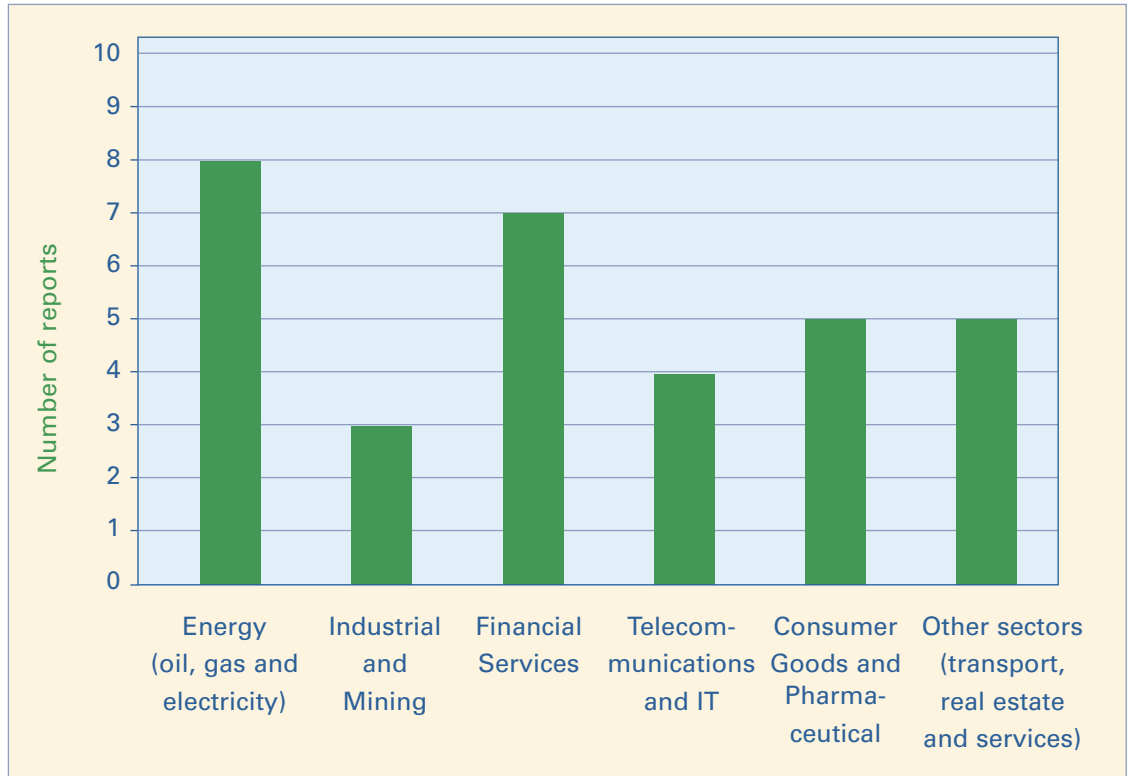


Figure 6: Number of companies that reported on other business opportunities from climate change

Risks arising from climate change

Very few of the companies surveyed reported quantitatively or qualitatively on risks arising from climate change. Of the examples that were found, by far most were related to current or future increased costs of energy (9 out of 50). A small number of companies reported on risk related to legal action and long term climatic changes. Very few other examples were found of reporting on risk related to climate change.

