



# Carbon Disclosure Project Report 2009 Germany

On behalf of 475 institutional investors  
with assets of 55 trillion US Dollars



*for a living planet*



Bundesverband Investment  
und Asset Management e.V.

# **Report written by Prof. Dr. Alexander Bassen, University of Hamburg**

October 2009

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## Carbon Disclosure Project Members 2009

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Meritas Mutual Funds Canada

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Mitsui Sumitomo Insurance Co.,Ltd. Japan

Mizuho Financial Group, Inc. Japan

Mn Services Netherlands

[Monega Kapitalanlagegesellschaft mbH Germany](#)

Morgan Stanley Investment Management US

Motor Trades Association of Australia Superannuation Fund Pty Ltd Australia

MP Pension – Pensionskassen for Magistre og Psykologer Denmark

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Nathan Cummings Foundation, The US

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National Grid UK Pension Scheme UK

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Neuberger Berman US

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New Jersey Division of Investment US

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New York City Teachers Retirement System US

New York State Common Retirement Fund (NYSCRF) US

Newton Investment Management Limited UK

NFU Mutual Insurance Society UK

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Nikko Asset Management Co., Ltd. Japan

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Nordea Investment Management Sweden

Norfolk Pension Fund UK

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Old Mutual plc UK

OMERS Administration Corporation Canada

Ontario Teachers Pension Plan Canada

Opplysningsvesenets fond (The Norwegian Church Endowment) Norway

Oregon State Treasurer US

Orion Asset Management LLC US

Pax World Funds US

PBU – Pension Fund of Early Childhood Teachers Denmark

Pension Fund for Danish Lawyers and Economists Denmark

Pension Protection Fund UK

Pensionskassen for Jordbrugsakademikere og Dyr læger Denmark

PETROS – The Fundação Petrobras de Seguridade Social Brazil

PFA Pension Denmark

PGGM Netherlands

Phillips, Hager & North Investment Management Ltd Canada

PhiTrust Active Investors France

Pictet Asset Management SA Switzerland

Pioneer Alapkezelő Zrt. Hungary

[Pioneer Investments Kapitalanlage-gesellschaft mbH Germany](#)

PKA Denmark

Portfolio 21 Investments US

Portfolio Partners Australia

Porto Seguro S.A. Brazil

PPM Premiepensionsmyndigheten Sweden

PRECE Previdência Complementar Brazil

PREVI Caixa de Previdência dos Funcionários do Banco do Brasil Brazil

Principle Capital Partners Limited UK

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Standard Chartered PLC UK	The University of Edinburgh Endowment Fund UK	
Standard Life Investments UK	The Wellcome Trust UK	
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Statewide Superannuation Trust Australia	Threadneedle Asset Management UK	
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Stratus Group Brazil	Trillium Asset Management Corporation US	
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Sumitomo Mitsui Card Company, Limited Japan	TrygVesta Denmark	
Sumitomo Mitsui Finance & Leasing Co., Ltd Japan	UBS AG Switzerland	
Sumitomo Mitsui Financial Group Japan	Unibanco Asset Management Brazil	
Sumitomo Trust & Banking Japan	UniCredit Group Italy	
Sun Life Financial Inc. Canada	<a href="#">Union Asset Management Holding AG Germany</a>	
<a href="#">Superfund Asset Management GmbH Germany</a>	<a href="#">Union Investment Institutional GmbH Germany</a>	
Svenska Kyrkan, Church of Sweden Sweden	<a href="#">Union Investment Privatfonds GmbH Germany</a>	
Swedbank Sweden	<a href="#">Union Investment Service Bank AG Germany</a>	
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**Dr. Wolfgang Mansfeld**



**Eberhard Brandes**

## Foreword for the fourth CDP Report 2009

The effects of global warming, such as melting glaciers, rising sea levels, floods, droughts, and extreme storms, are already being recorded and experienced. To prevent the dangerous impacts of climate change, global carbon emissions have to be reduced by 80 percent below 1990 levels by 2050. For European companies, these requirements translate into a reduction of 95 percent. This will seriously change the market conditions as well as the opportunities and risks for businesses. Accordingly, climate-related factors have influenced the investment strategies of the German investment and asset management industry for several years. The Carbon Disclosure Project (CDP) has set itself the goal of helping companies to understand and manage their own greenhouse gas emissions through increased transparency.

The CDP report, published since 2006 and therefore now in its fourth edition in Germany, has been supported by the BVI (Bundesverband Investment and Asset Management) and the WWF (World Wide Fund for Nature). The interest of companies in the CDP has substantially increased since then – in 2006, just 31 percent of Germany's largest companies in terms of market value responded to the questionnaire, whereas this year, 51 percent have taken part. The quality of the responses has also increased compared to previous years.

The results of the study provide important information on corporate value for investment fund companies, with regard to moving towards a low carbon economy. However, there is still work to be done. For example, the standardization of climate-relevant indicators, as well as the reporting of the relevant company objectives, need to be pursued in the future with renewed vigour.

At least part of the aim of the CDP has nevertheless succeeded – there has been a growing awareness amongst companies about the economic challenges, opportunities and risks associated with climate change. Climate has also become a factor in financial markets, because in the long term, only those companies are promising to adapt quickly to the new challenges are attractive to investors.

We wish the CDP much success, with intensive participation within Germany and also the rest of the world during the coming years.

**Dr. Wolfgang Mansfeld**  
President BVI Bundesverband  
Investment und Asset Management

**Eberhard Brandes**  
Director General of WWF  
World Wide Fund For Nature Deutschland

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# 1

# Executive Summary

## CDP 2009 in Germany

This year for the fourth time since 2006, the 200 largest German companies based on market capitalisation were requested to respond to the Carbon Disclosure Project (CDP). In total, 102 (51%) of these companies participated in the project. As such, the CDP 2009 represents 91% of the market capitalisation of the 200 largest German companies.

The CDP offers stakeholders and shareholders a way to assess strategies for managing the transition from today's CO<sub>2</sub>-intensive economy to the politically pronounced low-CO<sub>2</sub> economy of the future. But where do DAX companies fit into this transformation process, how are they addressing the issues involved, what systematic and strategic or random strategic answers are they developing? The CDP also provides investors with the best possible freely available data to transform these questions into rating models and close the gaps in the investment process.

Despite the current financial and economic crisis, the response rate by German companies to the globally standardised questionnaire remained at about the same level as the previous year. A main trend this year shows that risks associated with climate change are given less consideration than in the previous year. Regulatory risk is seen as the most significant risk here. Risks arising from consumer behaviour are becoming increasingly important. In 2009, companies see greater opportunities related to climate change than was the case in 2008. These opportunities come about thanks to new products, in particular energy-saving applications. With the exception of a few physical risks, the ratio of opportunities to risks has improved in comparison with 2008 for all sectors. One possible interpretation of this is that regulatory developments are now

becoming more evident than in the past and open up new opportunities. The Climate and Energy Package ("Klima- und Energiepaket") passed by the German government is also stimulating investment in this field.

An increasing level of standardisation can also be observed in the reporting of greenhouse gas (GHG) emissions. The Greenhouse Gas Protocol (GHG Protocol) seems to be establishing itself as the common standard, as it is being used for direct and energy-related emissions (Scope 1 and 2) by 50% of companies that responded to CDP Germany 2009. The transparency in terms of companies' own emissions has increased significantly. Some 66% of companies can already quantify their emissions. External auditing of the data is also becoming increasingly important. Yet there are still specific deficits with regard to assessing and disclosing so-called Scope 3 emissions associated with upstream added value chains and product usage.<sup>1</sup> 57% of companies employ emissions targets to reduce their overall emissions. And around three fourths of the companies also quantify their reduction targets. The average here is 2.8% per year. This reduction is expected to be primarily achieved through increased energy efficiency. However, the information for planning and setting targets and the capital expenditure associated with achieving this remains inadequately documented.

In connection with the effects of direct emissions on a company's commercial success, a highly sophisticated model has been further developed in the CDP Germany 2009 Report. The effect varies considerably between different sectors. Expectably, companies particularly affected include those in the Electric Utilities, Transport and Materials sectors. These

sectors all have high process-related emissions, and their value creation also seems significantly more carbon-intensive. However, these circumstances also come about due to the fact that the emissions intensity of the added value chain and of product usage is only being made transparent and assessable with insufficient emissions data. To date, it has therefore not been possible to take these implications and risks into account in the model, although it illustrates that additional action is needed here.

## Business models of the future – The challenges for 2008/09

With the UN negotiations in December 2009, the discussion on appropriate climate protection is heading towards an important landmark. The commitment period of the Kyoto Protocol ends in 2012, and whether a binding, globally applicable and above all appropriate amendment can be found depends to a large extent on the results of the Copenhagen Climate Conference.

### Exacerbating Findings in Climate Change Science

Since the last CDP reporting period, climatological results and conclusions have become more pressing. Climate change is happening faster than had previously been anticipated and forecast. For example, the Arctic summer sea ice is melting, which creates larger, darker, sunlight-absorbing water areas. The CO<sub>2</sub> intake capacity of the oceans also seems to be shrinking and thereby offering less natural carbon sink capacity. The consequences and reasons for limiting the effects of climate change are therefore becoming ever clearer from a scientific standpoint. To

<sup>1</sup> Scope 3 emissions can provide a powerful insight into a company's risk position, as effects on a company's commercial success can, for example, result from corresponding regulation of CO<sub>2</sub> emissions related to product groups or changes in consumer behaviour.

limit the temperature increase to a maximum of 2 degrees Celsius relative to pre-industrial values, a concept governing the maximum quantity of CO<sub>2</sub> to be emitted is prevailing – the Carbon Budget. No more than 1,000 Gt CO<sub>2</sub> can be emitted up to the year 2050 to remain within this temperature threshold with a probability of around 75%. More than a quarter of this has already been emitted in the first nine years since the turn of the millennium in 2000 and global emissions are continuing to increase. Transforming virtually all processes related to value creation and consumption from a previously carbon-intensive to a low-carbon structure will be fundamental – by 2050 the developed world's CO<sub>2</sub> account must be near zero. In addition, developing and emerging nations must achieve carbon reductions of around 60-80% of the developments expected for a scenario with no emissions constraints.

#### **Climate policy is increasingly being used to set regulatory guidelines**

No industry or sector will be able to avoid this development. Some sectors are due to change fundamentally, while others will see less severe change. Some will benefit and grow, yet other business models will simply not survive in a low-carbon future. Last year saw further changes and developments in this context. For example, the US has now followed the UK (Climate Bill, minus 80% by 2050) with a de facto climate bill. The legislation is intended to provide planning security in connection with the long-term development perspectives. The bill in the US includes mid- to long-term reduction targets (based on the year 1990 – with minus 4% by 2020, minus 29% by 2030 and minus 70% by 2050). These adjustments to the regulatory framework will in some cases require radical changes of direction, including for example ever decreasing de facto emission limits for conventional power stations (for example through emission performance standards) or a national “cap & trade” emission trading system. Increasingly, similar discussions can be increasingly observed in other countries as well, e.g. Finland, Spain or New Zealand. Yet, countries such as Germany still have not implemented any legally binding reduction targets through new legislation. The goal of Germany's Integrated Climate and Energy Programme (“Integriertes Klima- und Energieprogramm”) is to trigger and

encourage reductions in a timeframe up to 2020. These reductions are likely to be in the range of 30-35% to achieve the political goal of 40% by 2020.

Developing and emerging nations accepted the 2 degrees Celsius threshold as a guiding principle together with the G8 states in July 2009. Achieving this will require far-reaching, science-based landmarks.

#### **Concrete regulation at sector level**

Great Britain has launched an initiative for obligatory corporate emissions reporting from 2012 onward to increase transparency, and even the CBI (Confederation of British Industry) has both suggested and demanded a uniform standard for this reporting – as it is first necessary to have a sensible, comparable basis of measurement before any genuine assessments can be made and reductions achieved. For Germany, the CDP remains the only and voluntary reporting basis.

However, individual industrial sectors are being subjected to stricter regulation. In the EU, for example, a decision was taken in December 2008 to limit passenger car emissions to 130g/km from 2012 onwards (subsequent amendments still open) and to implement complete auctioning of emissions certificates in the energy sector from 2013 onwards. This will likely put an end to windfall profits, yet will send out a clear CO<sub>2</sub> price signal with an across-the-board effect. For energy-intensive industries, the allocation mechanism in Europe, i.e. the proportion of certificates that can be bought per auction, is to be decided by 2011.

#### **Developments in the capital market**

In the US, the National Association of Insurance Commissioners (NAIC) has announced obligatory reporting for major insurers from 2010 onward, according to which the influences of climate risks on the company and in particular on its investment portfolio and the resulting investment adjustments must be transparently reported.

The Norwegian oil fund, the second largest state fund and controlled by Norge Bank Investment Management (NBIM), has initiated consultations regarding CO<sub>2</sub>-based “reporting requirements” of companies in its portfolio as a way of entering into direct dialogue with these companies

and taking into account both their business strategy and the adequacy of their climate protection measures.

The Climate Disclosure Standards Board (CDSB) has submitted a proposal for harmonisation of emissions reporting standards for consultation, which also includes auditing companies.

#### **Limiting the effects of climate change requires a controlled transformation**

Climate protection, which is based on avoiding dangerous climate change and is thereby aligned to the 2 degrees Celsius threshold, will require almost complete decarbonisation of our economic system by the middle of the century. This transformation will be both dramatic and fundamental, stretching across the coming decades. Companies and capital markets are today still a long way from being aligned to a “two degrees future”. In the transition to a low-carbon society and economy, it will be impossible to avoid individual structural interruptions. And as is the case in any process of economic change, there will be winners and losers. However, the process of transformation is the only rational and sensible approach to be taken. It is achievable and, according to all studies, significantly more desirable than dealing with the damage and costs that would occur from allowing climate change to continue unabated. The framework conditions are changing slowly, although they are moving increasingly in this direction.

# 2

## The Carbon Disclosure Project (CDP)

### Overview

The turmoil in the financial markets and the global economy over the last year has highlighted the importance of effective disclosure and high-quality risk management. The financial crisis of 2008 suggests we need to better understand systemic risks that can cause significant destabilizing impacts in the global economy. Climate change has the potential to cause disruption in the form of unforeseen, high-impact events (such as extreme weather) as well as a longer term reassignment of value across countries, industries and corporations.

The Intergovernmental Panel on Climate Change (IPCC) predicts that 'future climate impacts show that the consequences could vary from disruptive to catastrophic'<sup>2</sup>. So it is vital that policymakers, companies and investors have a full understanding of the associated risks and opportunities. According to HSBC research<sup>3</sup>, governments around the world have allocated US\$ 430 billion in fiscal stimulus to key climate change themes. Those providing the low carbon solutions are very well positioned to benefit, while those who ignore the risks gamble on being left behind.

By convening the collective power of the investment community, represented in 2009 by more than 475 investors, with US\$ 55 trillion in assets under management, CDP motivates more than 1800 companies globally to report their climate change strategies and greenhouse gas emissions. This global system provides the market, investors, policymakers and procurement directors with a clear understanding of how companies are positioned as we move towards a low carbon economy and ensures corporations provide full transparency on climate change.

This year has seen considerable growth in responses from emerging economies such as China, South Africa and Korea, and CDP expanded in Russia in 2009 where major companies such as Gazprom and Novatek reported. CDP's reach continues to grow with the launch of the first CDP Europe report, covering the largest 300 European listed companies, as well as expansion into countries within Central and Eastern Europe. We have also opened new offices in Germany and Brazil, both key economies in the fight against climate change.

While the quantity and quality of data available has increased significantly, so has the use of the data, which is acting as a catalyst for changing business behavior. CDP data is increasingly being integrated into mainstream financial analysis, is available through Bloomberg Professional Services, and used to provide sector based analysis to CDP signatory members. A recent report produced by Mercer supports this view.

Some CDP signatories, such as CalSTRS are going a step further, using shareholder resolutions to encourage companies to report through CDP and implement climate change management strategies. We are also working with the Principles of Responsible Investment (PRI) to drive awareness and improve climate change reporting. CDP has recently entered a new partnership with financial information services company Markit to build a suite of indices based on the Carbon Disclosure Leadership Index, which will be licensed to exchange-traded fund (ETF) and structured product providers.

CDP now works with more than 55 organizations including Dell, Unilever, Wal-Mart Stores and departments of the British Government to measure and assess climate change risk and opportunity through

the supply chain. More than 800 companies report their climate change strategies through the CDP system to their customers and as a result we have seen a significant increase in the use of CDP data in procurement operations. Now procurement professionals can understand how their supply chains may be impacted and as a result begin to future-proof their procurement systems against climate change.

The process of measuring emissions is central to emissions management and reduction. As regulatory frameworks develop to mandate emission reductions, CDP's role will expand. We will continue to work with corporations, policymakers and information users to produce practical and robust results that complement the development of mandatory reporting rules.

In order to continue to provide the global hub for carbon reporting, CDP is currently undergoing a significant systems upgrade, designed to improve data comparability, facilitate benchmarking services and ultimately deliver data that is appropriate for investment analysis and regulatory submissions. In countries like the US and UK, where mandatory carbon reporting is on the horizon, CDP's systems will help companies prepare for such requirements and will eventually integrate with existing national registries to enable corporations to disclose more detailed and standardized data. Climate change is a global problem, which requires a global solution and by bridging the gaps between national governments and international businesses across the globe, CDP will help to connect the national and international climate change ecosystem.

<sup>2</sup> [http://unfccc.int/essential\\_background/feeling\\_the\\_heat/items/2905.php](http://unfccc.int/essential_background/feeling_the_heat/items/2905.php)

<sup>3</sup> HSBC Global Research: A Climate for Recovery The colour of stimulus goes green.

