Climate Change and Shareholder Value In 2004

On 1st November 2003, the Carbon Disclosure Project (CDP) issued a second information request to the FT500 Global Index companies. 95 institutional investors representing assets in excess of $10 trillion are signatories to the request, which asked for disclosure of investment-relevant information relating to the risks and opportunities presented by climate change. Full details of the responses and reports can be found at www.cdproject.net

Key Findings of CDP2

Recent developments are creating a fresh sense of urgency:

- **The mainstream investment community has woken up** to the financial implications of climate change; signatories to CDP increased by over 250%. Analysts and fund managers are starting to see risks and opportunities take shape. Assessing climate change is now becoming part of smart financial management.
- **The social and economic costs of climate change began to emerge:** in 2003 weather-related disasters cost $70 billion and a European heat wave killed 20,000 people. The number of natural disasters recorded by reinsurance companies reached a historical peak. More extreme weather events should be expected in the future.
- **Companies are likely to face increased pressure** from financial market authorities, fiduciaries, company officers and accounting bodies to deal with climate risk factors. 'Generally Accepted Carbon Accounting Principles' – 'GACAP' – appear likely to emerge.
- **Legislation designed to put a price on carbon accelerated in 2003/4** throughout the OECD. The 2004 global carbon market could reach $480m (€400m). Weather, GHG and green power markets are converging to broaden risk management options. Certain industrial sectors and commodity markets will experience greater volatility; wholesale electricity prices will impact profitability; adaptation to this 'new normalcy' will be required.
- **More FT500 firms now see opportunities in the 'clean tech' sector**. Investment in the sector has quadrupled to $2.5 billion over the past 2 years.

What the CDP responses tell us:

- **Climate change and shareholder interest are becoming more closely intertwined. 59% of firms responded to CDP2 (47% in CDP1)**. 45% of the FT500 believe climate change represents risk and/or opportunity. 65% of companies in high-impact sectors are now measuring and reporting emissions versus 51% in CDP1. Responses were up 40% in the US utilities sector and 23% in the oil and gas industry. Twice as many banks now have a stake in the renewables sector.
- **Significant differences of opinion remain** within the same sector on the importance of climate change to company business and competitiveness. Many companies remain firmly 'behind the curve'. Only one firm cited the CEO as being responsible for managing the issue.
- **Major 'disconnects' still exist** between some company's response status and what is known publicly about their actual climate change stance.
- **Not all companies respond to shareholders**. At least 12 companies failed to respond to the CDP letter despite having over 10% of their outstanding common shares owned by signatories to the CDP letter.
- **Total emissions from operations** (not including product use and disposal) reported to CDP equalled c. 2.9 billion tons of CO2 equivalent, approximately 13% of total global emissions from fossil fuel combustion.

Based on the responses received by the CDP, we have created the Climate Leadership Index, comprising the 50 'best in-class' responses.

CDP Signatories

Abbey National, Aberdeen Asset Managers, ABN AMRO Asset Management, ABP, Acuity Investments, AMP Henderson Global Investors, Asahi Life Asset Management Co., Ltd, ASN Bank, AXA, Baillie Gifford, Bank Sarasin & Cie AG, BNP Paribas Asset Management, Calvert, Catholic Superannuation Fund (CSF), Central Finance Board of the Methodist Church, CERES, CI Mutual Funds, Commerzbank, Conneticut Retirement Plans and Trust Fund, Cooperative Bank, Cooperative Insurance Society, Credit Agricole Asset Management, Credit Suisse Group, Daiwa Securities Group Inc, Deutsche Asset Management UK, Development Bank of Japan, Dexia Asset Management, Domini Social Investments, Dresdner RCM Global Investors, Environment Agency Pension Fund UK, Ethical Funds, AP1, Fleet, Folksam Insurance Group, Fortis Investments, Gartmore Investment Management plc, Henderson Global Investors, Hermes Investment Management, HSBC Holdings, HVB Group, ING Investment Management Europe, Insight Investment, Interfaith Centre on Corporate Responsibility, ISIS Asset Management plc, Jupiter Asset Management, KBC Asset Management, Legal & General, Local Authority Pension Fund Forum, Lombard Odier Darier Hentsch et Cie, London Pension Fund Authority, Meritas Financial Inc, Merrill Lynch Investment Managers, Mitsubishi Securities, Morley Fund Management, Munich Re, Neuberger Berman, Newton Investment Management Limited, New York State Common Employees Retirement System, Ontario Teachers Pension Plan, Pax World Funds, PGGM, Public Sector Superannuation Scheme / Commonwealth, Superannuation Scheme, Rabobank Group, Railpen Investments, Real Assets Investment Management Inc, Robeco, Rockefeller & Co Socially Responsive Group, SAM Sustainable Asset Management, Sanlam Investment Management, Sanpaulo Wealth Management, Societe Generale Asset Management UK Ltd, Sogeposte, State Street Global Advisors Limited, Storebrand Investments, Swiss Re, Treasurer of the State of California, Treasurer of the State of Maine, Treasurer of the State of Vermont, Trillium Asset Management, Triodos Bank, Tri-State Coalition for Responsible Investment, UBS Global Asset Management (UK), Unicredit Group, Union Investment, Universities Superannuation Scheme, VicSuper Proprietary Limited, Walden Asset Management, Wells Fargo & Co., West AM