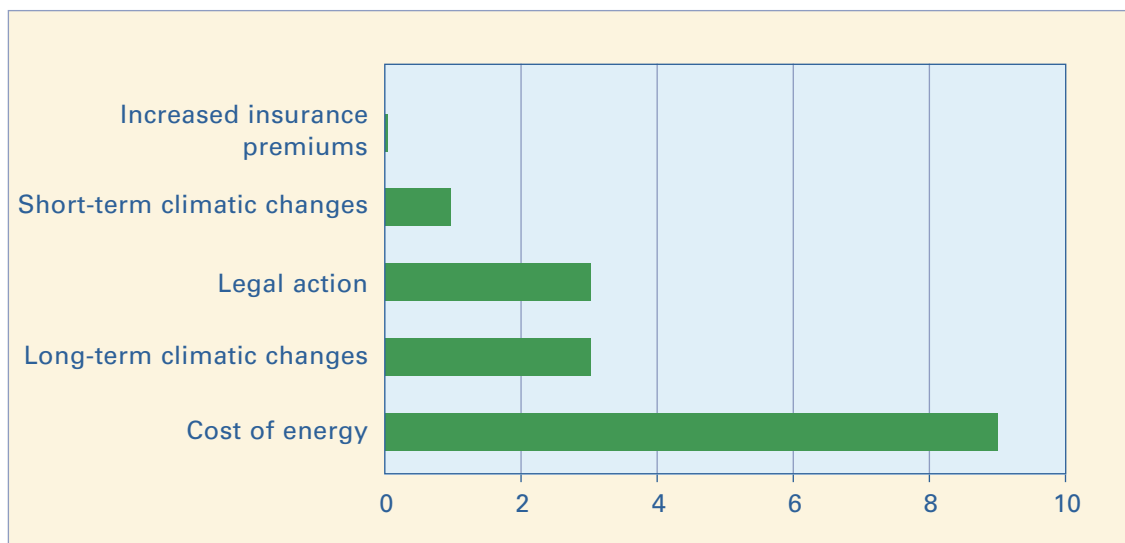


Figure 7: Number of companies that reported on risks arising from climate change

Increased energy and insurance costs

Increased energy costs

Much of the world's energy needs are currently met by burning fossil fuels such as coal, oil and gas. To address climate change, emissions from these processes will need to be addressed through means such as improving process efficiency and installing new technology and emissions reduction equipment. This has the possibility of resulting in higher energy costs.

A fifth (9 out of 50) of companies surveyed reported on the risk of current or future increased cost of energy related to climate change. The sector with most examples was the energy sector (oil, gas and electricity) followed by the industrial and mining, and pharmaceutical and consumer goods sectors. None of the companies provided information on how much energy costs could be expected to increase, or quantified the relative importance of energy costs to the company compared to other overheads. Companies did provide general information on their response to increasing costs, which was typically to initiate projects to research and improve energy use and efficiency within their operations.

A large European pharmaceuticals group reported that energy is an increasing cost factor, and that energy efficiency has become an important driver for cost reduction. The company specifically linked increased energy costs to climate change. It reported that although the pharmaceutical industry is not an energy intensive sector, management of energy usage and related greenhouse gas emissions is important for the long-term success of the company.

Increased insurance costs

Climate change will result in more extreme and adverse weather events, and an increase in the risk for insurance companies providing cover for such events. It is expected that insurance companies will respond by increasing insurance premiums, and in extreme cases withdrawing cover completely. A number of recent publications from the insurance sector on insurance costs and climate change elaborate on this (refer to Appendix A).

None of the 50 companies reported on the implications of increased insurance premiums due to climate change, although the sample did include companies with operations in regions that have been subject to extreme weather events in recent years (e.g., the Gulf of Mexico). Possible reasons for this are that companies are not quantifying the implications, or that they are but choose not to report this, or that the implications of increased insurance costs are currently too small to be material to the business.

Claims and legal action

Of the companies surveyed, 3 examples were found of companies that reported briefly on potential future litigation, claims or legal action related to climate change. Two of the examples came from the oil and petrochemicals sector. This item was included in the survey because the number of examples of claims and legal action against companies related to climate change has grown over the last two years. One of the higher profile examples occurred in August 2006, when the state of California initiated legal action against six major car manufacturers in the USA for damages related to climate change. The car manufacturers were asked to pay compensation for the damage inflicted on health, economy and the environment by emissions from their cars. Based on the degree of reporting (3 companies out of 50), this does not appear to be a major trend or concern at the moment. An example of company reporting on this issue is given below.

A large South African petrochemicals group provided a summary in its sustainability report of the company's material sustainability-related risks, and the measures in place to address these risks. The risks were identified from a formal internal risk assessment process. The company reported potential class action legal proceedings as one of the categories of risk, on asbestos, benzene, climate change, dioxins or other harmful emissions. The company reported that as part of its measures to address the risk, it undertakes routine emission inventories, and that following an extensive process of internal review and external benchmarking, it has set a group-wide target of achieving at least a 10% reduction in greenhouse gas emissions per ton of product by mid 2015.