**Table 1: Key trends snapshot<sup>4</sup> – This table outlines some of the key findings from CDP 2009 by geography and industry data-set.<sup>5</sup>**

(all numbers shown in percent)	of sample answering CDP 2009	of sample answering CDP 2008*	of responders with Board level responsibility for change	of responders seeing regulatory risks	of responders seeing regulatory opportunities	of responders seeing physical risks	of responders seeing physical opportunities	of responders disclosing Scope 1 emissions	of responders disclosing Scope 2 emissions	of responders externally verifying emissions disclosures	of responders engaged/considering participation in emissions trading	of responders with an emissions reduction/energy reduction plan	of responders engaging with policy makers on climate change
Sample: geography/ number of companies													
Asia-ex JICK** 100	31	[35]	76	55	76	66	55	66	69	31	17	59	62
Australia 200	52	48	80	79	81	82	56	81	83	46	50	67	73
Brazil 80	76	[83]	49	61	73	73	53	61	55	22	25	61	49
Canada 200	49	55	70	57	68	56	46	81	76	27	34	49	61
Central & Eastern Europe 100	8	-	75	50	50	75	25	75	25	75	50	100	50
China 100	10	5	56	67	78	67	44	22	22	22	11	67	44
Europe 300	82	-	85	80	90	75	63	91	85	77	58	89	79
France 120	58	63	77	69	84	66	61	79	77	63	47	81	66
Germany 200	51	55	65	58	70	44	47	63	57	45	33	63	55
Global 500	81	77	80	78	84	78	63	85	80	63	54	80	74
Global Electric Utility 250	49	52	71	79	84	75	62	81	50	61	57	60	77
Global Transport 100	67	58	84	81	84	79	50	79	68	50	43	72	74
India 200	18	19	52	14	66	62	48	48	48	17	17	55	38
Ireland 40	33	-	71	71	71	64	43	71	50	50	43	57	43
Italy 60	35	[46]	52	67	86	67	48	81	62	71	33	67	57
Japan 500	37	[72]	85	87	83	80	64	77	72	33	90	49	49
Korea 100	50	[32]	61	67	76	69	57	55	55	33	35	63	55
Latin America 50	50	[52]	58	79	79	58	47	79	68	37	26	47	58
Netherlands 50	62	52	97	74	90	65	61	90	90	58	42	81	71
New Zealand 50	52	50	65	69	77	69	65	58	54	35	27	58	54
Nordic 200	65	[58]	77	76	81	63	54	83	77	46	33	78	59
Portugal 20	38	-	75	88	75	88	63	100	88	88	25	63	75
Russia 50	13	-	33	0	33	33	33	33	33	0	33	33	33
South Africa 100	68	58	86	73	86	89	68	83	86	38	33	68	65
Spain 85	41	[71]	80	66	77	63	54	91	83	86	34	80	74
Switzerland 100	56	57	74	44	72	48	48	72	67	35	19	65	43
UK FTSE 100	95	90	83	89	91	83	66	98	95	73	77	88	79
UK FTSE 250	57	58	79	78	76	72	53	81	80	36	43	61	49
US S&P 500	66	64	68	70	77	70	52	77	74	41	31	65	61

<sup>4</sup> The numbers in this table are based on the total respondents at 10th July 2009. They may therefore vary from numbers in the rest of the report which are based on the number of companies who responded on time (e. g. 30th June for Global 500).

<sup>5</sup> In some cases, the number of responses analyzed is slightly less than the number answering CDP 2009 due to takeovers, mergers and acquisitions.

\* Percentages in square brackets reflect a different sized sample in 2008, e. g.: in 2008 we wrote to 75 companies in Brazil, not 80; and in Japan we wrote to 150 companies in 2008, not 500. A dash (-) shows that sample was not in CDP6 (2008).

\*\* Asia excluding Japan, India, China and Korea.

## Highlights in carbon regulation and outlook for Copenhagen

2009 has witnessed significant progress in the global approach to climate change. The Obama administration has introduced a new era in climate change policy in the US and, as a result, a global deal in Copenhagen this December appears more tangible. China, so integral to the success of Copenhagen, is set to meet ambitious renewable energy and energy efficiency targets and hosts some of the world's largest renewable energy companies. Brazil entered the new year with a new National Plan on Climate Change and national governments in industrialized countries including Japan and Australia are introducing new legislation to reduce emissions.

Whilst the July G8 meeting agreed to prevent global temperatures rising beyond 2 °Celsius (3 °–4 ° Fahrenheit) against pre-industrial levels, and agreed on aims to cut greenhouse gas emissions by between 50% and 80% by mid-century they disappointed many by ducking the issue of medium term targets. Although the multilateral architecture still needs work, there is much to report on at a regional level.

In Europe, the Energy and Climate Change package was approved in December 2008 which sets out the policy framework and accompanying measures to reduce emissions through the continuation (and expansion) of the EU Emissions Trading Scheme (EU ETS); targets for non-ETS sectors and new targets for the promotion of renewable energy.

In the US, the Obama administration moved early to set out its ambitions around climate change mitigation: "We will harness the sun and the winds and the soil to fuel our cars and run our factories."<sup>6</sup>

The Waxman-Markey bill was finally put before the House of Representatives in June and passed by a narrow margin. The proposed legislation would commit the US to reduce greenhouse gas emissions by 17% below 2005 levels by 2020 through a cap-and-trade system beginning in 2012.

The bill will pass through various Senate Committees where amendments will be debated, before being put to a vote; most likely in October.

In Australia, further work has progressed on the detail of the Carbon Pollution Reduction Scheme (CPRS) despite political challenges over possible competitive impacts in the face of the economic downturn. The Scheme, which would cover around 75% of total Australian emissions, is due to face a key vote later this year.

Given the multinational nature of many companies, the evolution of these policies is likely to have significant implications on strategic direction and operations and many of the world's largest companies want to seize early mover advantage.

Of course, the role of government is crucial in providing the regulatory frameworks. But investors and businesses will also play an essential role by driving capital flows towards the technologies which will allow economies to flourish and innovation to thrive as we transition to a low carbon economy.

Already these same investors and businesses are being directly affected by climate change. Many companies report to CDP the material impacts of climate change on their operations, through increased flooding, water shortage, spread of disease and changing local weather patterns. Within the public sector, cities reporting through CDP also explain how they are planning to adapt to changes in weather patterns such as extreme heat and extreme precipitation.

Investors, policymakers, procurement directors and other stakeholders need to build up the necessary comparable datasets in order to monitor and analyze changes; both in terms of the response to mitigation measures (such as carbon regulation) and adaptation policies and programmes. Integral to the success of the deal in Copenhagen will be the availability of this accurate reported data: if businesses don't measure current emissions now, it will be impossible for them to manage and reduce them in the future. This is where CDP's role is crucial.

## Progress on reporting standards

While CDP has set the tone on matters of disclosure over the years and, for the first time this year, is now widening its approach to encompass performance, there are other valuable and complementary initiatives underway to address the clear requirement for the creation of a global carbon measurement and reporting system.

While the financial accounting system has taken several hundred years to develop, carbon accounting is in its infancy. In order to achieve a coherent global system CDP is leading the work of the Climate Disclosure Standards Board (CDSB), working with Deloitte, Ernst & Young, KPMG and PricewaterhouseCoopers to develop robust accounting standards to enable carbon reporting through annual financial reports. CDP and CDSB will also work with the World Economic Forum to advise the G20 group of nations on climate change accounting in 2010.

The CDP process demonstrates that corporations can lead the way in taking action that can be Measured, Reported & Verified (MRV). It also shows how international companies can reduce their emissions across the entirety of their operations on a global basis, even when subject to a range of different regulatory requirements. As more and more countries introduce climate change regulation, the CDP system supports companies by bridging the gap between international business and national reporting requirements and helps reduce the reporting burden on companies.

The CDP Global Forum is part of the inaugural Climate Week NYC, when business leaders, heads of state and the world's major investors congregate in New York to prepare for negotiations at COP15. An agreement there will be a vital step towards success, but it is just as important to look beyond Copenhagen and to build the global systems required to combat dangerous climate change. CDP remains focused on and dedicated to this work and thanks all of the organizations that work with us to help realize this goal.

6 Barack Obama inauguration speech, January 21st, 2009.

## Partners to the CDP 2009 Report for Germany

The Partners to the CDP 2009 report for Germany are BVI Bundesverband Investment und Asset Management e.V. and the World Wide Fund For Nature (WWF). The author of the report is Professor Alexander Bassen.

BVI represents the interests of 88 companies that are active in asset management. BVI's members manage over €1.5 trillion in investment funds and discretionary portfolios on behalf of more than 15 million private and institutional investors. 43 of BVI's members support CDP directly as signatory investors.

WWF is one of the largest nature conservation organisations in the world and has been supporting the work of CDP globally since 2001 and in Germany since 2006. Speeding up the transition from the conventional carbon-intensive economy to a low-carbon economy is a goal of WWF both in Germany and globally. WWF believes that improved transparency regarding the sources of CO<sub>2</sub> emissions that cause "man-made" climate change is critical for the capital market and for companies.

BVI and WWF support CDP in order to increasingly ensure the consideration of the effects of climate change on the economic situation of listed companies and the German economy as a whole in investment research. Holistic analysis of the opportunities and risks presented by climate change must be engaged in by companies of all sectors and should not be limited to obvious emitters of greenhouse gases. Improved transparency accelerates the necessary systematic integration of climate risks in investment decisions on the part of investors.

Prof. Alexander Bassen, University of Hamburg, Chair for Management and Capital Markets, is the author of the CDP 2009 Report for Germany. Prof. Bassen researches, teaches and consults on the effect of corporate governance, corporate responsibility, climate change and investor relations on the capital market.

# 3

## Climate Change from the Perspective of Companies

In German CDP Reports, the topic of climate change is traditionally discussed from the perspective of a stakeholder group. This year, the report focuses primarily on the perspective of companies. The results of the CDP Report 2009 underline the fact that climate change is now being seen as a board level topic in many companies. And while there still are companies that consider climate change a secondary concern, sometimes classifying it as a sub-topic within the field of sustainability, it is increasingly becoming a significant element of corporate strategy, in which proactive action must be taken in the form of a dedicated strategy that

assesses the opportunities and risks of climate change. This also includes asking the fundamental question of whether a company can survive under the regime of maximum CO<sub>2</sub> reduction. In the following three interviews, the heads of corporate strategy at leading DAX companies talk about how they have anchored the subject of climate change in their strategy. The companies were selected, as their responses in the CDP Report underline their awareness of their own role in climate change, how they are keen to shape the necessary adjustments within their respective companies and thereby also maintain or even improve on their competitive position in a low-carbon economy.

### Interview with Heads of Corporate Development at three DAX Companies



**Dr. Rainer Feurer**  
Senior Vice President, Corporate Strategy and Planning,  
Environment, BMW Group

**As a successful manufacturer and global exporter, you are a major emitter of greenhouse gases and are thereby making an appreciable contribution to the dangerous change in climate conditions. What exactly can you do to significantly reduce this influence (directly and indirectly)?**

Sustainability has been anchored as a key guiding principle in our business strategy since 2000. Since this time, we have been working hard at lowering the CO<sub>2</sub> emissions of our vehicles and production processes.

Eight years ago, we introduced a package of innovative applications for reduced CO<sub>2</sub> emissions, which we refer to as Efficient Dynamics. This covers highly efficient petrol and diesel engines, lightweight construction, improved aerodynamics and measures for energy management in vehicles, including the Auto Start Stop function and regenerative braking. With these innovations, we were able to lower the CO<sub>2</sub> emissions of the new vehicles we sold in Europe from 1995 to 2008 by almost 27%. At 158 grams of CO<sub>2</sub> per kilometre, the brands MINI and BMW are significantly below the average of all new vehicles registered in Germany in 2008. No other vehicle manufacturer in Germany has lowered its CO<sub>2</sub> emissions more in the last two years than the BMW Group.

**But 158 grams is still a long way above the automotive industry's self-commitment from the 90s and also above the EU guidelines – which themselves can only be seen as an interim solution. What are you doing about this? And does the combustion engine even have a future in light of the climate change we are seeing?**

It is not true that we have failed to comply with the automotive industry's self-commitment. Quite the contrary in fact. We have lowered the CO<sub>2</sub> emissions even more than was agreed. The content of the negotiated agreement was that the entire European automotive industry would achieve 140g/CO<sub>2</sub> per km as a sector average. Broken down to each individual manufacturer, this meant lowering CO<sub>2</sub> emissions of new vehicles sold in Europe by 25% from 1995 to 2008. The BMW Group has lowered the CO<sub>2</sub> emissions of its entire fleet by almost 27%, meaning we have even gone further than stipulated in the ACEA voluntary self-commitment

But I agree – this will not be enough. However, we are committed to continue further improving the efficiency of today's drive technologies on the basis of the combustion engine. Our ultimate goal and our vision must be zero emissions. We are therefore set to tap further efficiency potential in the near future through electrification of the drive train, right up to comprehensive hybrid solutions. With the BMW ActiveHybrid X6 and the BMW ActiveHybrid 7, two vehicles will be ready for series production in 2009 that will enable fuel savings of up to 20% over comparable models powered purely by combustion engines.

Yet the more distant future lies in drives that do not rely on fossil fuels. This is why our long term approach is based on electric mobility and the use of regeneratively produced hydrogen. Only when we are in a position to build emission-free vehicles individual mobility will have a long term future.

**The public discussion always focuses on the impact of vehicles on the climate throughout their lifespan. Yet what about the production processes? Are you also confident here? And what proportion of the total carbon footprint of a vehicle does this represent?**

When producing our vehicles, we consistently follow the "clean production" philosophy. As such, the company is committed to proactive environmental protection, and not just in terms of greenhouse gases. The goal is to reduce consumption of energy and water, and emissions of solvents, carbon dioxide, waste and waste water per vehicle produced by 30% between 2006 and 2012. Since the beginning of 2007, we have already saved around 1.1 million MWh of energy throughout the whole company with this approach. The savings made from this come to around €62 million.

In the lifecycle of a vehicle, around 15% of CO<sub>2</sub> emissions are generated in the upstream chain and production of a vehicle. Around 85% of the CO<sub>2</sub> emissions are produced during the usage phase.

**Man-made climate change is here – whether we want it or not. And it can only be limited to the critical threshold of 2 degrees Celsius if radical measures are taken. Set against this background, what is the greatest threat for the current business model of your company that comes about due to climate change – regardless of whether directly or indirectly?**

The major challenges of course all stem from climate change itself, yet also from the finite nature of fossil energy sources and stricter global regulatory requirements. Changes in consumer values are another relevant challenge for us. A few years ago, the size of a car was viewed as a status symbol – this is no longer the case. Yet changes inevitably also bring about business opportunities. Only those companies that grasp the concept of sustainable business will survive in the long run.

So alongside climate change itself, the greatest risk is posed by a lack of willingness to change within companies and the insistence on continued use of successful approaches of the past. Only those companies that engage in drastic change, that rethink their approach and then adjust their business model and products to altered framework conditions will avoid being pushed aside.

In the BMW Group, this kind of rethinking has been in full force for years. For us this also means further developing the term "Premium", and sustainability plays a key role here.

**To what extent do climate change scenarios play an important part in your risk management systems and instruments?**

The BMW Group has, for example, introduced an environmental radar that is constantly being expanded to include further ecological and social aspects. A continuous dialogue with stakeholders helps ensuring that medium and long-term challenges are detected early on. In our opinion, the Carbon Disclosure Project is one of the very important platforms and instruments with which the absolutely vital dialogue on climate change can be managed between all stakeholders – state, industry and consumers.

In our risk management system we also examine and record risks that occur within the context of climate change. Examples that should be mentioned here include the development of fuel prices, shaped both by the market and taxation, as well as ever stricter requirements for reducing the consumption and emissions of vehicles. All of these factors continue to represent a challenge for engine and product development in the BMW Group.

**What chances of survival does your company have in a low-carbon economy, i.e. a world in which we all (are only allowed to) cause just a fraction of the greenhouse gases that we currently release to be released?**

We still see potential in the energy efficiency of conventional vehicle concepts. Yet we are also working in a dedicated unit, “project i”, on radically new solutions for sustainable mobility in urban areas. To meet our goals, which are to be achieved by 2020, it is clear that we need technological quantum leaps. The BMW Group is therefore working both on evolution and on revolution, pursuing improvement of classic vehicle concepts and working on entirely new drive and mobility concepts for vehicles. We believe that we will see dual, parallel developments over the next ten years, with revolutionary alternative vehicle concepts being created alongside evolutionary, improved conventional vehicle concepts. With over 600 fully electric MINI E vehicles, we are gaining important experience with practical electric mobility models, for example in field tests in the US and Europe. The findings of these field tests will provide “project i” developers with valuable know-how for everyday applications and further development of electrical mobility. The first so-called Megacity Vehicle with electric drive is already set to be launched in the market in the first half of the next decade. One thing is clear here – the need for individual mobility will remain a central requirement in our future society.

**So you see climate change as offering more business opportunities than risks for the BMW Group – can you also confirm that this is the case for the BMW Group today?**

The progress we have already made with Efficient Dynamics is today recognised and respected by customers. This gives the BMW Group a competitive advantage, particularly in markets with a CO<sub>2</sub>-based road tax system. Here, the running costs of BMW Group vehicles are significantly lower than the competition, and BMW Group vehicles with Efficient Dynamics therefore also maintain their value better in the used car market. This is one advantage that also convinced major customers. Indeed, various companies and also governments have switched their car fleets over to models from the BMW Group for reasons such as this.

**How do you operationalise the long-term implications of climate change for the BMW Group’s business model today – for example within the scope of your strategic planning?**

Strategic planning stipulates the framework for future vehicle and mobility concepts. We also use scenario processes here with over 300 external drivers that we portray and examine, considering how these might develop up to 2030. This also includes topics such as purchase behaviour, changing values or changes in the vehicle and engine mix.

Long-term business and product strategies are then drawn up on the basis of these extensive scenarios and implemented in corresponding initiatives. These scenarios form the basis for model and drive strategies as well as for site and technology decisions.

Operationalisation of our goals is only possible through integration of sustainability in all elements of control, starting with the development of strategies right up to long-term planning and controlling during the year with regular checks. The topics of environment and sustainability are therefore an integral part of our corporate strategy and planning.



**Dr. Thomas Braune**  
**Head of Central Group Development,**  
**Munich Re**

**Dr. Braune, for decades Munich Re has been engaged in its own scientific research on the topic of climate change and its effects on natural catastrophes. Yet you only identified the topic as a “strategic” subject for the company 3 years ago. Why did it take so long to operationalise the topic?**

Yes, we are pioneers in the field of climate research. Back in 1974 we set up our “GeoRisikoForschung” centre of expertise to conduct research activities in this field, which have been bundled in our Corporate Climate Centre (CCC) since 2007. We have therefore been conducting climate research for over 30 years, as it soon became clear that climate change would have direct effects on our core business of reinsurance. We use our findings to assess reinsurance risks, as you correctly stated, in the field of weather-based natural catastrophes. Without this research we would not be capable of underwriting US hurricane exposure.