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CARBON TRUST
Making business sense of climate change

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CARBON TRUST
Making business sense of climate change

The Carbon Disclosure Project is financially supported by the Carbon Trust, an independent, government funded organisation that helps UK business and the public sector cut carbon emissions and capture the commercial potential of low carbon technologies.
www.thecarbontrust.co.uk

RUFUS LEONARD

One of the largest UK corporate brand and communications consultancies, Rufus Leonard serve clients including Barclays, BBC, BT, Credit Suisse, Lloyds TSB and Shell. We were the first sponsor of CDP and the project is housed in our offices.
www.rufusleonard.com

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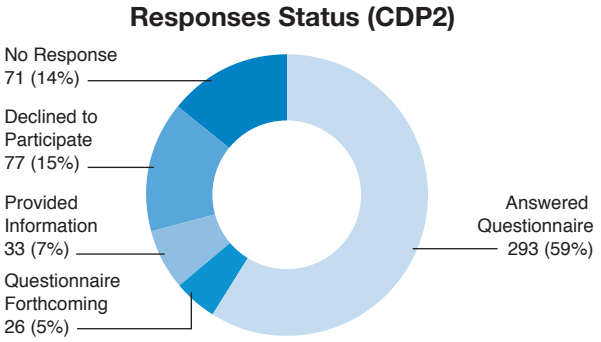

Executive Summary

Hard numbers on the costs of climate change create mood of urgency

The global expansion of the Carbon Disclosure Project (CDP) is firmly under way. Signatories, from Africa, Asia, Europe and North America, now represent over $10 trillion in assets – more than double last year's total. Responses from the FT500 Global Index companies are also up sharply, from 47% to 59%. Moreover, survey data are more diversified by industry, and more sophisticated in content, than previously. The total emissions from operations reported to CDP across all sectors equalled 2,886,033,085 tonnes of CO2 equivalent (CO2e), or roughly 13% of all emissions from fossil fuel combustion worldwide.

We believe that this escalation in scope and awareness – on behalf of both signatories and respondents – can be traced to an increased sense of urgency with respect to climate risk and carbon finance in the global business and investment community. This should not come as a surprise. Developments over the past 18 months have highlighted the social and economic costs of climate change and the risks and opportunities being created worldwide by emissions reduction policies.

Why the CDP Matters: Key Developments Since CDP1

- *Weather-related natural disasters caused about $70 billion damage during 2003 ($18.5 billion was insured).* For the first time, climate change was explicitly identified as being a factor. More extreme weather events should be expected in the future, according to leading reinsurers.
- *The effects of this will be felt in key sectors and commodity markets* – notably, the power, energy, insurance, transportation, heavy manufacturing and building/infrastructure industries, and the crude oil, gasoline, grain, soy and wheat markets. The application – and bundling together – of weather derivatives, catastrophe bonds and other environmental financial risk-hedging instruments is turning into a viable, but underutilized, risk-management option for many firms.
- *Mainstream pension trustees, analysts, bankers, insurers and fund managers have begun to appreciate the implications of climate change and greenhouse gas (GHG) policies in financial terms.* No longer can fiduciaries claim to be unaware of what is at stake. Taking climate risks into account is now becoming part of smart financial management. Failure to do so may well be tantamount to an abdication of fiduciary responsibility. FT500 firms can expect to come under greater pressure from shareholders as a result.
- *Carbon finance is now a reality.* Legislation favouring a shift to a low carbon intensity economy is now a fact of life for FT500 companies across the EU as well as in many parts of the US, Japan, Australia and Canada. In January 2005, over 14,000 entities will begin trading carbon in what promises to be the largest, most liquid carbon market in the world: the EU Emissions Trading Scheme (ETS). Approximately 29% of the FT500 companies contacted through the CDP are located in countries that are included in the EU ETS. In the US, more than 20 states have passed or proposed legislation on CO2 emissions, or have developed carbon registries, sequestration studies and similar measures.