Implications of climatic changes

Short-term climatic changes

In this survey a distinction is made between short-term physical impacts of climate change such as storms, floods and fires, and longer term climatic changes such as reduced water availability and sea level rise. Global warming is widely predicted to lead to increased short-term climatic changes in the coming years, which will likely be reflected both in greater frequency or intensity of extreme weather events such as hurricanes and floods, as well as dryer conditions in certain regions that will increase the risk of droughts. These scenarios will pose different risks for companies, but the reports surveyed showed very little discussion of these issues.

Only one company (1 out of 50) reported on the implications of disruptions to business (for example to transport or production processes) due to short-term climatic changes. This report was from the energy sector in the USA. The company reported on disruptions caused by the last two hurricanes in the climate change section of the report, but didn't include details on the operational impacts (e.g., down time). No financial implications were reported either in terms of the historical costs of such events or any financial arrangements made to prepare for future costs (e.g., insurance expenses or reserve funds).

An additional five companies from the energy and financial services sectors mentioned short-term physical changes to weather due to climate change. The companies who reported were primarily European. One company reported on floods, two companies reported on droughts, and two companies reported on storms. Appendix B provides more detail on the types of events that related to criteria for floods and storms. Tsunami related events were specifically not tracked because they are generally related to geological events and not to climate change.

The number and intensity of forest and bush fires are also expected to increase as a result of increasing atmospheric temperatures and increased evaporation and dryer conditions in certain regions. No examples of reporting on risks arising from forest or bush fires related to climate change were found in the reports surveyed.

Reporting on aid, donations and assistance given by companies for weather related events were excluded from the survey. Several examples of reporting on donations

and assistance by companies to victims of Hurricane Katrina in the USA were found, although these examples did not specifically link Hurricane Katrina to climate change.

Long-term climatic changes

Based on IPCC projections, climate change could result in a wide range of changes to existing ecosystems and weather patterns around the globe. The effect would be different in each region, but all regions would see changes in their basic ecological conditions. Changing temperatures will alter rainfall patterns, wildlife habitats, and frequency of weather events. The impacts of these changes will depend on the region, but will alter the availability and costs of basic resources such as water and raw materials. These changes can potentially create new competitive advantages or disadvantages for companies depending on the depth of the change. For example, a company that has water intensive processes in a region which is already facing water constraints could face a significant long-term disruption to its operations if climate change further permanently reduces rainfall in the region.

Of the companies surveyed, there was virtually no reporting on the potential impacts of long-term climatic changes. The only examples were 3 companies that included indirect references to changes in rainfall and the availability of water (from rivers, dams, lakes, etc) due to climate change. These were in the energy and financial sectors, an example of which is provided below.

An Australian bank noted that climate change is becoming an increasingly important issue for the company as a finance provider, and that it ties together a number of other environmental issues including water scarcity and biodiversity. The bank provides significant finance to the agribusiness sector, and it reported that this sector may face increased exposure to risk as a consequence of extreme weather events and potential long-term loss of species. It did not elaborate any further on the extent of exposure or its strategy or response, other than that it is working to improve understanding of this area.

The overall finding that very few companies report on weather related risks of climate change is consistent with similar findings in other studies. In the publication *Business Responses to Global Climate Change*², based on company responses to the Carbon Disclosure Project (CDP), it was concluded that many companies do not mention weather related events resulting from climate change as a potential risk or opportunity, because these are expected to occur only in the long run, not within their current business horizon.

Issues that can be both risks or opportunities

Some issues related to climate change present both risks and opportunities to organisations. These issues are covered in this chapter. The chapter begins with the financial instruments for managing climate change risk, namely weather derivatives and catastrophe products, and follows with future legislation and regulations, and issues of reputation and brand value.

Financial instruments for managing climate risk

Key concepts Weather derivatives and catastrophe products

Weather derivatives are financial instruments for managing the risk that weather could negatively impact on a business and its activities. Examples of uses of weather derivatives are farmers who wish to manage the risk of bad weather affecting their crops or electricity companies who wish to manage the risk of very hot or cold weather affecting electricity consumption. The most common weather derivatives track changes in temperature, where payment is made by the company offering the derivative to the company purchasing the derivative whenever temperatures deviate beyond agreed limits. Weather derivatives also exist for other conditions such as rain, snow and frost.