Yet only in the last few years has the topic of climate protection found its way into the public consciousness. This has been accompanied by a demand for new “green” products, which we have been trying to cover for several years in the fields of reinsurance, direct insurance, and also through investment funds.

**As a leading global reinsurance company you are not a major emitter of greenhouse gases, but you do have a potentially significant influence on companies that themselves contribute significantly to the dangerous change in our climate. What have you done to exert this influence in an effective way? Have you, for example, included exclusion criteria in your risk policy, with which you clearly signalise to your customers that certain projects or risks are simply off-limits?**

We can point out certain developments and recommend that measures be implemented. This includes warning of the consequences of climate change, as the damage caused by these can be extremely costly. Our direct influence within the scope of our business relations is, however, obviously limited due to international competition. In addition to this, reinsurance generally does not deal with individual risks, but rather whole packages of insurance risks. The key focus here is assessing the risks to be insured. And if pollution and emissions play a role here – the keyword being environmental liability – then these are also incorporated in the price.

We have not committed ourselves to the Global Compact for nothing. This sends out an important signal, also for our customers, investors and staff members. However, we have not specified blanket exclusion criteria in our reinsurance guidelines with regard to climate change-related risks. We prefer to sensitise underwriters, offering both them and our customers support and advice through a committee of experts.

**So you would also insure a lignite-fired power station built in India using 30-year old technology?**

We control these risks through our pricing and conditions, i.e. we probably would not insure a power station of this nature on the liability side as we would have to charge a very high price. The same also applies to other ecological risks, such as liability insurance for a single-hull oil tanker.

**What other leverage do you use to influence your customers in their emissions behaviour?**

I would like to mention a different example, the capital investment side, as with investments of around €170 billion the MR Group is a major investor. We now subscribe to the Principles for Responsible Investments (PRI) and are signatory investors of the Carbon Disclosure Project. This means that our capital investment strategy is committed to the principle of sustainability. And today we invest 80% of our shares and loans based on sustainability criteria.

We are also active in a wide range of climate initiatives, such as UNEP-FI, the Global Roundtable on Climate Change and the Climate Group, via which we give our opinions on the risks of climate change and the necessary measures – also increasing awareness of climate change issues in society as a whole. Munich Re also recently gave the impetus for setting up the Desertec Industrial Initiative, which is to test the feasibility of power generation from solar energy in North Africa with the goal of making this vision a reality in the near future.

**Man-made climate change is here – whether we want it or not. And it can only be limited to the critical threshold of 2 degrees Celsius if radical measures are taken. Set against this background, what poses the greatest threat to your company?**

The key for us is understanding the complex and changing risk of climate change and its implications. We do everything we can to this end and continuously adjust our risk assessments, modelling and product development. This allows us to cover changing risks and secure the success of our business.

But I do not want to talk just about risks. Climate change also offers a lot of opportunities if preventive measures are realised, as greater energy efficiency and promotion of climate-friendly technologies clearly bring benefits. As risk carrier, we can help new technologies achieve their breakthrough. A good example here is the performance guarantee coverage we developed for manufacturers of photovoltaic modules. So overall, I do not think that climate change represents a threat to Munich Re.

Let us return to the topic of risk assessment once more. In the last few years there have been events, many of which were influenced by the impact of climate change in one way or another, for which the pricing of the risks had not been right. Obvious examples here are “Katrina” or even the general frequency of tropical hurricanes in the south of the US.

One clarification: Climate change is not responsible for individual events. But weather-related natural disasters will occur more frequently via climate change, and the effected extent of losses will increase. There can be no doubt – the sector has not always hit the mark with its models. We use our comprehensive expert knowledge to correctly assess catastrophic risks. But extreme events such as “Katrina” do occur. And the nature and scope of the damage caused leads to conclusions to be drawn for the modelling of events. Insurers learn something new every time loss events occur. This is one of the reasons why we are so broadly diversified.

**So you really do not think that Munich Re faces any kind of material, strategic risk from climate change? Or at least no risk that would pose a serious threat to the business model?**

No. No significant risks that result from our specific business model if we do our homework and continuously adjust our risk model to the latest findings. We strive to make all risks that can affect our customers insurable, i.e. to assess the risks appropriately and determine the right technical price. The only challenge, as I see it, lies in the risks which cannot be fitted into a model, meaning that they are in principle not insurable and therefore should not be included in our books. Pool solutions, which provide privately organised insurance cover with state participation, such as for risks of terrorism, have to be found for these risks. The same might also be necessary for several climate change-based risks, such as the risk of flooding.

**It is pretty much indisputable that we have to gradually develop towards a truly low-carbon economy if we are to avoid dangerous climate change – i. e. a temperature increase of more than 2 degrees Celsius. For many manufacturing industries, for the raw materials industry, for the transport sector and others, this has transformational consequences. How does this scenario look for Munich Re overall?**

**But these are primarily opportunities within the scope of your current business model, your core business – do you not see any other options or requirements that would cause you to adjust your business model?**

**Munich Re has set its own internal goal of being CO<sub>2</sub>-neutral worldwide in its reinsurance business by 2012. From a macroeconomic perspective, this is not particularly significant, as you are after all a service provider. Should you not be more ambitious here, considering your important overall industrial role in this field? HSBC and Swiss Re have been climate-neutral for some time now.**

Here, we must again differentiate between Munich Re as an insurer and as an investor. As an insurer, new business opportunities will come about – for example from the risk of failure of solar energy systems or the guaranteed minimum energy production of a wind generator. We constantly analyse this and similar business potential.

On the capital investment side we are considering which asset classes we want to invest in more heavily in the context of the low-carbon economy, what form these investments will take and which partners we will choose.

We are also talking about extensions and realignment in our core business. And while the subject of climate change has mainly affected us in the field of reinsurance, we also use our special climate know-how in our direct insurance business, where it allows us to offer new insurance solutions and gives us a genuine competitive advantage, as we are more familiar with the climate-specific risks. However, overall there is no need for us to transform our business model in a low-carbon economy.

When we made the announcement in 2007, our goal was to be among the pioneers and become climate-neutral through real improvements in efficiency, through green power and through targeted investments that generate certificates. The direct purchase of corresponding certificates should, if at all possible, be avoided.



**Markus Reckling**  
Executive Vice President, Corporate Development,  
Deutsche Post DHL

**As a globally active logistics company, you are a major emitter of greenhouse gases and are thereby contributing significantly to the dangerous change in climate conditions. What exactly can you do to significantly reduce this influence (directly and/or indirectly)?**

It is true that the transport sector is responsible for 18% of global GHG emissions and that we are one of the key players in this sector. Including all contracting companies, we are responsible for around 32 million tonnes of CO<sub>2</sub> emissions.

With “GoGreen”, we have had a Group-wide strategic programme for some time now. Our goal with this programme is to hit our overall climate target of a 30% reduction in our CO<sub>2</sub> emissions by 2020 while maintaining the same level of revenue. A key factor here is for this programme not to be one of countless Group initiatives, but rather one of just four programmes that we have passed within the scope of our new strategy.

**So what exactly is behind this marketing buzzword of “GoGreen”? How exactly do you want to hit your reduction targets?**

The programme is made up of four parts. In the first part, we are keen to establish complete transparency regarding CO<sub>2</sub> in the Group, building on our valuable experience with CDP reporting. To this end, we are introducing a global system of carbon accounting. We want to make CO<sub>2</sub> into a kind of second currency at Deutsche Post. The second part of the programme focuses on leverage for reduction in the fields of air, maritime and road traffic, together with real estate. In the third part of the programme, we want to mobilise our 500,000 staff members worldwide to fight with us against climate change, while the fourth part is based on offering our customers climate-neutral products.

The savings programme will achieve the greatest effects in the fields of air, maritime and road traffic. Key areas here include subjects such as technical and aerodynamic optimisation and gradual replacement of our aircraft fleet to improve our route management in all three fields of transport and thereby achieve optimised capacity utilisation – potentially also in cooperation with our competitors. In the maritime field, there are also cross-modular products to be considered – i.e. closer networking of aircraft, ships, trains and trucks – and in terms of road-based transport, changes in driver behaviour can play a key CO<sub>2</sub>-specific role. In addition to this, second and third generation biofuels will also play an important role, at least in the foreseeable future.

**That all sounds quite comprehensive – to what extent have you already integrated pioneering future innovations into your reduction planning?**

Overall, the programme up to 2020 is essentially based on consistent use of state-of-the-art technology. So although we are not anticipating it, there will hopefully be emission-free drives for trucks by then – whether powered by electricity or hydrogen. In the transitional period, as already mentioned, I believe there to be considerable potential in the field of modern biofuel.

**Why have you avoided specifying an absolute reduction target? After all, governments also negotiate targets that have to be met regardless of underlying economic growth?**

Despite all ambitions, we are keen to specify a realistic target. And we will be happy to adjust this, making it even more ambitious if greater waves of innovation come about.

**Man-made climate change is here – whether we want it or not. And it can only be limited to the critical threshold of 2 degrees Celsius if radical measures are taken. Set against this background, what is the greatest threat for the current business model of your company that comes about due to climate change – regardless of whether directly or indirectly?**

Our business model is global trade. If this is disrupted due to prohibitive state intervention and protectionism, as a global logistics company which comes into contact with 5% of global trade either directly or indirectly, we clearly have a problem. We still believe in global trade as the basis of growth and development. Yet we must all contribute to ensuring that it remains possible in a way that is both sustainable and climate friendly. And for this to happen, we must manage to overcome our dependence on the combustion engine once and for all in the foreseeable future – i. e. within just 30-40 years. We are keen to actively contribute to this.

**To what extent do climate change scenarios play a part in your risk management systems and instruments?**

The topic of climate change is already playing a role in risk controlling. In a worst case scenario, the company looks at the potential consequences of natural catastrophes, weather, earthquakes, tropical storms and the like.

**So you would say your company has good chances of survival in a low-carbon economy, i. e. a world in which we all (are only allowed to) produce just a fraction of the greenhouse gases that we currently emit?**

Yes, of course, I would go along with that. You see, I have a humanistic background and therefore believe firmly in the intelligence and the ability of mankind to reform. However, it will be an incredible race against time to find the necessary innovations and, even more importantly, to mobilise people for this new way of life on a broad scale. This is the area where I have the most doubts. The greatest challenge is to generate a true and broadly accepted sense of urgency and mobilise all social and economic forces worldwide.

**Are there parts of your company or business that are more threatened than others – or others that will particularly benefit from climate change?**

The risks apply to everyone to more or less the same extent. It is fair to say that when it comes to finding technical solutions to combat the climate problem we have come further in the road-based arena than in the air. However, I still expect solutions to be found in time here so that the 2 degrees Celsius target can be met – and the aviation industry has declared its goal to be climate-neutral by 2050. In terms of opportunities, I see our growing range of climate-neutral products. Indeed, it is already possible with our services to send a letter climate neutrally across the globe. In addition, we are also already offering our customers a service to calculate their CO<sub>2</sub> footprint.

**How do you operationalise approaches of this nature – for example within the scope of your strategic planning?**

CO<sub>2</sub> emissions are already a key performance indicator (KPI) for us within the scorecard for strategic planning. And we no longer make any major investment decisions without transparency regarding their effect on the company's CO<sub>2</sub> balance sheet. All areas within the company have addressed the topic of CO<sub>2</sub> reductions as one of the mega-trends in their strategic planning.

# 4

## Analysis of the Responses from German Companies in the CDP 2009

### Responses

CDP is becoming ever more important in Germany. This is also due to the fact that companies are responding to the CDP Questionnaire via the Supply Chain programme<sup>7</sup> in addition to the traditional Investor CDP approach. A total of 119 German companies have responded to the CDP Questionnaire in 2009.

The CDP 2009 Questionnaire was sent to the 200 largest listed companies in Germany based on market capitalisation. 21 of these companies are also included in the CDP 2009 Global 500 Report.

102 of the 200 companies, i.e. 51% (previous year 55%) answered the Questionnaire. A further 2 percent made information available. 6 percent of the companies informed CDP that they would not be participating and 41 percent did not answer. We were pleased that a high response rate could be reached again despite the economic crisis. Viewing the responses based on the indices of the companies, the response rates are distributed as follows:

**Table 2: Responses by indices**

Index	CDP 2009	CDP6 (2008)
DAX	97 %	93 %
MDAX	68 %	71 %
TecDAX	33 %	42 %
SDAX	16 %	39 %
Other companies	53 %	38 %

What is noteworthy here is the consistently high DAX response rate at 97%. The only DAX-company that did not submit a response, Salzgitter AG, at least made information available. MDAX and TecDAX saw a slight drop in the response rate. SDAX, on the other hand, saw a significant decrease in responses. The increased response rate among the other companies, not represented in any index, is particularly positive. This can also be attributed to the fact that many of the companies which took part in the CDP in previous years are no longer listed in the major indices of Deutsche Börse AG due to index alterations. The companies that have been newly included in the indices, on the other hand, have a particularly low response rate, above all in the SDAX.

2009 saw an increase in the responding companies' market capitalisation to 91% of the overall market capitalisation of the Germany 200 sample (90% in 2008). This shows that the sample results are slightly biased with regard to company size. Causes for the low response rate of smaller businesses are chiefly the lack of human resources and the attitude that climate change is less relevant for their sectors. In addition, the current economic situation of companies has had a negative effect on the response rate.

On an international level, the German response rate is mid-table, which can be seen in the "Overview of CDP" section in the beginning of this report. A response rate of over 75% is regularly achieved in the CDP Global 500 Report.

### Transparency

The respondents were able to decide whether the information they submitted may be quoted in this report and published on the CDP website [www.cdproject.net](http://www.cdproject.net). Only 53% (compared with 60% in the previous year) made their answers available to the public.<sup>8</sup> This constitutes a drop in the transparency rate. The publication of the companies' information improves the transparency of climate-related risks and opportunities and reduces asymmetry of information. The fact that the willingness of companies to make answers public is no longer increasing can be seen as an indicator that the provided data is regarded as less reliable. However, the main reason being cited for non-public disclosure to CDP is that the reported information is considered competition sensitive, with companies not wanting the information to be available to their competitors. This thinking illustrates that the topics included in the CDP Questionnaire are becoming more important for the companies. At the same time, this indicates a potential rise in uncertainty among investors with regard to data access. Addressing the necessity of reporting via mechanisms such as the CDP more rigorously and, above all, more actively should help here.

<sup>7</sup> CDP's Supply Chain Programme is designed to assist companies in their efforts to manage emissions resulting from a company's supply chain and the climate risks and opportunities involved.

<sup>8</sup> The Signatories of CDP have access to all public and non-public answers provided by the companies via the CDP database.

<sup>9</sup> The complete Questionnaire can be viewed at <http://www.cdproject.net/questionnaire.asp>.

## Methodology

The Questionnaire was only slightly modified for CDP 2009 in cooperation with investors and companies. All companies responded to the same Questionnaire. Additional, very detailed questions only had to be answered by companies in specific sectors, such as Electric Utilities and Automobiles.<sup>9</sup>

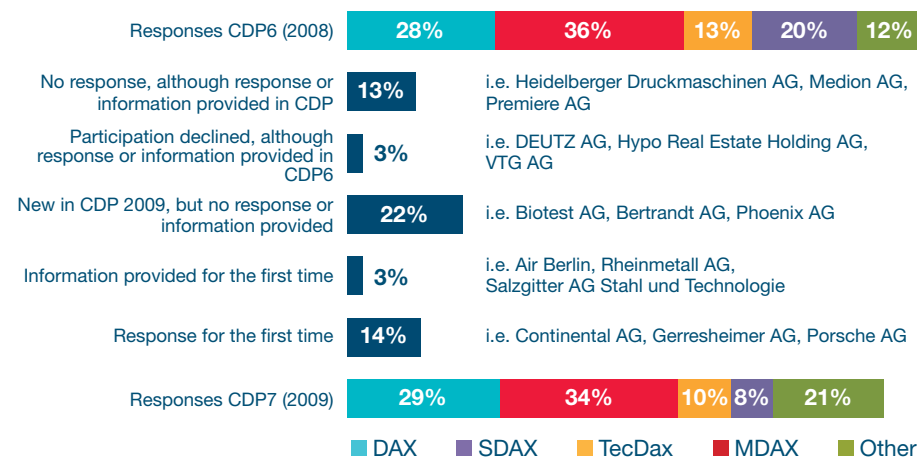
The first part of the general Questionnaire covers the risks and opportunities associated with climate change. Part 1 consists of a total of six questions.

Part 2 records information on GHG emissions reporting. Companies are required to report on the applied methods and the extent to which emissions were recorded. The focus is on the reporting of concrete direct and indirect emissions as well as power consumption. Information is also requested on external auditing, emissions history, and on company-specific indicators for emissions intensity. One question that has been added in 2009 addresses whether and to what extent a company's own products or services offer potential for lowering GHG emissions. This part is complemented by questions for companies which are subject to the German Greenhouse Gas Emission Trading Law (TEHG) and which belong to particularly affected sectors. It further includes questions which can be voluntarily answered by other companies, relating to topics such as the significance and effects of emission trading.

Part 3 is devoted entirely to the goals of reducing GHG emissions ('Performance'). The goals of reducing GHG emissions and related measures to this effect are dealt with in detail. Building on this, future and past investments associated with the goals are recorded, and the parameters for emissions planning are drawn up.

In part 4, the governance of climate change in companies is investigated. For this purpose the responsibilities in management, but also the incentives, communication and the relationship to public opinion-makers are determined.

Figure 1: CDP 2009 – Altered response patterns

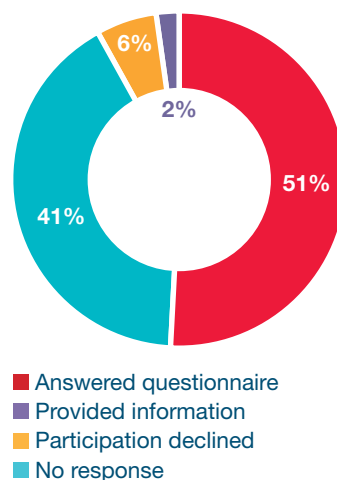


The evaluation is undertaken both on a general level and by sector. Despite the response from a total of 102 companies, the data is not always sufficient to yield reliable sector-specific statements. In these cases only the overall results are discussed.

How much a company is affected with regard to emissions and the impact of the GHG effect depends on company and sector-specific characteristics. For this reason there is a series of extra questions in the CDP which are answered by those companies most affected.<sup>10</sup>

For the sector-specific evaluation the additional problem of differentiation arose: A very precise differentiation has the advantage of increasing the comparability of companies within a sector. The sample size is then however mostly too small, therefore sectors have to be combined. Furthermore companies are on the one hand affected through direct (Scope 1) or indirect emissions (Scope 2 and 3). On the other hand there are a number of companies that indicate only low emissions for their value chain, while the products can generate significant amounts of emissions during their life-span (for example automotive manufacturers) or can involve other climate risks (for example insurance

Figure 2: CDP 2009 – Response rate in Germany



<sup>10</sup> These include companies that are subject to the TEHG and/or belong to the Automobiles, Aeronautical, Chemicals, Building Materials, Utilities, Oil & Gas, Metals & Mining, Paper & Forestry and Transport sectors.

companies, the asset management of banks). However, these risks cannot be included in the business-specific GHG emissions. For this reason the analysis has been based on the following sector classification, the number of companies in each one is given in brackets.

- Automobiles (8)
- Electric Utilities (5)
- Materials (14)
- Pharmaceuticals/Health (7)
- Transportation (7)
- Capital Goods (21)
- Insurance (7)
- Non-intensive sectors (33)

The CDP 2009 Global 500 Report and Europe 300 Report divide companies based on the quality of their disclosure, using the Carbon Disclosure Leadership Index (CDLI) methodology. The CDLI assesses solely the transparency and formal quality of the responses. No statements regarding the performance, such as the quality of the corporate climate strategy, are made.

No ranking is performed for the German CDP 2009 Report based on this assessment. These criteria are only used to quantify the qualitative responses to the risks and opportunities and make them more comparable on a sector level.

**Standard assessment for open responses/answers**

The response is complete and detailed. The information requested in the CDP (5-7 sub-questions) is provided in a comprehensive response.	3
The response indicates comprehensive understanding of the topic. Elementary information (3-4 sub-questions) is provided.	2
Parts of the response or indeed the entire response indicate a low level or vague understanding of the subject with general comments. Only one piece of requested information is provided.	1
No response or a response not relevant to the question.	0

In addition to the maximum of three CDLI points, two further points can be awarded depending on the scope of the response. This implies that companies can achieve a maximum CDLI score of 5.

The response is clearly company-specific and includes special comments.	+1
The response specifies the financial effects where this is sensible and applicable.	+1

Companies generally answer the questions in text form. To improve the comparability of these responses, they are assessed based on the criteria of the CDLI for the German report along the same lines as for the CDP 2009 Global 500. For this purpose, qualitative answers of companies were classified into four groups scoring different CDLI scores per question.

## Company-Specific Risks and Opportunities of Climate Change

### Risks of Climate Change

#### Regulatory Risks:

Is your company exposed to regulatory risks related to climate change?

#### Physical Risks:

Is your company exposed to physical risks related to climate change?

#### Other Risks:

Is your company exposed to other risks related to climate change?

This year again companies were questioned on how they assess the opportunities and risks of climate change. Overall, risks are recognised by fewer companies than in the previous year. However, analysis shows that companies that do consider themselves exposed to climate change risks have strongly improved their ability to pinpoint concrete potential effects. The decrease in the perceived prevalence of risks associated with climate change is on the one hand certainly influenced by the shift in companies' priorities during the current financial and economic crisis; short-term risks to the survival of the business are often taking priority at the moment, which means that the medium-term climate risks are considered less significant. On the other hand, it is also possible that companies see themselves as better equipped to cope with the challenges connected with climate change and therefore do not see themselves at risk.

Overall, 67% (77% in 2008) of the companies see climate change as a risk factor. There is, however, a very varied perception of the form that this risk will take. Only 33% (23% in 2008) believe that climate change will have no influence on their own business model.

#### Regulatory Risks

Of the responding companies, 64% (67% in 2008) consider themselves to be faced with regulatory risks, whereby 17% (15% in 2008) perceive this type of risk as low and 47% (52% in 2008) as significant. Regulation therefore poses the most significant climate risk identified by companies. Of the companies which do not believe themselves to be at risk, 17% at least perceive there to be a minor influence. The sectors with the highest aware-

ness of these risks are Automobiles, Materials, Energy Provision and Transportation. Banks in particular consider regulatory risks to be greater than in the previous year, as they fear indirect negative effects through their customers who are affected by the regulation.

As in the previous year, regulatory risks are predominantly perceived as a price risk. With 35% (27% in 2008), more than a third of the companies that identify regulatory risks expect an extension of the EU ETS to other sectors, a significant reduction in allowances or an extension of emissions rights auctions after 2012. Reasons for such increased concerns compared to last year may be the further development of the EU ETS since December 2008 and the public discussion ahead of the UN Climate Change Conference in Copenhagen in December 2009. For companies participating in EU ETS, the uncertainty surrounding exceptions from the auctioning for energy-intensive companies is likely to play another important role.

Among the responding companies, 19% (25% in 2008) fear that regulation measures will cause a direct or indirect increase in energy costs, above all in electricity prices. CO<sub>2</sub>-associated price increases will, however, not be authorised until 2012, as energy pricing is based on the marginal costs (including emission rights) of the last utilised power plant. The price of CO<sub>2</sub> is thus already comprised for the most part in today's electricity prices. Any

Direct financial implications from the risks described above currently mainly result from the continual tightening of the EU ETS. To date, the impact of the EU ETS on Bayer's profitability has only been marginal. In 2008, additional costs amounted to less than 1% of Bayer's 2008 EBITDA.

#### Bayer AG

Figure 3: Climate change as a risk

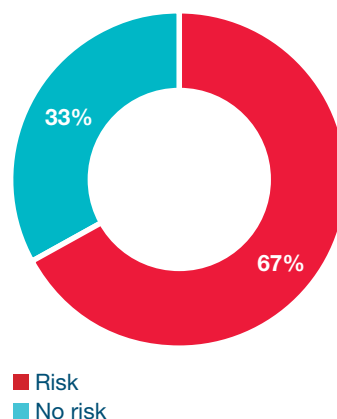
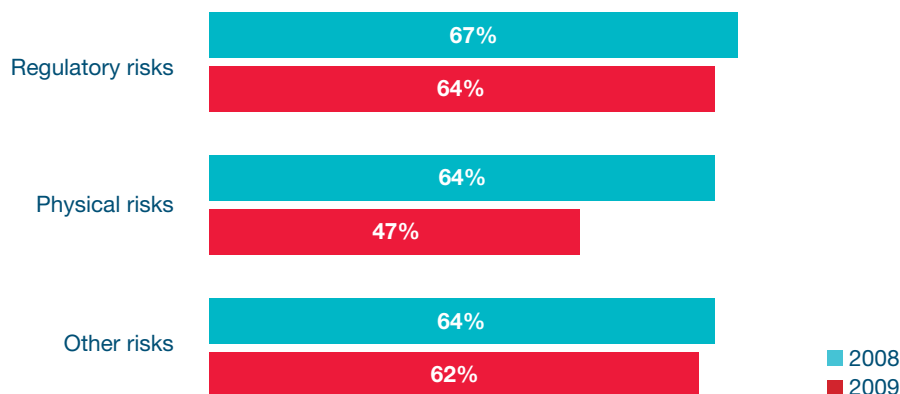


Figure 4: Perception of risk types by responding companies



A further risk is resulting from the EU directive on the Energy Efficiency of Buildings, which already came into effect in October 2007, but currently, has been tightened and extended in its scope. METRO Group is massively affected by this directive, because it defines binding energy standards for commercially used buildings (new buildings as well as restructured objects). This will in context of METRO Groups expansion strategy especially in Eastern Europe lead to slightly higher construction costs (0 to 5% additional project cost per affected location).

#### Metro AG

Public opinion imposes the highest risk. RWE is the biggest single emitter of CO<sub>2</sub> in Europe. Public opinion might assign responsibility for climate change to RWE and call for action.

#### RWE AG

further increases can only be explained by the developments expected after 2012.

Further regulatory risks identified by 21% of companies (10% in 2008) relate to the obligation to comply with energy efficiency standards. As such, they are expecting significantly more energy efficiency standards at operational and product level, which, perceived as a regulatory risk, will mainly lead to higher investments to ensure compliance with such standards. This underlines the fact that even less carbon-intensive sectors and companies are increasingly affected by climate policy regulation. In addition, 13% (10% in 2008) of the companies see risks in taxation alterations. A new regulatory risk emerged in connection with the new President in the USA. 11% of the companies expect that regulatory changes in the USA will have a negative effect on their own competitive situation. This is certainly also due to the fact that during the period when companies completed the Questionnaire, the Waxman-Markey bill was passed by Congress in the USA, which calls for a national cap and trade system.

#### Physical Risks

Only 47% (64% in 2008) of the responding companies consider themselves under threat from physical risks, whereby 17% (18% in 2008) classify these risks as low and 30% (46% in 2008) attribute greater significance to physical risks. Of the companies which do not believe themselves to be at risk, 24% at least perceive a minor influence from physical risks. Companies that recognise physical risks see themselves directly exposed to

a risk through extreme weather conditions, for example through loss of use of production plants (45%; previous year 22%) or through the breakdown of infrastructure (25%; previous year 16%). Risks are also perceived in the loss of transport routes (18%) or of raw material supply (11%). In comparison to last year, the significance of water was particularly emphasised. Compared with 2008, risk awareness of companies has developed further and the impairment of production facilities is now considered the central direct effect of climate change.

Physical risks are perceived very differently from sector to sector. Risks from extreme weather conditions are perceived particularly in the sectors which are more exposed to weather, namely Transportation (57%), Materials (57%), and Electric Utilities due to the cooling requirements and overhead power lines (80%).

Companies mainly work on the presumption that physical risks are covered by insurance and therefore also expect an increase in insurance premiums as direct costs. In terms of increased transparency it would be of use for an external analysis to quantify the uninsured risks of climate change or specify the costs caused by increased insurance premiums. However, information on this has not yet been provided by the companies.

#### Other Risks

62% (64% in 2008) of the responding companies see themselves as being exposed to additional risks, which are primarily related to changes in consumer behaviour. Of the responding companies, 50% recognise a significant risk, while 12% believe that there is only a low risk. Of the companies which do not believe themselves to be at risk, only 3% perceive a minor influence from other risks.

At 48%, economic risks are of central importance here. Companies see a particular danger in the fact that the direct physical or indirect regulatory consequences could lead to a weakening of the economy with negative effects for their own company. 30% (23% in 2008) are anticipating a critical debate by consumers over questions of climate protection. This rise indicates that German companies perceive a change in consumer behaviour to the effect that climate-relevant product or service features are

**Table 3: Appraisal of risks by sector (% of responding companies)**

Branche	Regulatorische Risiken	Physische Risiken	Andere Risiken
Automobiles	75 %	50 %	75 %
Electric Utilities	80 %	80 %	80 %
Pharma/Health	43 %	14 %	29 %
Capital Goods	52 %	29 %	48 %
Insurance	43 %	43 %	57 %
Transportation	71 %	57 %	71 %
Materials	64 %	57 %	43 %
Non-intensive	41 %	34 %	44 %

becoming more important in purchase decisions. This is also underlined by the fact that company reputation in terms of climate issues is considered significant by 13% of the responders (7% in 2008). Expectedly, this perception is once again predominantly shared by companies that deliver directly to the consumer.

Comparing particularly affected sectors, it becomes clear that all risks are perceived as relatively low, especially among manufacturers of capital goods. Only 52% identify regulatory risks, 29% believe there are physical risks and 48% consider there to be other risks. Yet insurance companies also deem the risks to be low, which can be explained by insurance premiums that already incorporate the relevant risks. This is explained further in the analysis of opportunities below.

Measured against CDLI criteria, the reporting by responders could be improved with regard to risks associated with climate change. Companies exhibit relatively high levels of transparency in the assessment of regulatory risks. Although only 4% can report fully on the risks and their financial consequences specific to the company, 11% (rating 4) or 12% (rat-

ing 3) of the companies receive a good rating. In addition, 28% (rating 2) provide a partial report, and 35% (rating 1) or 11% (rating 0) do not provide any satisfactory information.

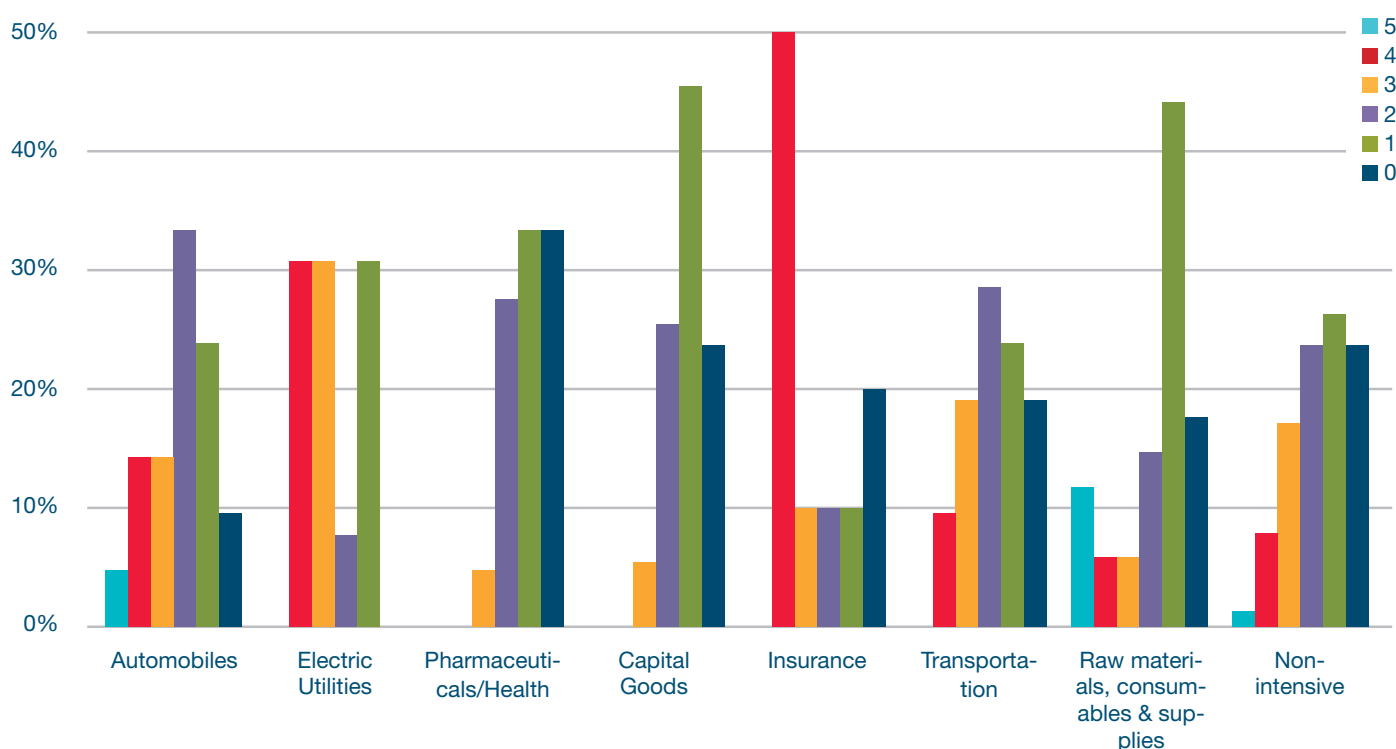
The disclosure quality for physical risks is lower than for regulatory risks. Here, only 2% (rating 5) or 8% (rating 4) of the companies receive the highest rating and 13% are given rating 3. Furthermore, 21% (rating 2) provide a partial report, and 34% (rating 1) or 21% (rating 0) do not provide any satisfactory information. The decreasing transparency makes it more difficult for investors to analyse the relevant risks and quantify them in company review models.

In the sector-specific analysis, Insurance companies, Electric Utilities and Automobile manufacturers achieve consistently high CDLI scores for the first part of the Questionnaire. Capital Goods and Pharmaceuticals/Health Care companies on the other hand show poor disclosure results. For the other sectors, the scores vary greatly, including very good reports on the risks, but also reports which could be considerably improved.

For the third trading period starting in 2013, the regulatory framework of the EU ETS is still uncertain in many relevant issues. Depending on the final design of the implementing regulation, BASF may be required to purchase between 3 and up to 10 million certificates on an annual average in the trading period from 2013 through 2020. Depending on the assumed carbon price, the cost burden for BASF could sum up to a three-digit million Euro sum (at a carbon price of € 40 per metric tonne of CO<sub>2</sub>-e).

**BASF SE**

**Figure 5: CDLI scores for risk assessment by sector**



Climate change presents the opportunity for the Gerresheimer Group to look at its operations objectively to see how it can further optimise energy and emissions management. This is a benefit for Gerresheimer shareholders, employees, and customers.

**Gerresheimer AG**

The new regulations will bring about higher costs for energy and/or carbon pricing and possible technical minimum standards regarding energy efficiency for products and solutions. We expect that these developments will encourage our customers to focus more than in the past on energy efficiency and low-CO<sub>2</sub> solutions. Since Siemens is well prepared with its environmental portfolio of energy efficient-solutions, we view potentially stricter requirements as an opportunity.

**Siemens AG**

### Company-Specific Opportunities Arising from Climate Change

- Regulatory Opportunities:**  
Do regulatory requirements on climate change present opportunities for your company?
- Physical Opportunities:**  
Do physical changes resulting from climate change present opportunities for your company?
- Other Opportunities:**  
Does climate change present opportunities for your company?