Catastrophe products (catastrophe bonds and catastrophe reinsurance) differ from weather derivatives primarily in that payment is triggered by a single large event, such as a hurricane, usually defined by physical parameters or the losses caused. Catastrophe bonds and catastrophe reinsurance are typically purchased by insurance companies rather than by other businesses, to manage insurance companies' risk of exposure to catastrophic weather events and the resulting large number of insurance claims.

Only one example was found of a report that included the use of financial instruments to manage future climate change, however, the report highlighted opportunities to provide these instruments rather than the use of them to manage risks. The example was an Australian company in the financial sector (banking), which reported on the opportunities for new weather derivative products that it has developed. The bank did not report on the number of customers or potential future revenue from the product, which if included would have provided more information about the financial implications for the company in developing this product.

An Australian bank specifically mentioned increasing future variability of weather due to climate change, and that this will create significant financial risks for customers in sectors such as agribusiness, tourism and utilities. To assist customers to manage the financial risks, the bank has developed a weather derivative product offering that has now been taken up by a number of large agribusiness and outdoor event organisers. The bank believes that this is a product with significant future potential, particularly in the agribusiness, and is undertaking further work to develop a similar, simpler product for smaller customers.

Future legislation and regulations

With the increasing prominence and urgency of climate change, regulators will continue to introduce legislation and regulatory schemes to address climate change. These will create both future risks and opportunities for companies.

About one fifth of companies (12 out of 50) companies reported on the potential implications of future regulations or legislation related to climate change. These examples were concentrated in Europe (4 out of 12) and the Asia-Pacific (5 out of 12) region. About half the companies reporting on potential future regulations or legislation were from the energy sector, and the remainder from other sectors.

The most commonly reported type of regulation or legislation was future emissions trading schemes, followed by future carbon taxes and then future fuel tariffs related to climate change.

Key concepts Carbon Tax

A carbon tax is a tax on the use of fuels that cause emissions of carbon dioxide and other greenhouse gases into the atmosphere, and is usually based on the quantity and type of fuel used (for example coal, oil or gas).

The primary purpose of a carbon tax is to create an incentive to increase the efficiency of fuel use, and thereby reduce greenhouse gas emissions from fuel and the associated contribution to climate change. Sweden was the first country to introduce a carbon tax in the 1990s, for certain uses of coal, gas and liquid fuels, with concessions and exemptions for certain industries. Finland, the Netherlands, and Norway have also introduced carbon taxes. Carbon taxes have been formally proposed within federal government (but not adopted) in the USA and New Zealand. Carbon taxes are regarded as the main alternative mechanisms to greenhouse gas emissions trading schemes, as both share the objective of reducing emissions and tackling climate change.

A large European based oil and gas company reported that it is expecting countries to implement further policies to achieve their Kyoto targets, and that these actions will result in a cost being applied to carbon in emissions, either through carbon taxes or through the value of permits in a trading system. The company reported that it is incorporating its expectation of this carbon cost into project investment decisions, but offered limited detail on the impact of this change. It stated that most of its new investment projects, irrespective of size, will be designed for optimal profitability in a carbon constrained world. Two financial related reasons given for the company's decision are that this avoids expensive retrofits later and that it reduces the risk of future liabilities.