**Regulatory Opportunities**

As in the previous year, companies recognise numerous regulatory opportunities that could arise as a result of climate change. A total of 79% (73% in 2008) of respondents derive opportunities for their companies from current or anticipated regulatory requirements, for example from regulations on product standards; only 21% do not recognise any regulatory opportunities. Of the companies that identified regulatory opportunities, 48% (41% in 2008) believe that these are direct opportunities for their products in the form of improved competitive conditions. 26% (16% in 2008) of companies expect regulation measures to result in pressure to implement savings, which increase the efficiency of products and

processes. Yet 12% (16% in 2008) also expect the development of completely new markets.

On the basis of this data it therefore appears that companies expect positive changes in market and competitive conditions as a result of the regulatory measures. The opportunities are considered significantly greater compared to the previous year. This may be due to the experience in recent years of a rather slow implementation of regulations, such as is the case with the regulation of CO<sub>2</sub> emissions from vehicles at EU level, and also to the positive experiences with companies' own products which are helping to open up new markets through energy conservation.

**Physical Opportunities**

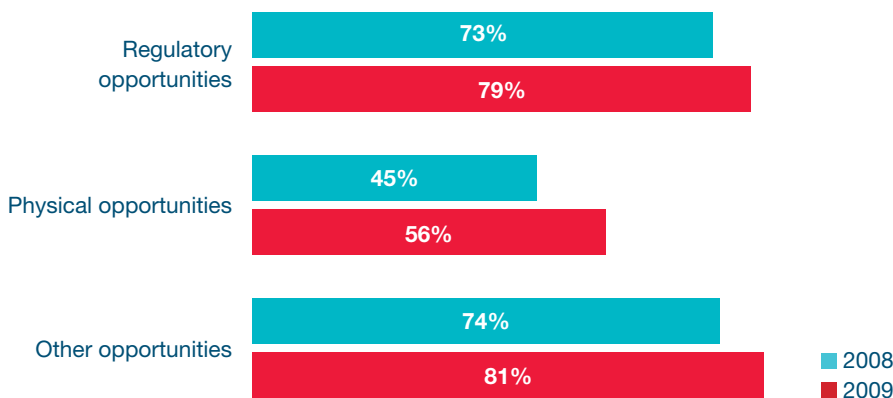
Physical changes, such as extended periods of growth or more frequent extreme weather conditions, can also represent opportunities for the companies. Physical opportunities are perceived by 56% (45% in 2008) of the responding companies. These opportunities can be attributed to weather extremes in particular. Companies are particularly expecting increased sales and further innovations in materials for designing the infrastructure, such as the construction of buildings (22%). In addition to this, rising sea levels, longer periods of sun and heavier storms all contribute to an expected increase in the efficiency of alternative energies (16%). Likewise, numerous companies believe new product solutions will come about (31%), in particular concerning the increasing demand for cooling (16%). An increase in conservation and a rise in plant robustness are expected for the agricultural sector (16%).

Increasing opportunities are seen for new products in particular as a result of physical changes compared to the previous year. This growing awareness of the potential for opportunities is certainly also encouraged by major projects such as Desertec.<sup>11</sup>

**Other Opportunities**

Of the responding companies, 81% (74% in 2008) consider climate change to pro-

**Figure 6: Opportunities perceived by responding companies**



<sup>11</sup> Desertec is an initiative for the transmission of solar and wind power from Sahara Desert to Europe.

vide additional opportunities for their company. These opportunities can generally be divided into three groups. Opportunities from current or new products are perceived by 63% (69% in 2008). A further 18% (23% in 2008) expect resources to be used more efficiently in the value creation process and that cost benefits can be generated as a result of this, while 18% (14% in 2008) expect altered consumer behaviour to represent a competitive advantage. Here, too, there is a significant increase in the perceived opportunities compared to the previous year.

Overall, disclosure practice regarding the opportunities is slightly weaker than for the risks, according to the CDLI. As regards the regulatory opportunities, only 1% (rating 5) or 7% (rating 4) of the companies received the best rating, and 14% report in detail with some exceptions (rating 3), while 22% of the companies (rating 2) report in detail at least in parts. Conversely, 41% (rating 1) or 12% (rating 0) did not provide any satisfactory information. Transparency regarding the physical opportunities also remains unconvincing. Only 4% (rating 4; 0% rating 5) of the companies receive a top rating. Furthermore, 4% (rating 3) or 14% (rating 2) at least report in some detail. However, 47% (rating 1) or 30% (rating 0) did not provide any satisfactory information. With regard to other opportunities, only 6% (rating 4; 0% rating 5) of the companies receive top scores, while 9% (rating 3) or 23% (rating 2) report in detail and 45% (rating 1) or 12% (rating 0) do not provide any satisfactory information. As such, there is again a need for improvement in communication here.

An overview of the identified opportunities by sector demonstrates that it is primarily the other and regulatory opportunities which are regarded as being high. As in previous years, the opportunities in the particularly strongly affected sectors of Automobiles, Electric Utilities and Transportation are considered to be very high. In terms of competition, the companies already seem to feel prepared for the economic effects of climate change. Opportunities are also seen as especially high in the Capital Goods sector.

It is revealing in this context how the relationship between opportunity and risk is rated for individual companies and sectors. For this an opportunity/risk coeffi-

**Table 4: Evaluation of opportunities by sector**

Sector	Regulatory Opportunities	Physical Opportunities	Other Opportunities
Automobiles	88 %	50 %	88 %
Electric Utilities	80 %	60 %	100 %
Pharmaceuticals/Health	43 %	14 %	57 %
Capital Goods	81 %	57 %	86 %
Insurance	57 %	43 %	57 %
Transportation	71 %	43 %	86 %
Materials	79 %	64 %	64 %
Non-intensive	44 %	28 %	44 %

**Table 5: Opportunity/risk factors by sector**

Sector	Regulatory	Physical	Other
Automobiles	1.20	1.00	1.20
Electric Utilities	1.00	0.75	1.25
Pharmaceuticals/Health	1.00	1.00	2.00
Capital Goods	1.55	2.00	1.80
Insurance	1.33	1.00	1.00
Transportation	1.00	0.75	1.20
Materials	1.22	1.13	1.50
Non-intensive	1.08	0.82	1.00

cient was established. If this is greater than 1, the company rates the opportunities arising from climate change higher than the connected risks.

The application of this coefficient confirms the results of the individual analysis. The opportunities outweigh the risks in all sectors. This relationship is particularly pronounced among Capital Goods companies. The companies consider themselves to have an innovative advantage over the competition as regards the energy efficiency of their own products. The risks are only seen as greater than the opportunities in isolated cases. This is the case for example for Electric Utilities, where physical risks due to insufficient wind, too low a water level or damage to the networks present special risks to the business model. In the Transportation sector, too, weather extremes naturally form high risks and few opportunities.

In summary, the opportunities appear to be perceived as significantly higher than

Porsche regards the statutory regulations on fuel consumption and on the emission values regarding CO<sub>2</sub> and other greenhouse gases as “innovation drivers” and sees opportunities for gaining competitive advantages through the development of new, energy-saving drive concepts and models.

**Porsche AG**

We observe that new, more severe regulations related to climate change lead to a stronger demand for more energy and material efficient technologies with lower emissions. A new technology developed by Dürr can lead to enables energy savings of up to 30% in the automobile painting process.

**DÜRR AG**

We have identified “Energy and Climate Protection” as one of four megatrends and we expect from innovations based on projects in our five growth clusters – including energy management and raw material change – additional annual sales of between €2 billion and €4 billion starting in 2015.

**BASF SE**

We expect that energy efficiency will to an even larger extent be a major factor determining future investment decisions worldwide. Given our product and service portfolio, GEA Group is in a position to be able to strengthen many fields of business.

**GEA Group AG**

the risks. Compared to the previous year, the risks were even rated as lower and the opportunities as higher. However, the high rating of the opportunities may also be due to the fact that the companies are not aware of the full extent of the risks and that opportunities are overestimated in the value proposition. It is also conceivable that companies are not revealing the actual relationship between the opportunities and risks for competitive reasons. Moreover, it is surprising that although climate change represents a competitive opportunity, investments in climate-relevant technologies do not, or at least not always, reflect this. This is also made clear by the CDLI rating, as hardly any company is able to quantify the financial consequences of the risks and opportunities. The underlying potential for improvement in assessing the magnitude and causal relationships indicates that the effects of climate change on the business model have not yet been recorded to their full extent.

## GHG Emissions Reporting

### Emissions reporting in the CDP Questionnaire

Please state the start date and end date of the year for which you are reporting greenhouse gas (GHG) emissions.

Please indicate the category that describes the company, entities, or group for which Scope 1 and Scope 2 GHG emissions are reported.

Please state whether any parts of your business or sources of GHG emissions are excluded from your reporting boundary.

Please describe the process used by your company to calculate Scope 1 and Scope 2 GHG emissions including the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

Please also provide details of any assumptions made, the names of and links to any calculation tools used, the global warming potentials you have applied and their origin, the emission factors you have applied and their origin.

The extent of the measurement of GHG emissions has dropped compared to the previous year. Only 66% (75% in 2008) provide disclosure from which the GHG emissions can be directly or indirectly derived. This can relate to CO<sub>2</sub> emissions or energy consumption.

As regards the reporting method, further standardisation and thereby comparability of the information has become established. As the dominating standard, the GHG Protocol is now used by more than half of the companies as the framework for measuring the GHG emissions. The following table gives an overview of the systems preferred by the German responding companies.

With 52%, the GHG Protocol has become significantly more popular compared to the previous year. This increase becomes even more significant when compared with CDP5 (2007), when the GHG Protocol had a share of 16%. With 30%, the indirect determination of CO<sub>2</sub> emissions from resource consumption (in particular energy consumption) has again increased slightly

compared to the previous year (28%). Additionally, the reporting methods in accordance with EU ETS/TEHG and the sector-specific regulations of the Verein für Umweltmanagement in Banken, Sparkassen und Versicherungen (Association for Environmental Management in Banks, Building Societies & Insurance Companies – VfU) are still relevant as indicators, predominantly for financial services providers. It is encouraging that companies are keen to employ various methods with a view to achieving transparency regarding their own emissions and the risks associated with this. The continued standardisation means that the comparability of the emissions data was further increased.

The fact that more and more companies are now having or planning on having their GHG emissions reporting systems validated through external audits is also a step in the right direction. A total of 51% (previous year 36%) of all responding companies have an external audit performed on their system of GHG emissions reporting. 29% of the companies enclosed a confirmation of the external verification with their response.

As such, although there is less emissions data available, it is made more credible by the external inspection.

The question concerning the accuracy of the data was added for the first time in CDP 2009. In response, 74% of the responding companies state that they gather information on GHG emissions. In addition to responding to CDP, 61% report in line with other standards which require accurate data. Furthermore, 62% of the companies were also able to make statements on deviations in the data, revealing a mean variance of 5%. The reliability of the data supplied has therefore risen significantly compared to the previous year. Both internal and external monitoring systems contribute to this. The results also underline the improvements in the standardisation of GHG emissions measurements.

### Scope and Distribution of Emissions

Please provide total gross global Scope 1 GHG emissions in metric tonnes of CO<sub>2</sub>-e.

Please break down your total gross global Scope 1 emissions by country or region.

Please tick the box if your total gross

**Table 6: Selected methods of emissions reporting**

Method	CDP 2009	CDP6 (2008)
GHG Protocol	52 %	32 %
Energy consumption	30 %	28 %
EU Emission Trading System (EU ETS)/TEHG	10 %	7 %
VfU-Indicators	6 %	6 %
Global Emission Model for Integrated Systems (GEMIS)	1 %	6 %
Other	1 %	11 %

global Scope 1 figure includes emissions that you have transferred outside your reporting boundary.

Please break down your total global Scope 1 GHG emissions in metric tonnes of the gas and metric tonnes of the CO<sub>2</sub>-e by GHG type.

Please provide total gross global Scope 2 GHG emissions in metric tonnes of CO<sub>2</sub>-e.

Please break down your total gross global Scope 2 emissions by country or region.

If you retire any certificates (e.g. Renewable Energy Certificates) associated with zero or low carbon electricity, please provide details.

Scope 3, other indirect GHG Emissions: For each of the following categories, please:

- Describe the main sources of emissions,
- Report emissions in metric tonnes of CO<sub>2</sub>-e,
- State the methodology, assumptions, calculation tools, databases, emission factors (including sources) and global warming potentials (including sources) you have used for calculating emissions.

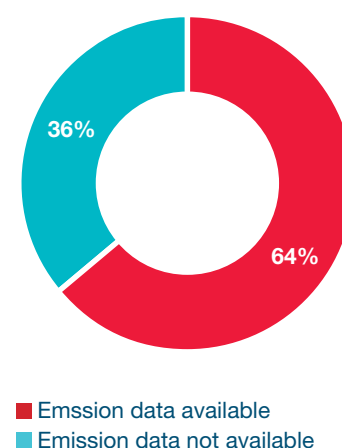
Employee business travel: Describe the main sources of emissions.

External distribution/logistics: Describe the main sources of emissions.

Use/disposal of your company's products and services: Describe the main sources of emissions.

Company supply chain: Describe the main sources of emissions.

**Figure 7: Availability of emissions data**



If your goods and/or services enable GHG emissions to be avoided by a third party, please provide details including the estimated avoided emissions, the anticipated timescale over which the emission are avoided and the methodology, assumptions, emission factors (including sources), and global warming potentials (including sources) used for your estimations.

Please provide the total global carbon dioxide emission in metric tonnes CO<sub>2</sub>

from biologically sequestered carbon.

Please supply a financial emissions intensity measurement for the reporting year for your combined Scope 1 and 2 emissions. Please describe the measurement.

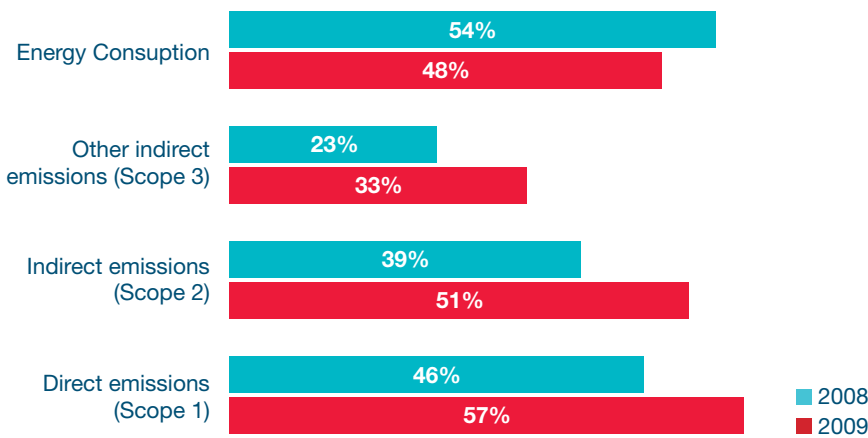
Do emissions for the reporting year vary significantly compared to previous years?

Has any of the information reported been externally verified / assured in whole or in part?

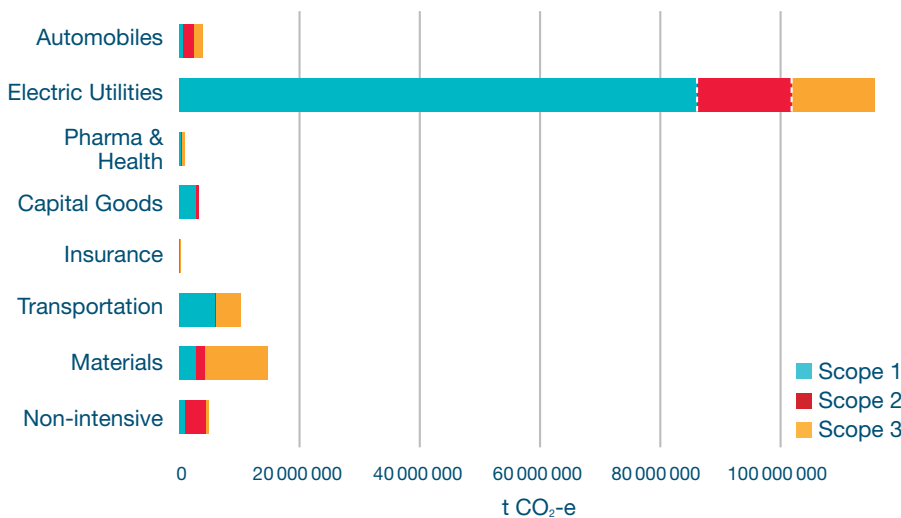
What are the main sources of uncertainty in your data gathering, handling, and calculations (e.g. data gaps, assumptions, extrapolation, metering/measurement inaccuracies, etc.)?

Please provide the following information for the reporting year: Cost of purchased energy, cost of purchased fuel, energy and fuel inputs, purchased energy input.

**Figure 8: Provision of emissions data per Scope**



**Figure 9: Disclosed emissions by sector and scope**



The majority of companies are already able or willing to quantify their GHG emissions. Some 64% (previous year 59%) of the responding companies quantified their CO<sub>2</sub> emissions.

Companies also differentiate emissions according to type (Scopes 1 to 3)<sup>12</sup> and their region of origin (industrialised nations in accordance with the Kyoto protocol – so-called Annex B countries – and other countries). However, companies are not always able to break down their emissions by country or region.

Scope 1 covers all emissions caused by the companies directly. This includes all emission sources belonging to or controlled by the company, such as power stations, production facilities and vehicles. Some 57% (46% in 2008) of companies give information on their Scope 1 emissions. 57% (30% in 2008) can provide country-specific information within the Scope 1 emissions, while 33% are able to make a further differentiation by company division and 12% by site.

This is considered a significant improvement in the level of detail for reporting.

Scope 2 emissions include indirect emissions resulting from the consumption of purchased energy. Some 51% (39% in

<sup>12</sup> Please refer to the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, revised version ([www.ghgprotocol.org](http://www.ghgprotocol.org)).

2008) of companies communicated their CO<sub>2</sub> emissions in this category. 56% (27% in 2008) of these companies made statements on the regional emissions in the various countries and 25% on the company divisions, while 8% were able to break the information down to individual sites.

These Scope 2 emissions can also partly be determined from information on purchased and consumed electricity; 48% (54% in 2008) of the responding companies provided this kind of information. To convert electricity consumption into CO<sub>2</sub> emissions, assumptions have to be made about the CO<sub>2</sub> emission factor based on the German electricity mix. The Federal Environment Agency currently uses the factor 624 g/kWh.<sup>13</sup> Comparable emissions factors must be determined for sites outside Germany.

In recent years, reporting on indirect Scope 3 emissions has regularly been unsatisfactory. This year, 33% of the companies (23% in 2008) have provided information on this category. Specifically, 32% (23% in 2008) of the companies were able to make a statement on CO<sub>2</sub> emissions from business trips, 11% (5% in 2008) on emissions in the supply chain, and 7% on the use and consumption of their products. On the one hand this is encouraging, as up until now, non-transparent climate risks have been assumed for area of indirect emissions in particular. However, the disclosure regarding the emissions related to the companies' own products continued to show little transparency, meaning that effects of the derived climate-related risks on own products cannot be fully analysed.

Differentiation of emissions by sector underlines the major impact of Electric Utilities. It also becomes clear that Scope 3 emissions have only been recorded to a small extent to date.

In CDP 2009, the companies also reported on the emissions in the past in modified form. 60% of the responding companies were able to provide information on their emissions history, of which 35% indicate fluctuating emissions and 26% have mostly constant emissions. Rising emissions were reported by 14% of the companies with an average emissions

increase of 17%. A reduction in emissions was reported by 2%, with an average drop of 8%. However, the figures communicated do not allow a connection to be established between the development of the emissions and the type and scope of the emissions targets set.

Overall, there has been a continued increase in the companies' reporting quality, even though only just over half of the companies communicate their emissions. This particularly applies to Scope 3 emissions. Although there has been an increase here, a considerable improvement is necessary in order to comprehensively integrate the risks into the rating models. This is particularly true of emis-

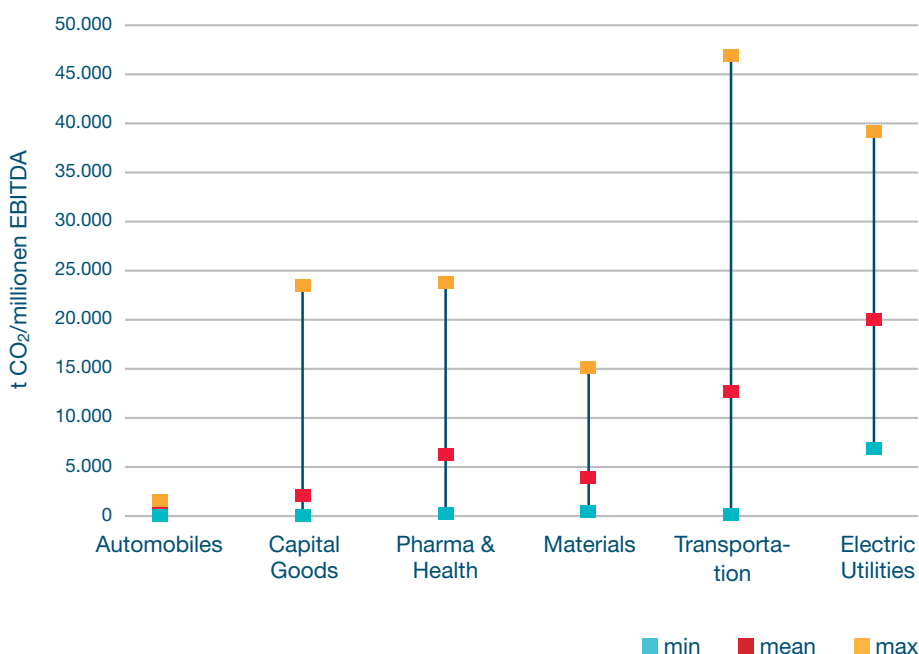
The vast majority of our Scope 3 data, at least where we have managerial impact, occurs in our subcontracted transportation via air, road, sea and rail. Therefore we have focused our effort on calculating the emissions arising from subcontracted transportation.

Deutsche Post AG

**Table 7: Development of the absolute emissions (in tonnes CO<sub>2</sub>-e)**

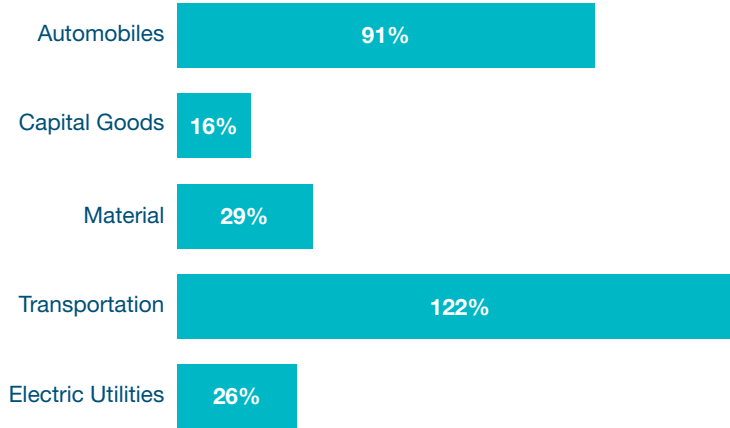
	CDP 2009	CDP6 (2008)	Change
Scope 1	576,734,008	533,480,455	8,11 %
Scope 2	121,687,033	79,541,036	52,99 %
Scope 3	252,941,494	45,493,648	455,99 %
Ale	951,362,535	658,515,139	44,47 %

**Figure 10: Emissions intensity by sector**



<sup>13</sup> See M. Machat/K. Werner: Entwicklung der spezifischen Kohlendioxid-Emissionen des deutschen Strommix, Dessau 2009. <http://www.umweltbundesamt.de/energie/archiv/co2-strommix.pdf>

**Figure 11: Change in the emissions intensity according to sector**



Bayer financial emission intensity is based on Scope 1 and 2 emissions and expressed in terms of t CO<sub>2</sub>-e per EUR sales and EUR EBITDA. Bayer uses emissions related to EUR EBITDA as a proxy for carbon risk development.

**Bayer AG**

For the BMW Group an activity related intensity measurement should be emissions per vehicle produced.

**BMW AG**

sions at the level of companies' own products.

The change in reporting also becomes apparent when the absolute values are compared.

The total reported emissions are increasing, but the rise may also be effected by improved measurement and disclosure practices. This is certainly the case for Scope 3 emissions and helps to explain the sharp increase since last year.

**Emissions Intensity**

The measurement of CO<sub>2</sub> emissions naturally varies for each sector. 40% (46% in 2008) of the responding companies have identified specific measures for measuring the intensity of their emissions. The use of absolute CO<sub>2</sub> emissions numbers is often limited to e.g. comparing total emissions over time or identifying overall reductions, and intensity measures help companies to assess their carbon management from an additional angle.

The majority of the companies which report on their emissions intensity relate the CO<sub>2</sub> discharge to financial performance indicators. The most significant of these is the turnover, which is used by 85% of the respondents as a reference figure for forming a key performance indicator, while 15% choose EBITDA as a reference.

Output-oriented indicators are used by 21% (37% in 2008) of the companies. To do this it is necessary to specify the product. Depending on the type of product,

the emissions discharge is related either to a unit of measurement, e.g. CO<sub>2</sub> per metric tonne of the product, or to product units, e.g. CO<sub>2</sub> per finished product. In some cases, the KPIs are very sector-specific (for example CO<sub>2</sub>/Gigabyte, CO<sub>2</sub>/metric tonne of product, CO<sub>2</sub>/vehicle, CO<sub>2</sub>/produced MWh, CO<sub>2</sub>/passenger). As such, these KPIs can often only be compared in an international context. As the aim of the company is to increase the volume of goods produced, this indicator can, however, cause false incentives, as the absolute emissions can be increased independently of a reduction in the intensity.

The emissions intensity in t CO<sub>2</sub>/million EBITDA is also revealing. This indicator can serve as a risk measurement for current or potential costs from GHG emissions. The high risks are evident for the Electric Utilities and Transportation sectors and companies providing raw materials, consumables & supplies. However, the relatively high fluctuation within the sectors should also be mentioned.

A comparison of the mean values for the emissions intensity shows that the emissions in metric tonnes of CO<sub>2</sub> per million EBITDA have risen significantly. This is due predominantly to improvements in emissions reporting, in particular for Scope 3 emissions. The EBITDA indicators, which have dropped in some cases due to the financial crisis, have barely any influence on this.

The proportion of energy costs can be seen as a further indicator of the risk of CO<sub>2</sub>-related price increases and therefore the risks of climate change. For competitive reasons, however, many companies refuse to publish details of their energy costs, whether absolute or relative. For the CDP 2009, 28% (30% in 2008) of the responding companies have revealed their energy costs and 21% their fuel costs.

## Performance

### Reduction Plans and Goals

Does your company have a GHG emissions and/or energy reduction plan in place? Please explain why.

Do you have an emissions and/or energy reduction target(s)?

What is the baseline year for the target(s)?

What is the emissions and/or energy reduction target(s)?

What are the sources or activities to which the target(s) applies?

Over what period/timescale does the target(s) extend?

What activities are you undertaking or planning to undertake to reduce your emissions/energy use?

What benchmarks or key performance indicators do you use to assess progress against the emissions/energy reduction goals you have set?

What emissions reductions, energy savings and associated cost savings have been achieved to date as a result of the plan and/or the activities described above? Please state the methodology and data sources you have used for calculating these reductions and savings.

What investment has been required to achieve the emissions reductions and energy savings targets or to carry out the activities listed in response to question 23.8, and over what period was that investment made?

**Table 8: Average CO<sub>2</sub> reduction targets by sector**

Ø CO <sub>2</sub> Reduction	% p. a.
Overall	2.78 %
Automobiles	3.60 %
Electric Utilities	2.50 %
Pharma/Health	1.43 %
Capital Goods	0.92 %
Insurance	3.67 %
Transportation	2.15 %
Materials	2.10 %
Non-intensive	3.57 %

**Table 9: Average energy reduction targets by sector**

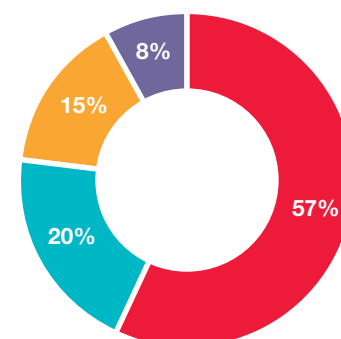
Ø Energy Reduction	% p. a.
Overall	3.21 %
Automobiles	5.00 %
Electric Utilities	not specified
Pharma/Health	1.67 %
Capital Goods	3.33 %
Insurance	5.00 %
Transportation	not specified
Materials	3.19 %
Non-intensive	2.67 %

What investment will be required to achieve the future targets set out in your reduction plan or to carry out the activities listed in response to question 23.8 above, and over what period do you expect payback of that investment?

Please estimate your company's future Scope 1 and Scope 2 emissions for the next five years for each of the main territories or regions in which you operate or provide a qualitative explanation for expected changes that could impact future GHG emissions.

Please estimate your company's future energy use for the next five years for each of the main territories or regions in which you operate or provide a qualitative explanation for expected changes that could impact future GHG emissions.

**Figure 12: Disclosure of emissions reduction targets**



■ Reduction target  
■ No answer  
■ Reduction target planned  
■ NoReduction target

Already now any major investment in our Group has to be evaluated in terms of its impact on our ability to achieve our carbon efficiency targets. This is supported by cost scenarios, in which different market price levels for carbon are assumed to simulate the cost effect of carbon.

**Deutsche Post AG**

**Table 10: Distribution of absolute and relative CO<sub>2</sub> reduction targets by sector**

	Absolute Targets	Relative Targets
Automobiles	50 %	50 %
Electric Utilities	67 %	33 %
Pharma/Health	100 %	0 %
Capital Goods	67 %	33 %
Insurance	67 %	33 %
Transportation	50 %	50 %
Materials	25 %	75 %
Non-intensive	80 %	20 %

Deutsche Bank's Group Executive Committee recently made the significant decision to make Deutsche Bank carbon neutral by 2012. From 2008, Deutsche Bank will start a phased programme to reduce and to offset its carbon footprint by 20 percentage points a year. This will be achieved through energy efficiency investments, realignment of real estate and IT services in lower carbon-impact infrastructure, expansion of renewable power purchase commitments, and purchasing of offset certificates.

**Deutsche Bank AG**

Within the framework of the Bayer Climate Program Bayer has reserved €1 billion for investments in climate-related projects between 2008 and 2010. In 2008, specific climate-related investments of approximately €350 million were made across Bayer's key businesses. This sum was invested in production facilities and R&D.

**Bayer AG**

Our energy emissions account for about 68% of our carbon footprint. Half of them are due to our buildings, the other half derives from our IT. We are currently developing international guidelines for the building area and investigate the possibility to increase the energy efficiency in the buildings where we operate.

**Allianz SE**

Please explain the methodology used for your estimations and any assumptions made.

How do you factor the cost of future emissions into capital expenditures and what impact those estimated costs had on your investment decisions?

In consideration of the UN Climate Change Conference in Copenhagen in 2009, willingness to reduce GHG emissions represents an important subject of investigation for the CDP 2009. The basic willingness to reduce emissions is reflected in the strategies of the companies, which have to be implemented by setting reduction targets for emissions. A total of 57% (49% in 2008) of responding companies stated that they have formulated targets for reducing emissions within their organisation. A further 14% are currently in the process of defining such emissions targets. Some 41% (30% in 2008) of companies can also quantify these targets. For 16% of the companies (19% in 2008), however, there is more of a general willingness to reduce GHG emissions. What is most important here is the differentiation between absolute and relative reduction targets. In the event of an increase in the reference figure – such as sales revenue – relative targets can lead to an absolute increase in emissions. This does not apply to absolute reduction targets. Nevertheless, 44% of the companies with emissions targets specify absolute targets. 25% have relative emissions targets which may lead to an absolute rise in emissions in the event of a positive development in the reference fig-

ure. The remainder of the companies did not specify.

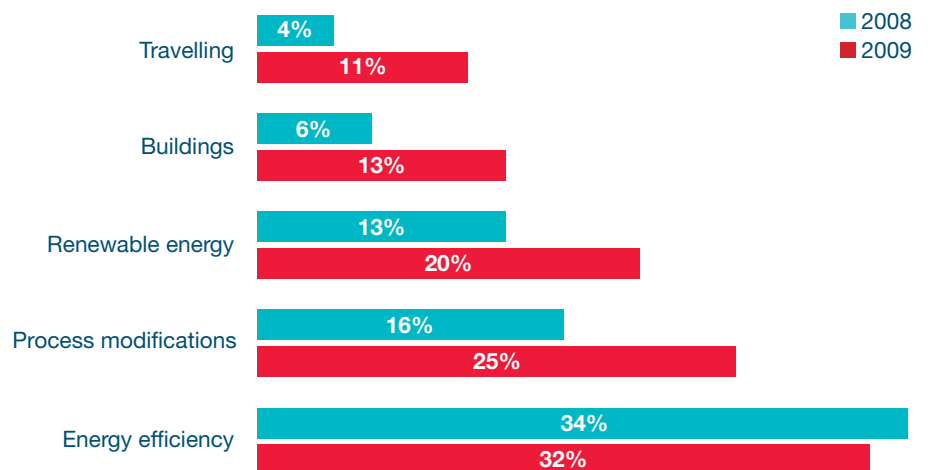
One thing we can observe is that the reduction targets are based on very recent figures, i.e. figures that have just been set or updated. The most common base year is 2006. The reduction targets are predominantly set within a time period of 6 years, i.e. they are to be met by 2012. This tallies with the results of the previous year. On the whole, the companies are striving for a reduction in GHG emissions of 2.8% per year, which corresponds to last year's result.

The planned savings are not widely distributed across the sectors. The largest savings are planned in the non-intensive sectors, primarily by the diversified Financial Service providers. In the intensive sectors, it is the Insurance companies and Automotive companies which have the highest savings targets.

A similar picture emerges with the targets for saving on energy consumption. Here, too, it is the Automobile manufacturers and Insurance companies who have set themselves the highest reduction targets.

The targets include both absolute and relative targets. Table 10 shows how this differentiation is made in the various sectors. Overall, absolute reduction targets predominate for emissions from Scope 1-3. In the Materials sector, the relative targets prevail, and in the Automobiles and Transportation sectors, both types of target are evenly distributed.

**Figure 13: Emissions reduction activities**



The measures selected for reaching the reduction targets cover a broad spectrum. Of greatest significance with 32% is the increase in efficiency in energy consumption (34% in 2008) as a result of saving on energy and fuels. The modification of processes has gained importance with 25% (16% in 2008). Of particular note here are waste management, training employees and, most importantly, resource management. The use of renewable energy has risen to 20% (13% in 2008). Building optimisation is not lacking in significance at 13% (6% in 2008), nor is the reduction of business travel with 11% (4% in 2008). Whether the measures are implemented solely for the purpose of reducing GHG emissions or whether they complement other corporate activities is generally questionable. For instance, the drop in business travel is sure to be due to economic reasons, as well as contributing to a reduction in emissions.

Of the responding companies, 57% are able to make statements on target fulfilment in the reduction of emissions and energy. However, only 25% were able to quantify the emissions reductions already reached and 17% the energy conservation achieved. Just 19% of the companies that responded cited the associated investments made.

The information on planning for GHG emissions is as yet insufficient. Only 11% of the responding companies can estimate the future investments required to achieve the targets set for the coming years. The average investment volume is €2.4 billion. The companies are planning total investments of €53,098,200,000. The information regarding estimated emissions in the future is also unsatisfactory. Only 8% of the companies make statements on the planned emissions and 9% on the planned energy consumption. This conflicts with the information regarding the emissions targets. One has the impression that the connection between targets, measures and planned target fulfilment has not yet been made. Alternatively it is possible that companies do not want to create transparency concerning the planned target fulfilment. However, neither explanation is welcomed by the investors.

## Governance

### Responsibility

Does a Board Committee or other executive body have overall responsibility for climate change?

Please state how overall responsibility for climate change is managed and indicate the highest level within your company with responsibility for climate change.

Which Board Committee or executive body has overall responsibility for climate change?

What is the mechanism by which the Board or other executive body reviews the company's progress and status regarding climate change?

### Individual Performance

Do you provide incentives for individual management of climate change issues including attainment of GHG targets?

Are those incentives linked to monetary rewards?