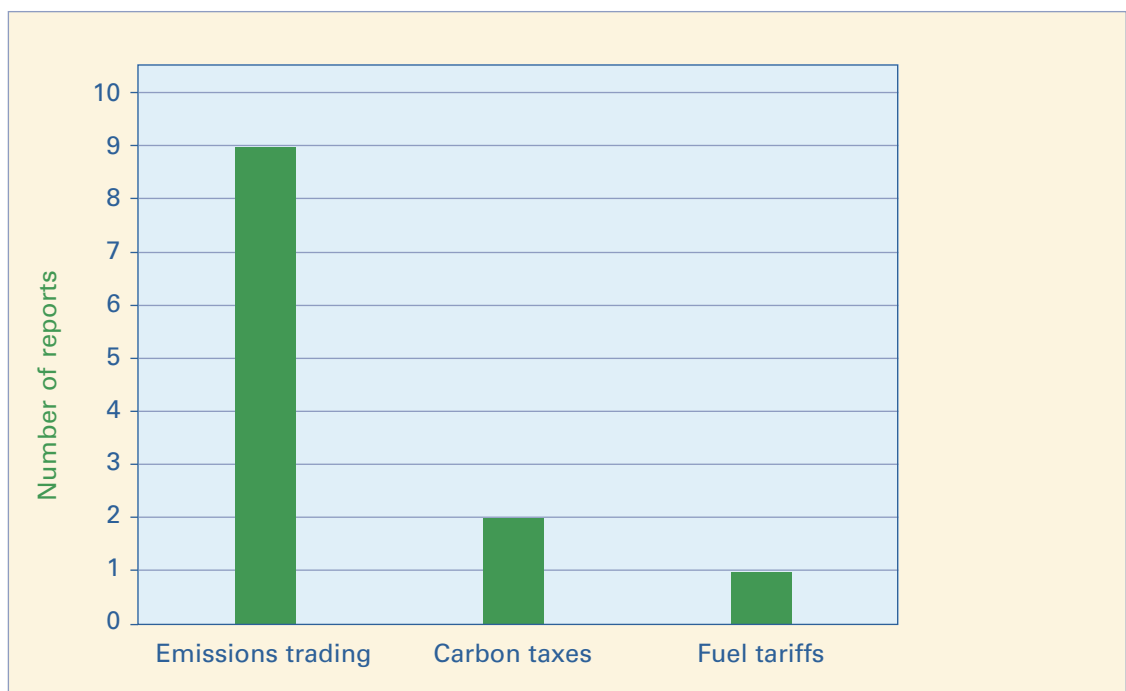


Figure 8: Number of companies that reported on risks associated with future regulations

Reputation and brand value

Companies' position and action on climate change is becoming a factor in determining brand value and reputation. This is evident in the oil and gas sector in particular, where some large companies publicise their actions to reduce emissions and their investments in renewable energy as part of their marketing campaigns. Of the reports surveyed, very few companies explicitly reported on the link between climate change and company reputation or brand value, and where companies did report the examples were brief and indirect.

One financial services company reported on its inclusion in the Climate Leadership Index, and reported that it was among the 60 large companies worldwide recognized as leaders in understanding and addressing a breadth of climate change issues. Another electricity company emphasised as a theme of its report that it was the least emitting of the seven major electricity companies in the region where it operated.

Climate change is also increasingly discussed in stakeholder engagement forums. Nearly a third of reports surveyed (14 out of 50) included discussion of climate change in stakeholder engagement or consultation. Many of these reports were from companies in Europe and in the energy sector, where a common focus of the stakeholder dialogue was the implication of climate change on energy prices brought about by the EU Emissions Trading Scheme.

A Japanese-based industrial group reported on a stakeholder engagement process to discuss the company's sustainability reporting, including the strengths and weaknesses of the report and how it could be improved. The company reported that it had invited a climate change focused non-governmental organisation (NGO) to participate in its stakeholder dialogue, and published the comments that the NGO provided. The NGO asked for more information on the company's stance on climate change, whether it aspired to be a leader in the field, and if so, what that would mean. The NGO commented on the case studies that the company reported and asked for more information on the company's overall carbon impact and how it benchmarks its activities against other companies.

The company responded in its report that through the stakeholder dialogue it would re-evaluate and improve its CSR activities and management of CSR issues.

Conclusions

This survey found that while almost all companies reported on climate change in their sustainability reports, on closer examination companies reported far more on potential opportunities than financial risks for their companies from climate change.

This is in stark contrast with recent new evidence that climate change presents serious global economic risks if measures are not taken. The Stern Report on The Economics of Climate Change states that our actions over the coming few decades related to climate change could create risks of major disruptions to economic activity, and that costs of extreme weather alone could reach 0.5-1% of world GDP per annum by the middle of the century.

This low rate of reporting on risks from climate change may be because companies see climate change not only as a threat but also as an opportunity for new services, products and trading. Risks could be perceived to be beyond current business planning horizons, or companies may not have identified, explored or quantified risks associated with climate change and may therefore not be in a position to report on risks.

A surprising two thirds of companies reported new business opportunities from climate change, mostly in the area of emissions trading and carbon credits. This applied equally to companies irrespective of whether or not they were based in countries that are party to the Kyoto Protocol, which lays out the global framework for current and future international emissions trading. A total of 167 countries are now party to the Kyoto Protocol, with the exceptions of the USA and Australia. Reasons for this appear to be that some multinational companies based in the USA and Australia have overseas operations that are involved in emission trading, and that new emissions trading regulations are beginning to emerge in the USA and Australia independently of Federal Government positions on the Kyoto Protocol.

A wide range of other types of new business opportunities related to climate change were reported, ranging from manufacturing components for low-emission hybrid electric vehicles to energy efficient washing powder.

In comparison companies reported little on the business risks of climate change. Where companies did report on business risks, this was mostly the risk of increases in the cost of energy related to climate change, reported by about one fifth of companies.

In general companies did not report on the financial implications of risks or opportunities related to climate change, for example expected costs of complying with future regulations or expected profits from the sale of new climate change related products. Exceptions were examples of reporting on savings from improvements in energy efficiency and reductions in emissions, and in some cases the financial cost or revenue from the purchase or sale of carbon credits.

Japan stood out as a region with a high rate reporting on climate change, with all Japanese companies including a dedicated section on climate change in their reports. Japan also had the highest rate of reporting on new business opportunities from climate change. Japan was closely followed closely by Europe, with lower reporting rates in other regions.

Appendix A: Further reading

Report	Scope	Coverage
Climate and Risk Disclosure by the S&P 500, Calvert & CERES, January 2007	Analysis and commentary on disclosure of climate change and risk among S&P 500 companies, based on company responses to the Carbon Disclosure Project (CDP).	USA
The Stern Review: The Economics of Climate Change, Sir Nicolas Stern, Head of the UK Government Economic Service, October 2006	Report on the economic impacts of climate change, and costs and benefits of taking action to address climate change. Report highlighting 190 innovative	Global
From Risk to Opportunity: How insurers can proactively and profitably manage climate change, CERES, August 2006	Products and services related to climate change from insurance companies in 16 countries.	Mostly USA, some Global
Carbon Footprint Ranking of UK Investment Funds, Trucost, June 2006	Ranking of 44 Investment funds by their carbon footprints, based inter-alia on national pollution and emission registries and environmental accounts.	UK
Climate Change and the Role of Banks, Dutch Sustainability Research for Friends of the Earth Netherlands, June 2006	A best practice study of selected international and Dutch banks, based on publicly available information.	Netherlands, UK and USA
Corporate Governance and Climate Change: Making the Connection, CERES, March 2006	A measure of how 100 leading global companies are responding to climate change, based on securities filings, company annual reports, websites and third-party questionnaires.	Global
Climate Change and Shareholder Value, The Carbon Trust, March 2006	An analysis of value at risk from climate change, based on 10 case studies of company disclosure.	UK
Climate Change, Adapt or Bust, Lloyds Insurance, 2006	Risks to Insurance companies posed by climate change, based on existing literature.	Global
KPMG International Survey of Corporate Responsibility Reporting, KPMG and the University of Amsterdam, 2005	Survey of trends in sustainability reporting in a sample of 1600 companies, based on company's public sustainability reports.	Global

Report	Scope	Coverage
The Carbon Disclosure Project (CDP), Innovest Strategic Value Advisors, 2005	Survey of company approaches to climate change and issues relevant to investment, based on a questionnaire sent to the FT500 companies.	Global
Climate change and company value, a guide for company analysts, AMP Capital and Baker & MacKenzie, November 2005	Summary of potential impacts of climate change on company value, based on existing literature.	Australia
A climate for change, a trustee's guide to understanding and addressing climate risk, IIGCC, Mercer and the Carbon Trust, August 2005	A guide for pension trustees on understanding and addressing risks related to climate change in investment portfolios, based on existing literature and company case studies.	Global
Financial Risks of Climate Change, Association of British Insurers, June 2005	Financial risks of weather related impacts on the insurance sector, based on existing literature.	UK
Climate change and the financial sector, an agenda for action, Allianz Group and the WWF, June 2005	Implications of climate change for insurance, banking and asset management, based on existing literature.	EU
Business Responses to Global Climate Change, Jonatan Pinkse, University of Amsterdam	Dissertation on the strategies and activities of multinationals in response to climate change, based on information from the CDP.	Global