Who is entitled to benefit from those incentives?

### Communication

Do you publish information about the risks and opportunities presented to your company by climate change, details of your emissions and plans to reduce emissions?

- The company's Annual Report or other mainstream filings.

Figure 14: Responsibility for climate change



- Voluntary communications (other than to CDP) such as Corporate Social Responsibility reporting.

Do you engage with policymakers on possible responses to climate change including taxation, regulation and carbon trading?

**Responsibility and Individual Performance**

With regard to anchoring the concepts within companies and their culture, executive boards have a consistently clear responsibility for questions of climate change. 31% (38% in 2008) have anchored responsibility directly with the CEOs, while 21% (19% in 2008) see this issue as the responsibility of the entire executive board. For 18% of the companies, the responsibility is assigned to a board member not as a stand-alone topic, but rather together with other topics relating to environmental protection and/or corporate social responsibility (CSR) (16% in 2008). At 14% (17% in 2008) of companies, responsibility is assigned solely to middle management, for example in the form of workgroups.

A distinct increase can be observed regarding the correlation between climate change issues and incentive schemes. 37% (22% in 2008) of responding companies have implemented such systems or intend to do so. The spectrum of variable remuneration components is extremely comprehensive here. For example, a large, variable proportion is based on reducing emissions in products manufactured or reducing the overall energy consumption within a sphere of responsibility. However, no specifics were given regarding the relative levels of these remuneration components and thus their incentive effects.

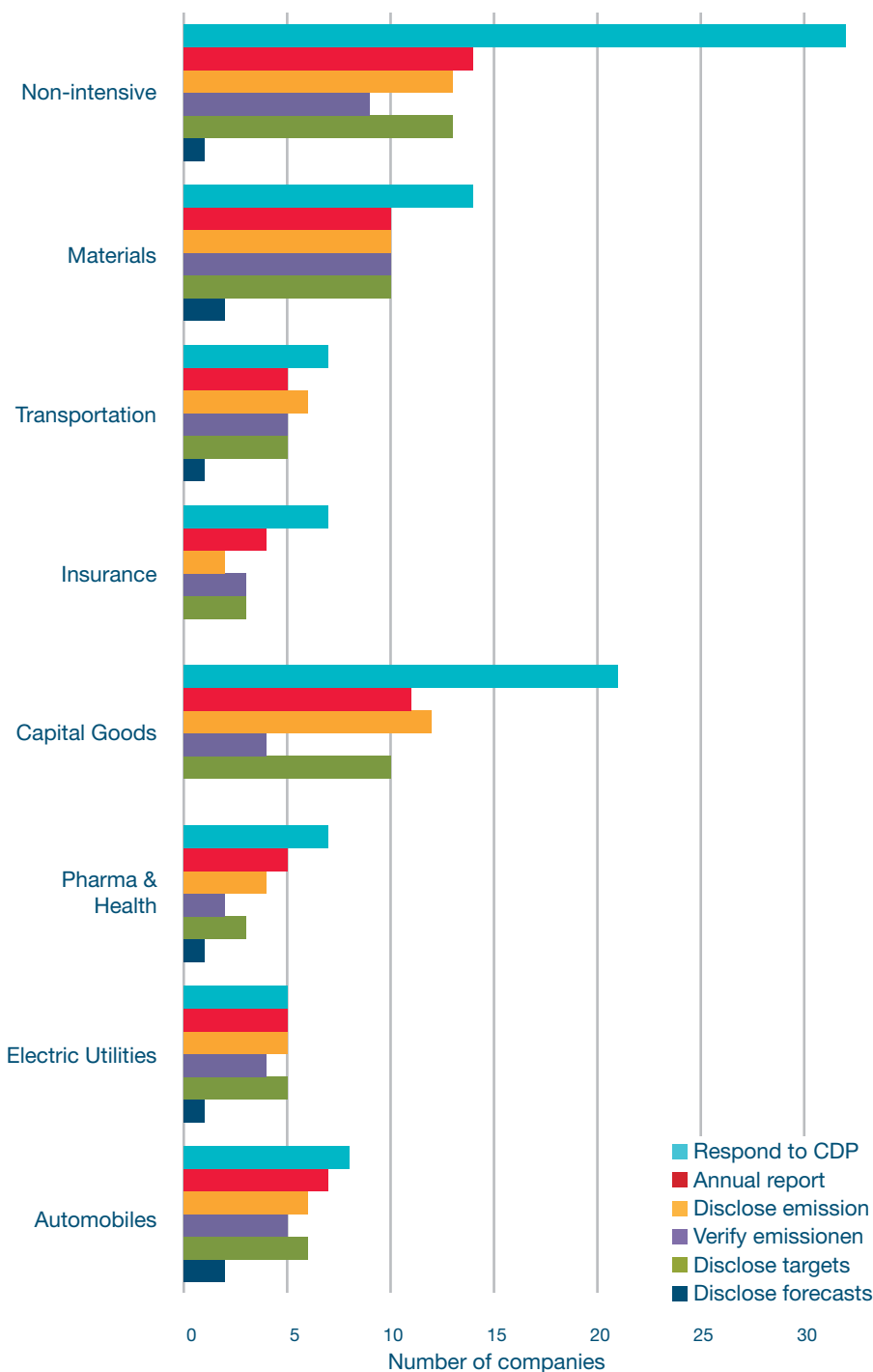
**Communication**

Communication of the opportunities and risks of climate change is considered highly relevant by the majority of companies. Indeed, 60% of companies (52% in 2008) communicate climate-related information in their annual reports and just as many report additional information in their CSR reports.

Looking at the various levels of reporting, the declining level of transparency, particularly with regard to future-oriented values, is noticeable. Participation in CDP and reporting in annual reports show positive trends, while there is still room for improvement when it comes to auditing and in particular publication of reduction plans and targets.

CDP not only offers a reporting framework for standardisation and comparability, it also fundamentally increases transparency in questions of climate change relevant for the capital market.

**Figure 15: Disclosure of key indicators by sector**



## Performance effects of emissions

The performance effects of emissions are influenced by many factors. These factors, in turn, are shaped by certain company characteristics. As in the previous year's report, the following analysis is based on a model which allows the effect of CO<sub>2</sub> risks on the success of a business to be quantified for selected sectors. The calculations are based on the information provided by the companies within the scope of CDP 2009 with the addition of data available in the market.

The model derived below is based on the following assumptions:<sup>14</sup>

- Risks from Scope 1 emissions are regulated and are predominantly based on the sectors taken into account, as well as power plant outputs, country of origin and, in particular, the emissions rights assigned either free of charge or by auction. A further risk comes about from the question of to what extent energy suppliers' power and influence in the market allows them to pass these additional costs on to the consumer – based on the marginal costs of the last power plant.
- Risks from Scope 2 emissions are based on the level of resource consumption. The risk from CO<sub>2</sub> emissions results from the changes in the regulatory conditions for Scope 1 emissions and the ability of resource suppliers to pass on price changes to those causing Scope 2 emissions. A key factor again here is the country in which the Scope 2 emissions occur (Annex B).
- Risks from Scope 3 emissions, for example from business trips and transport, result from the market power of the suppliers of these services. If these suppliers are able to pass any potential additional emission costs to those causing Scope 3 emissions, these Scope 3 emissions then represent additional costs.
- The final influential factor is then to determine per sector whether a company's power in the market allows price

increases from all three emissions types (Scope 1-3) to be passed on the end consumer.

- Risks outside a company's own emissions cannot be taken into account, as there is simply not enough data to support this.

To be able to include these factors in risk analysis and risk planning, assumptions must be made or scenarios developed regarding the proportion of emissions rights that can be acquired via auction, the price of the emissions rights, the ability to transfer costs to the respective users, the proportion of emissions caused in the Annex B countries and the development of Scope 1-3 emissions.

Scope 1 emissions of companies form the initial basis for determining the current and anticipated costs. The price of emissions rights and the share of rights distributed via free-of-charge allocation or auctioning are critical factors here. In the literature there are various expectations with regard to regulation and market price development. In one scenario, Société Générale calculated prices of up to €62 per metric tonne of CO<sub>2</sub> based on their own prognoses and expectations in publications such as the "Stern Report". With Scope 1 emissions, only those emissions in the so-called Annex B states of the Kyoto Protocol are initially recorded. The emissions rights assigned free-of-charge are then deducted. The emissions determined in this way are quantified by multiplying them by the market price. It is then important to take into account what proportion of these costs can be transferred to the consumer.

A similar approach is also suitable for Scope 2 emissions. The costs of CO<sub>2</sub> emissions already taken into account result from the fact that suppliers – predominantly energy suppliers – have already accounted for the CO<sub>2</sub> emissions created directly by themselves. In empirical investigations, assumptions are made that providers can transfer around 50% of CO<sub>2</sub> costs to the end consumer. The impact of Scope 2 emissions in companies depends largely on whether these

<sup>14</sup> See also Lucas-Leclin, V./Nahal, S./Lannegrace, M. G./Ouaknine, Y.: CREAM-ing Carbon risk exposure, Equity research report, Société Générale, 2007. Carbon Trust: Climate Change and Shareholder Value, 2006.

**Notation:**

$C$	Total emissions cost	$\bar{E}_{\text{AnnexB}}$	Emissions in non-Annex B countries
$C_{\text{Scope1}}$	Costs Scope 1	$\text{CTF}_{\text{energy}}$	Cost transfer factor energy
$C_{\text{Scope2}}$	Costs Scope 2	$\text{CTF}_{\text{logistic}}$	Cost transfer factor logistics
$C_{\text{Scope3}}$	Costs Scope 3	$C_{\text{transfer}}$	Company-specific cost transfer factor
$E_{\text{Scope1}}$	Emissions Scope 1	$\tilde{P}_{\text{CO}_2}$	Expected CO <sub>2</sub> price
$E_{\text{Scope2}}$	Emissions Scope 2	$\text{GHG}_{\text{reduction}}$	Reduction target of regulator
$E_{\text{Scope3}}$	Emissions Scope 3		

The individual cost components are calculated as follows:

$$(1) \quad C_{\text{Scope1}} = (E_{\text{Scope1}} - \bar{E}_{\text{AnnexB}} - E_{\text{free}}) \times \tilde{P}_{\text{CO}_2}$$

$$(2) \quad C_{\text{Scope2}} = (E_{\text{Scope2}} - \bar{E}_{\text{AnnexB}}) \times \tilde{P}_{\text{CO}_2} \times \text{CTF}_{\text{energy}}$$

$$(3) \quad C_{\text{Scope3}} = E_{\text{Scope3}} \times \tilde{P}_{\text{CO}_2} \times \text{CTF}_{\text{logistic}}$$

The total emissions costs of a company result from the total of the individual Scope 1 to Scope 3 emissions adjusted by a company-specific cost transfer factor. This ensures that the company's ability to pass on market costs to the customer is taken into account.

(1) to (3) result in:

$$(4) \quad C = (C_{\text{Scope1}} + C_{\text{Scope2}} + C_{\text{Scope3}}) \times (1 - C_{\text{transfer}})$$

The financial performance effects of a company's CO<sub>2</sub> emissions results from the quotient of the total emissions costs (4) and the EBITDA adjusted by the CO<sub>2</sub> reduction target.

$$(5) \quad \text{Risk}_{\text{CO}_2} = \frac{C}{\text{EBITDA}} \times (1 - \text{GHG}_{\text{reduction}})$$

companies are able to pass the additional costs on to their customers.

This approach can also be adopted for Scope 3 emissions. However, in the CDP no differentiation is made based on countries, meaning that this adjustment can simply be ignored. It is also important to note with Scope 3 emissions to what extent the Logistics and Transport companies, who in turn generate Scope 1 emissions through their services, can pass this on to the companies investigated within the scope of Scope 3 emissions. And for Scope 3 emissions there is also the question of what proportion of the costs can actually be passed on to the customer.

Scope 1 to 3 emissions of a company can be described as follows for risk analysis and planning purposes.

The following example of an energy supplier demonstrates how a calculation is carried out. Scope 1 emissions amount to 84.3 million metric tonnes of CO<sub>2</sub>. The emissions are generated to 100% in Annex B states. As the European Union has agreed full auctioning for Electric Utilities, the cost impact of Scope 1 emissions

is not reduced by the emissions rights allocated free of charge. A projected certificate price of €50 is assumed for 2013 in order to determine the financial performance effects of CO<sub>2</sub> emissions. According to the formula (1), the costs arising from Scope 1 emissions amount to €4,215 million. If the energy supplier produces Scope 2 emissions of 3.4 million metric tonnes of CO<sub>2</sub> and if the energy supplier has an assumed cost transfer factor of 50%, the costs resulting from Scope 2 emissions amount to €85 million (formula 2). If a cost transfer factor for logistics of 50% is applied in the calculation and Scope 3 emissions of 0.025 million metric tonnes of CO<sub>2</sub> are produced, the costs for Scope 3 emissions amount to €0.625 million (formula 3).

The total emissions costs are thus derived from the total of the three individual emissions scopes, which is then adjusted by the company-specific cost transfer factor. Therefore, if the cost transfer factor is 50%, the energy supplier's total emissions costs amount to €2,150.31 million (formula 4). When these total costs are adjusted by the European Union's reduction target of 4% and a ratio is formed with the company's EBITDA of €3,393 million, formula (5) results in a CO<sub>2</sub> risk as a financial performance effect of 60.8% for the energy supplier in question.

The calculation method described in the table can be used to derive a scenario for future risks posed by CO<sub>2</sub> emissions based on the current emissions data of the company within the scope of CDP 2009 and freely accessible market data. The following assumptions are made in this context: the future price for emissions certificates has been fixed at €50. In order to take into account the ability of the company to increase its profitability in future, the financial performance figure EBITDA is adjusted by an annual growth rate of 2% relating to the base year 2008. In addition, a cost transfer factor of 50% for both the provider and the logistics is defined for the calculation. Furthermore, it is assumed that 20% of emission rights (100% for energy suppliers) must be acquired via auction from 2013 onwards, in accordance with the Climate Change Package agreed by the European Union in December 2008. Whether this will lead to an increase in energy prices and thereby to indirect emissions costs as per Scope 2 and Scope 3 is a contentious issue, since the emissions rights should already be

**Table 11: Performance effects of emissions by sector**

Sector 2013 projection	Emission intensity (t CO <sub>2</sub> /million EBITDA)	Scope 1 emissions costs: EBITDA influence in %	Scope 2 emissions cost: EBITDA influence in %	Scope 3 emissions cost: EBITDA influence in %	Emissions cost of total emissions: EBITDA influence in %
Automobiles	9 to 1,619	0.00 to 0.18	0.01 to 1.24	0.00 to 0.83	0.01 to 1.42
Capital Goods	50 to 23,468	0.00 to 9.22	0.04 to 2.84	0.00 to 0.83	0.04 to 11.68
Pharmaceuticals/Health	216 to 23,772	0.02 to 0.82	0.09 to 2.46	0.00 to 20.75	0.15 to 24.03
Materials	513 to 15,152	0.08 to 1.66	0.00 to 2.40	0.00 to 13.25	0.27 to 14.63
Transportation	146 to 46,946	0.01 to 14.77	0.00 to 0.80	0.00 to 24.26	0.14 to 28.87
Electric Utilities	6,903 to 39,195	15.00 to 46.50	0.00 to 10.14	0.00 to 9.21	15.00 to 65.85

factored in as opportunity costs. This would then lead solely to a reduction in profits among energy suppliers.

The table shows the maximum variance in emissions impact for selected sectors in the year 2013. The large variance is explained by the rather rough sector division. The starting point is the emissions intensity, calculated as CO<sub>2</sub> emissions in metric tonnes with reference to EBITDA in € million (column (2)). Scope 1 emissions costs (column (3)) are determined on the basis of the calculation method of formula (1). A calculation is performed to determine the difference relative to previous emissions costs and how this reduces EBITDA (in percent). Scope 2 and 3 emissions costs are calculated in the same manner using formulae (2) and (3).

The final column (6) then summarises the influence of the emissions costs on EBITDA to be expected in the year 2013 for the sectors in question.

As anticipated, the particularly heavy impact on the energy suppliers (Electric Utilities) is striking. This can be attributed to the fact that full auctioning of emissions rights, particularly with a CO<sub>2</sub>-intensive energy mix, will result in high costs. EBITDA will also drop significantly in the Transportation sector. Total emissions will be predominantly shaped by Scope 1 emissions here, too. These sectors are therefore primarily exposed to regulatory risks. As in the previous year, the impact of Scope 2 emissions on the EBITDA tends to be low in all investigated sectors. This is above all due to the fact that the effects of Scope 1 emissions in the sectors heavily affected by this are already factored into the costs and/or can only be passed on

partially. In contrast to this, it is notable that the influence of Scope 3 emissions is growing. Especially in the sectors of Pharmaceuticals/Health, Transportation and Materials, business risks arising from emissions seem to be dependent on the products and the added value chain of companies. This is down to the fact that companies have increased their level of transparency regarding Scope 3 emissions. However, on the whole the information regarding Scope 3 emissions recorded until now is still somewhat unreliable, as aggregated data on emissions is only available to a limited extent.

The model therefore takes a range of factors into consideration which to date have not been incorporated into analyses of CO<sub>2</sub> emissions. The key issue here is that the level of total emissions does not tell the full story. The risks caused by direct (Scope 1) and indirect Scope 2 emissions as well as cost transfers via the prices are taken into account. The regional pattern of how the emissions are created is also incorporated. However, it is vital to note that assumptions regarding price trends and the transferability of emissions costs have to be made. Also, the business risks due to the emissions of products and the added value chain have only been quantified by companies in very limited scope to date. Yet this is one key area in which information is required, as this is the only way to assess risks to sales and reputation, which have a significant influence on EBITDA. A high degree of risk also makes investments necessary to reduce CO<sub>2</sub> output. Considering the effects of the above on emissions costs would mean a further increase.