Appendix B: Survey criteria

Part 1: Background information related to climate change

Does the company's sustainability report include:

- the words climate change or global warming?
 - a dedicated section on climate change or global warming?
 - greenhouse gas (GHG) or carbon dioxide (CO₂) emissions from the company with quantities in units such as kg or tonnes?
 - a target to reduce greenhouse gas emissions?
 - energy use (eg: reported as electricity use and fuel use - Coal, Diesel, Petrol, Gas, etc) with quantities in units such as litres, tonnes, kWh, MWh?
 - a target to reduce energy use or improve energy efficiency?
 - management responsibility for climate change specifically?
 - a specific statement from the CEO or company chairman that mentions climate change?
 - consideration by the board of directors (board) of climate change?
 - shareholder resolution or shareholder action related to climate change?
 - an assurance statement that covers greenhouse emissions and/or statements on climate change?
-

Part 2: Opportunities arising from climate change

Does the company's sustainability report include:

- involvement in emissions trading, such as buying or selling emissions allowances under the EU emissions trading scheme, Kyoto Protocol or other scheme?
 - opportunities for generating carbon credits?
 - credits from Clean Development Mechanism (CDM) projects under the Kyoto Protocol?
 - credits from Joint Implementation (JI) projects under the Kyoto Protocol?
 - credits from other types of emission reduction projects?
 - opportunities for setting up a carbon fund or engaging in emissions brokering? (eg: within the EU emissions trading scheme or Kyoto)
 - other business opportunities from climate change, for example related to products, services or technologies (eg: selling green energy, building or operating wind turbines, demand for lower emissions cars and other products, eco-friendly products, green or carbon neutral home loans, credit cards, and other products)
 - carbon neutral activities or projects to offset emissions from parts of its operations by buying or acquiring carbon credits?
-

Part 3: Risks arising from climate change

Does the company's sustainability report include:

- potential future litigation, claims or legal action related to climate change?
 - the implications of increased insurance premiums due to climate change?
 - the implications of disruptions to business (for example to transport or business process) due to climate change?
 - current or future increased cost of energy related to climate change?
 - the implications of one or more of the following physical changes related to climate change:
 - floods? (including storm surges and flash floods from intense rainfall, but not Tsunami related floods)
 - droughts?
 - strong wind?
 - heat waves?
 - storms, including hurricanes, cyclones, typhoons, hailstorms, snowstorms and other types of storms?
 - increased forest fires or bush fires?
 - longer term changes in weather patterns?
 - increased or decreased rainfall?
 - decreases in the availability of water from rivers, dams, lakes, etc?
 - the implications of rising sea levels?
-

Part 4: Issues that can be both risks or opportunities

Does the company's sustainability report include:

- weather derivatives to manage future climate change?
 - catastrophe bonds to manage future climate change?
 - the implications of potential future regulations or legislation related to climate change?
 - potential future emissions trading schemes?
 - potential future carbon taxes?
 - potential future fuel tariffs?
 - the links between climate change and company reputation or brand value?
 - discussion of climate change in stakeholder engagement or consultation?
 - asset management/ investment and climate change, for example reporting on new investment opportunities related to climate change, or risk associated with specific investments? (financial services companies only)
-