# 5

# Appendix

## Response of the 200 largest listed companies in Germany

Note: Company names of organisation that answered the Questionnaire have been highlighted

Name	Sector	CDP 2009	CDP6 (2008)
Aareal Bank AG	Banks	No response	No response
Actris AG	Food Products	No response	Not in CDP6
<b>Adidas Group</b>	Textiles, Apparel & Luxury Goods	Answered questionnaire	Answered questionnaire
Air Berlin	Airlines	Information provided	No response
<b>Aixtron AG</b>	Semiconductor Equipment & Products	Answered questionnaire	Declined to participate
<b>Allianz SE</b>	Insurance	Answered questionnaire	Answered questionnaire
Alstria Office Reit AG	Financial services	No response	No response
<b>Altana AG</b>	Chemicals	Answered questionnaire	Answered questionnaire
<b>AMB Generali Holding AG</b>	Insurance	Answered questionnaire	Answered questionnaire
Andreae-Noris Zahn AG	Speciality Retail	No response	No response
<b>Arcandor AG</b>	Multiline Retail	Answered questionnaire	Answered questionnaire
<b>Audi AG (see Volkswagen)</b>	Automobiles	Answered questionnaire	Answered questionnaire
<b>Aurubis AG</b>	Metals & Mining	Answered questionnaire	Not in CDP6
AWD Holding AG	Diversified Financials	No response	No response
<b>AXA Konzern Agg (see AXA)</b>	Insurance	Answered questionnaire	Answered questionnaire
<b>Axel Springer AG</b>	Publishing	Answered questionnaire	Answered questionnaire
<b>BASF</b>	Diversified Chemicals	Answered questionnaire	Answered questionnaire
Bauer AG	Construction & Farm Machinery & Heavy Trucks	Information provided	Information provided
<b>Bayer AG</b>	Diversified Chemicals	Answered questionnaire	Answered questionnaire
<b>Bayerische Hypo und Vereinsbank (see UniCredit Group)</b>	Banks	Answered questionnaire	Answered questionnaire
BayWa AG	Industrial Machinery	No response	No response
Bechtle AG	Software	No response	No response
<b>Beiersdorf AG</b>	Household & Personal Products	Answered questionnaire	Answered questionnaire
Berlin-Hannoversche Hypothekenbank AG	Banks	No response	No response
Bertrandt AG	Automobiles	No response	Not in CDP6
BERU AG	Auto Components	No response	No response
Bijou Brigitte modische Accessoires AG	Textiles, Apparel & Luxury Goods	Declined to participate	No response
Bilfinger Berger AG	Construction & Engineering	Declined to participate	No response
Biotest AG	Pharmaceuticals	Declined to participate	Not in CDP6
<b>BMW Bayerische Motorenwerke AG</b>	Automobiles	Answered questionnaire	Answered questionnaire
Carl Zeiss Meditec AG	Health Care Equipment & Supplies	No response	Answered questionnaire
<b>Celesio AG</b>	Trading Companies & Distributors	Answered questionnaire	Answered questionnaire
Centrotec Sustainable AG	Industrial Machinery	No response	Not in CDP6
Centrotherm Photovoltaics AG	Industrial Renewables	No response	No response
comdirect bank AG	Diversified Financials	No response	No response
<b>Commerzbank AG</b>	Banks	Answered questionnaire	Answered questionnaire
CompuGroup Holding AG	Software	No response	No response

Name	Sector	CDP 2009	CDP6 (2008)
Constantin Film AG	Movies & Entertainment	No response	No response
<b>Continental AG</b>	Auto Components	Answered questionnaire	Declined to participate
CropEnergies AG	Industrial	No response	No response
CTS EVENTIM AG	Movies & Entertainment	No response	No response
Custodia Holding AG	Diversified Financials	No response	No response
<b>D+S europe AG</b>	Advertising	Answered questionnaire	Answered questionnaire
DAB bank AG	Diversified Financials	No response	No response
<b>Daimler AG</b>	Automobiles	Answered questionnaire	Answered questionnaire
<b>DBV-Winterthur Holding AG (see AXA Group)</b>	Insurance	Answered questionnaire	Answered questionnaire
Delticom AG	Multiline Retail	No response	Not in CDP6
Demag Cranes AG	Construction & Farm Machinery & Heavy Trucks	No response	No response
<b>Deutsche Bank</b>	Banks	Answered questionnaire	Answered questionnaire
Deutsche Beteiligungs-AG	Diversified Financials	No response	Answered questionnaire
<b>Deutsche Boerse</b>	Diversified Financials	Answered questionnaire	Answered questionnaire
<b>Deutsche EuroShop AG</b>	Real Estate	Answered questionnaire	Answered questionnaire
<b>Deutsche Lufthansa AG</b>	Airlines	Answered questionnaire	Answered questionnaire
<b>Deutsche Post AG</b>	Air Freight & Logistics	Answered questionnaire	Answered questionnaire
<b>Deutsche Postbank AG</b>	Banks	Answered questionnaire	Answered questionnaire
<b>Deutsche Telekom AG</b>	Integrated Telecommunication Services	Answered questionnaire	Answered questionnaire
DEUTZ AG	Industrial Machinery	Declined to participate	Answered questionnaire
DIC Asset AG	Financial services	No response	No response
Didier Werke AG	Construction Materials	No response	Not in CDP6
<b>Douglas Holding AG</b>	Speciality Retail	Answered questionnaire	No response
<b>Draegerwerk AG</b>	Health Care Equipment & Supplies	Answered questionnaire	Declined to participate
<b>Duerr AG</b>	Industrial Machinery	Answered questionnaire	Answered questionnaire
DVB Bank AG	Banks	No response	Information provided
Dyckerhoff AG (see Buzzi Unicem)	Construction Materials	No response	Answered questionnaire
<b>E.ON AG</b>	Electric Utilities - International	Answered questionnaire	Answered questionnaire
<b>EADS</b>	Aerospace & Defense	Answered questionnaire	Answered questionnaire
<b>Eisen- und Huettenwerke AG (see ThyssenKrupp)</b>	Construction Materials	Answered questionnaire	Answered questionnaire
<b>ElringKlinger AG</b>	Auto Components	Answered questionnaire	Answered questionnaire
<b>EnBW Energie Baden-Württemberg</b>	Electric Utilities - International	Answered questionnaire	Answered questionnaire
Envitec Biogas AG	Industrial	No response	No response
<b>EPCOS AG</b>	Electronic Equipment & Instruments	Answered questionnaire	Answered questionnaire
<b>ERGO Versicherungsgruppe AG (see Munich Re)</b>	Insurance	Answered questionnaire	Answered questionnaire
<b>ErSol Solar Energy AG</b>	Industrial Renewables	Answered questionnaire	Answered questionnaire
Fielmann AG	Speciality Retail	Declined to participate	No response
<b>Fraport AG</b>	Surface Transport	Answered questionnaire	Answered questionnaire
freenet.de AG	Software	No response	No response
<b>Fresenius Medical Care KGaA</b>	Health Care Providers & Services	Answered questionnaire	Answered questionnaire
<b>Fresenius SE</b>	Health Care Equipment & Supplies	Answered questionnaire	Answered questionnaire
<b>FUCHS PETROLUB AG</b>	Speciality Chemicals	Answered questionnaire	Answered questionnaire
<b>GEA Group AG</b>	Construction & Engineering	Answered questionnaire	Answered questionnaire
Gelsenwasser AG	Water Utilities	No response	No response
<b>Gerresheimer AG</b>	Health Care Equipment & Supplies	Answered questionnaire	Declined to participate
GERRY WEBER INTERNATIONAL AG	Textiles, Apparel & Luxury Goods	No response	Information provided
<b>GfK Group</b>	Commercial Services & Supplies	Answered questionnaire	Answered questionnaire
GILDEMEISTER AG	Industrial Machinery	No response	No response
GRENKELEASING AG	Diversified Financials	No response	Information provided
<b>H&amp;R WASAG AG</b>	Speciality Chemicals	Answered questionnaire	Answered questionnaire

Name	Sector	CDP 2009	CDP6 (2008)
<b>Hamburger Hafen und Logistik AG</b>	Air Freight & Logistics	Answered questionnaire	Answered questionnaire
<b>Hannover Rueckversicherung AG</b>	Insurance	Answered questionnaire	Answered questionnaire
Hawesko Holding AG	Multiline Retail	No response	Not in CDP6
<b>Heidelberg Cement</b>	Construction Materials	Answered questionnaire	Answered questionnaire
Heidelberger Druckmaschinen AG	Industrial Machinery	No response	Answered questionnaire
<b>Henkel KGaA</b>	Household & Personal Products	Answered questionnaire	Answered questionnaire
<b>HOCHTIEF AG</b>	Construction & Engineering	Answered questionnaire	Answered questionnaire
<b>Homag Group AG</b>	Industrial Machinery	Answered questionnaire	Declined to participate
Hornbach Holding AG	Speciality Retail	No response	Answered questionnaire
Hornbach-Baumarkt AG	Multiline Retail	No response	Not in CDP6
HUGO BOSS AG	Textiles, Apparel & Luxury Goods	No response	No response
Hypo Real Estate Holding AG	Diversified Financials	Declined to participate	Answered questionnaire
<b>IDS Scheer AG</b>	Software	Answered questionnaire	Answered questionnaire
IMW Immobilien AG	Financial services	No response	Not in CDP6
INDUS Holding AG	Diversified Industrial	Declined to participate	No response
Infineon Technologies AG	Semiconductor Equipment & Products	No response	Declined to participate
Interhyp AG	Diversified Financials	No response	Answered questionnaire
<b>INTERSEROH Aktiengesellschaft zur Verwertung von Sekundärrohstoffen</b>	Steel	Answered questionnaire	Answered questionnaire
<b>IVG Immobilien AG</b>	Real Estate	Answered questionnaire	Answered questionnaire
<b>Jenoptik AG</b>	Industrial Machinery	Answered questionnaire	Answered questionnaire
Jerini AG	Pharmaceuticals	No response	Not in CDP6
Jungheinrich AG	Industrial Machinery	No response	No response
<b>K + S AG</b>	Speciality Chemicals	Answered questionnaire	Answered questionnaire
KAP Beteiligung AG	Financial services	No response	Not in CDP6
<b>KIZOO AG</b>	Software	Answered questionnaire	Not in CDP6
Klöckner-Werke AG	Industrial Machinery	No response	No response
<b>Kloekner + Co AG</b>	Metals & Mining	Answered questionnaire	Declined to participate
Koelnische Rückversicherungs-Gesellschaft AG	Insurance	No response	No response
Koenig & Bauer AG	Industrial Machinery	No response	No response
Kontron AG	Electronic Equipment & Instruments	No response	No response
<b>Krones AG</b>	Industrial Machinery	Answered questionnaire	Answered questionnaire
<b>KSB AG</b>	Industrial Products & Services	Answered questionnaire	Answered questionnaire
<b>KUKA AG</b>	Industrial Machinery	Answered questionnaire	Answered questionnaire
KWS SAAT AG	Food Products	No response	No response
Landesbank Berlin Holding AG	Banks	Declined to participate	No response
<b>Lanxess AG</b>	Speciality Chemicals	Answered questionnaire	Answered questionnaire
Lechwerke AG	Electric Utilities - International	No response	No response
<b>Leoni AG</b>	Auto Components	Answered questionnaire	Answered questionnaire
<b>LHS AG (see Ericsson)</b>	Telecommunication Services	Answered questionnaire	Declined to participate
<b>Linde</b>	Chemicals	Answered questionnaire	Answered questionnaire
<b>MAN AG</b>	Industrial Machinery	Answered questionnaire	Answered questionnaire
Mannheimer AG Holding	Insurance	No response	Declined to participate
Manz Automation AG	Industrial	No response	Not in CDP6
MEDION AG	Speciality Retail	No response	Answered questionnaire
<b>Merck KGaA</b>	Pharmaceuticals	Answered questionnaire	Answered questionnaire
<b>Metro AG</b>	Multiline Retail	Answered questionnaire	Answered questionnaire
<b>MLP AG</b>	Financial services	Answered questionnaire	Answered questionnaire
<b>MorphoSys AG</b>	Biotechnology	Answered questionnaire	No response
<b>MTU Aero Engines Holding AG</b>	Aerospace & Defense	Answered questionnaire	Answered questionnaire

Name	Sector	CDP 2009	CDP6 (2008)
<b>Munich Re</b>	Insurance	Answered questionnaire	Answered questionnaire
<b>MVV Energie AG</b>	Multi-Utilities & Unregulated Power	Answered questionnaire	Answered questionnaire
<b>Nordex AG</b>	Industrial Renewables	Answered questionnaire	Answered questionnaire
Nürnberger Beteiligungs-AG	Insurance	No response	No response
<b>OVH Holding AG</b>	Diversified Financials	Answered questionnaire	Not in CDP6
<b>Pfeiffer Vacuum Technology AG</b>	Industrial Machinery	Answered questionnaire	Answered questionnaire
<b>Pfleiderer AG</b>	Materials	Answered questionnaire	Answered questionnaire
Phoenix AG	Industrial Products & Services	No response	Not in CDP6
Pilkington Deutschland AG	Industrial Products & Services	No response	Declined to participate
<b>Porsche AG</b>	Automobiles	Answered questionnaire	No response
Praktiker Bau- und Heimwerkermärkte AG	Speciality Retail	Declined to participate	Declined to participate
Premiere AG	Broadcasting & Cable TV	No response	Answered questionnaire
Primacom AG	Broadcasting & Cable TV	No response	Not in CDP6
ProSiebenSat.1 Media AG	Broadcasting & Cable TV	No response	Declined to participate
<b>PUMA AG</b>	Textiles, Apparel & Luxury Goods	Answered questionnaire	Answered questionnaire
<b>Q-Cells AG</b>	Industrial Renewables	Answered questionnaire	Answered questionnaire
QSC AG	Integrated Telecommunication Services	No response	No response
<b>Rational AG</b>	Industrial Products & Services	Answered questionnaire	Answered questionnaire
REpower Systems AG	Electric Utilities - International	No response	No response
Rheinmetall AG	Industrial Conglomerates	Information provided	No response
<b>Rhön Klinikum AG</b>	Health Care Providers & Services	Answered questionnaire	Answered questionnaire
Roth & Rau AG	Industrial	No response	Not in CDP6
RSE Grundbesitz und Beteiligungs-AG	Diversified Financials	No response	No response
<b>RWE</b>	Electric Utilities - International	Answered questionnaire	Answered questionnaire
<b>Saint-Gobain Oberland AG (see Saint-Gobain)</b>	Materials	Answered questionnaire	Answered questionnaire
Salzgitter AG Stahl und Technologie	Steel	Information provided	No response
<b>SAP AG</b>	Software	Answered questionnaire	Answered questionnaire
Sartorius AG	Industrial Machinery	Declined to participate	Declined to participate
<b>SCA Hygiene Products AG (see SCA)</b>	Household & Personal Products	Answered questionnaire	Answered questionnaire
Schwarz Pharma AG (see UCB Cap)	Pharmaceuticals	No response	Declined to participate
SGL Carbon AG	Speciality Chemicals	No response	No response
<b>Siemens AG</b>	Electronic Equipment & Instruments	Answered questionnaire	Answered questionnaire
Simona AG	Chemicals	No response	Not in CDP6
Sixt AG	Surface Transport	No response	No response
SMA SOLAR TECHNOLOG. AG	Industrial	No response	Not in CDP6
<b>Software AG</b>	Software	Answered questionnaire	Answered questionnaire
<b>SolarWorld AG</b>	Industrial Renewables	Answered questionnaire	Answered questionnaire
Stada Arzneimittel AG	Pharmaceuticals	No response	No response
Stinag Stuttgart Invest AG	Diversified Financials	No response	No response
Strabag AG	Construction & Engineering	No response	No response
Stratec Biomedical Systems AG	Pharmaceuticals	No response	Not in CDP6
Südzucker AG Mannheim/Ochsenfurt	Food Products	Declined to participate	No response
<b>Symrise AG</b>	Chemicals	Answered questionnaire	Answered questionnaire
<b>TAKKT AG</b>	Multiline Retail	Answered questionnaire	Answered questionnaire
Techem AG	Industrial Products & Services	No response	No response
<b>ThyssenKrupp AG</b>	Industrial Conglomerates	Answered questionnaire	Answered questionnaire
<b>Tognum AG</b>	Industrial Machinery	Answered questionnaire	Declined to participate
Triumph International AG	Consumer	No response	Not in CDP6
<b>TUI AG</b>	Hotels, Restaurants & Leisure	Answered questionnaire	Answered questionnaire
United Internet AG	Software	No response	No response

Name	Sector	CDP 2009	CDP6 (2008)
Utimaco Safeware AG	Software	No response	Not in CDP6
<b>Vattenfall Group</b>	Electric Utilities - International	Answered questionnaire	Answered questionnaire
VBH Holding AG	Construction Materials	No response	Not in CDP6
Versatel AG	Telecommunication Services	No response	No response
<b>Volkswagen</b>	Automobiles	Answered questionnaire	Answered questionnaire
<b>Vossloh AG</b>	Industrial Products & Services	Answered questionnaire	Answered questionnaire
VTG AG	Air Freight & Logistics	Declined to participate	Answered questionnaire
<b>Wacker Chemie AG</b>	Chemicals	Answered questionnaire	Answered questionnaire
<b>Wella AG (see Procter &amp; Gamble)</b>	Consumer	Answered questionnaire	Answered questionnaire
<b>Wincor Nixdorf AG</b>	Electronic Equipment & Instruments	Answered questionnaire	Answered questionnaire
Wirecard AG	Software	No response	No response
WMF WUERTT.METAL.ST O.N.	Consumer	No response	Not in CDP6
Wuestenrot & Wuerttembergische AG	Diversified Financials	No response	Declined to participate
Zhongde Waste Technology AG	Environmental Services	No response	No response

## Glossary of Terms

CDLI	Carbon Disclosure Leadership Index
CDM	Clean Development Mechanism
CDP	Carbon Disclosure Project
CDSB	Carbon Disclosure Standards Board
CEO	Chief Executive Officer
COO	Chief Operating Officer
CORE	CORporate REsponses
CSR	Corporate Social Responsibility
EBITDA	Earnings Before Interest, Tax, Depreciation, Amortisation
EU ETS	European Union Emissions Trading System
GEMIS	Global Emission Model for Integrated Systems
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
IIGCC	Institutional Group on Climate Change
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
KPI	Key Performance Indicator
NAP	National Allocation Plan
R&D	Research and Development
TEHG	German Greenhouse Gas Emission Entitlements Trading Act
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute







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