Appendix C: Sample of companies

Organization	Sector classification
Australia & New Zealand Banking Group (ANZ)	Financial Services
Banco Itau Holding Financeira S.A.	Financial Services
Citigroup	Financial Services
HSBC Group	Financial Services
National Australia Bank (NAB)	Financial Services
Nomura Holdings	Financial Services
Royal Bank of Canada (RBC)	Financial Services
Royal Bank of Scotland Group (RBS)	Financial Services
Standard Bank	Financial Services
TD Bank Financial Group	Financial Services
Wells Fargo & Company	Financial Services
Westpac Banking Corporation	Financial Services
BP	Energy (Oil, Gas & Electricity)
Chevron Corporation	Energy (Oil, Gas & Electricity)
Electricité de France (EDF)	Energy (Oil, Gas & Electricity)
Eni	Energy (Oil, Gas & Electricity)
KEPCO (Korea Electric Power Corporation)	Energy (Oil, Gas & Electricity)
Petróleo Brasileiro (Petrobras)	Energy (Oil, Gas & Electricity)
Sasol	Energy (Oil, Gas & Electricity)
Shell International B.V.	Energy (Oil, Gas & Electricity)
Suncor Energy Inc.	Energy (Oil, Gas & Electricity)
Total	Energy (Oil, Gas & Electricity)
Cisco Systems Inc.	Telecomms & Information Technology
Intel Corporation	Telecomms & Information Technology
Microsoft Corporation	Telecomms & Information Technology
MTN Group	Telecomms & Information Technology
NTT	Telecomms & Information Technology
Samsung SDI	Telecomms & Information Technology
Telstra	Telecomms & Information Technology
Vodafone Group Plc	Telecomms & Information Technology
Coca Cola Company	Consumer Goods & Pharmaceutical
Johnson & Johnson	Consumer Goods & Pharmaceutical
Matsushita Electric Industrial Company Ltd	Consumer Goods & Pharmaceutical
Novartis International AG	Consumer Goods & Pharmaceutical
Procter & Gamble	Consumer Goods & Pharmaceutical
Roche	Consumer Goods & Pharmaceutical
Sony	Consumer Goods & Pharmaceutical
Anglo Platinum Ltd	Industrial & Mining
BHP Billiton	Industrial & Mining
CEMEX	Industrial & Mining
General Electric (GE)	Industrial & Mining

Organization	Sector classification
Nippon Steel	Industrial & Mining
POSCO	Industrial & Mining
Reliance Industries Limited	Industrial & Mining
Denso Corporation	Other
East Japan Railway (JR East)	Other
Hyundai Motor Company	Other
Mitsubishi Corporation	Other
Mitsubishi Estate	Other
Nissan	Other

Appendix D: GRI Reporting Protocol for EC2

EC2. Financial implications and other risks and opportunities for the organization's activities due to climate change.

1. Relevance

Climate change presents risks and opportunities to organizations, their investors, and their stakeholders. Organizations may face physical risks due to changes in the climate system and weather patterns. These risks may include the impact of increased storms; changes in sea level, ambient temperature, and water availability; impacts on the workforce such as health effects (e.g., heat-related illness or disease); or the need to relocate operations.

As governments move to regulate activities that contribute to climate change, organizations that are directly or indirectly responsible for emissions face regulatory risk through increased costs or other factors impacting competitiveness. Limits on greenhouse gas emissions can also create opportunities for organizations as new technologies and markets are created. This is especially the case for organizations that can use or produce energy and energy products more efficiently.

EN16 allows for disclosure on total amount of greenhouse gas emissions, while EN18 discloses total reductions achieved and initiatives for reducing the amount of emissions the reporting organization produces.

2. Compilation

2.1 Report whether the organization's senior governance body considered climate change and the risks and opportunities it presents to the organization.

2.2 Report risks and/or opportunities posed by climate change that have potential financial implications for the organization, including:

- Risks due to physical changes associated with climate change (e.g., impacts of modified weather patterns and heat-related illness);
- Regulatory risks (e.g., the cost of activities and systems to comply with new regulations);
- Opportunities to provide new technologies, products, or services to address challenges related to climate change; and
- Potential competitive advantages created for the organization by regulatory or other technology changes linked to climate change.

2.3 Report whether management has quantitatively estimated the financial implications (e.g., cost of insurance and carbon credits) of climate change for the organization. Where possible, quantification would be beneficial. If quantified, disclose financial implications and the tools used to quantify.

3. Definitions

None.

4. Documentation

Records or minutes of the organization's governance bodies, including environmental committees may have the information required by this Indicator.

5. References

None.

Global Reporting Initiative™

PO Box 10039
1001 EA Amsterdam
The Netherlands
guidelines@globalreporting.org
www.globalreporting.org/home

KPMG's Global Sustainability Services™

PO Box 74500
1070 DB Amsterdam
The Netherlands
sustainability@kpmg.nl
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