- *The future 'cost of carbon' is a major headache for energy-intensive FT500 companies. Two-thirds of EU utilities expect wholesale electricity prices to rise by up to 20%.* According to one report, higher electricity prices across the EU will mean additional costs of almost €600 million ($720m) per year for the European steel industry, €500m for the pulp and paper business, and €260m for the cement, lime and glass industries. Our analysis indicates that even a 5% shift in energy prices could impact per share earnings by as much as 15% in certain industries. Energy risk management and energy efficiency initiatives are taking on a new strategic importance.
- *Pressure is growing on financial market authorities, fiduciaries, company directors and officers, and accounting bodies to incorporate climate risk factors into financial statements and offerings.* This is likely to result in greater pressure on firms to measure and disclose the risks they face. It now seems to be only a matter of time before "generally accepted carbon accounting principles" (GACAP)– are adopted at national and international levels. Climate litigation against major industrial emitters also looks increasingly likely.
- *The global carbon market has doubled in size in each of the past two years and is projected to reach $480 million in 2004.* Emissions trading is an important element of the corporate risk management equation, with more FT500 firms involved. Some 70 million tonnes of CO2e was traded during 2003 across all markets, against a total since 1996 of roughly 220 million tonnes. A hierarchy of credit quality is emerging. Increased cash flow from carbon finance can boost internal rates of return (IRRs) by as much as 15% for some projects.
- *FT500 firms are major participants in the global clean technology sector. Non-hydro renewables are expected to grow faster than any other primary energy source to 2030.* Worldwide, the growth in electricity from renewable energy is projected to rise by 9-10% annually. Over $2.5 billion has been invested in "clean tech" ventures over the past two years – a near quadrupling of the market. Europe aims to generate 50% of its energy needs from renewables by 2050. In the US, clean technology forms the cornerstone of both leading presidential candidates' environmental agendas.

What the CDP Responses Tell Us

CDP2 responses indicate that these trends have not gone ignored. More firms than last year consider climate change to present risks and opportunities to their business. More are quantifying GHG emissions and preparing to trade emissions. Corporate climate strategies are becoming more coherent and more comprehensive. The concept of 'GHG-Neutral' products and companies is taking root. Many firms have established multi-disciplinary teams to manage the climate risk file. The use of standardized measurement systems, such as the WRI/WBCSD GHG Protocol, is up. The number of banks reporting an involvement in renewable energy initiatives has more than doubled in the past year.

That said, worrying trends are also apparent. Certain greenhouse gas management tasks – approaches to supply-chain questions, assessment of life-cycle emissions, the integration of carbon costs into management accounting – are proving to be troublesome. The absence of greater regulatory certainty also appears to be holding some companies back. Significant differences in opinion remain within the same sectors on the importance of climate change to company business and competitiveness.

There are also many examples of "disconnects" between a company's response status and what is known publicly about its actual climate-change stance. Whether this is due to poor internal communications or a lack of interest on the part of the responder is open to speculation. Perhaps most alarmingly, several companies failed to respond to the CDP letter despite having a significant proportion of their outstanding common shares (over 10%) owned by signatories to the CDP letter.

The concepts of corporate leadership, transparency and brand value underpin approaches to climate change. These "soft" issues should not be taken lightly. Currently, some 85% of a company's true market value can be attributed to such "intangible value drivers". Leaders are seizing the initiative across the spectrum of activities that shape a company's true value and competitive potential as the shift to a low-carbon economy proceeds. To reflect this, we have created the Climate Leadership Index (CLI), comprising the 50 'best in class' responses to the CDP.

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I. Background to the CDP

The Carbon Disclosure Project (CDP) is a coordinating secretariat for institutional investor collaboration regarding climate change. Its mission is twofold: to inform investors regarding the significant risks and opportunities presented by climate change; and to inform company management regarding the serious concerns of shareholders regarding the impact of these issues on company value.

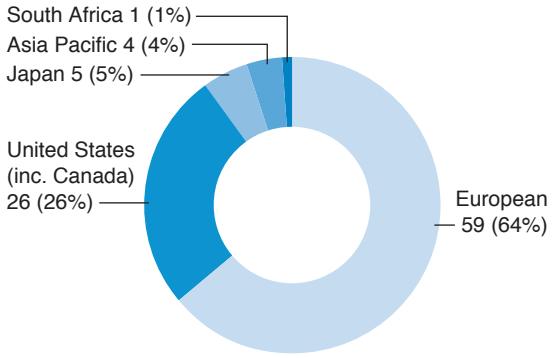
Last year's inaugural Carbon Disclosure Project (CDP1) gathered the support of 35 institutional investors representing some $4.5 trillion in managed assets. The project culminated in the launch of the first CDP report, authored by Innovest, at the London Guildhall in February 2003, featuring a keynote address by the noted UK pension industry authority, Sir Derek Higgs. A few weeks later, at Swiss Re's North American headquarters, the former US Secretary of State and current NYSE Board Member, Madeleine Albright, presented the report before the US financial community in New York.

Commenting on the launch of the first report in February 2003 the Prime Minister Tony Blair neatly summarised the aim of the CDP:

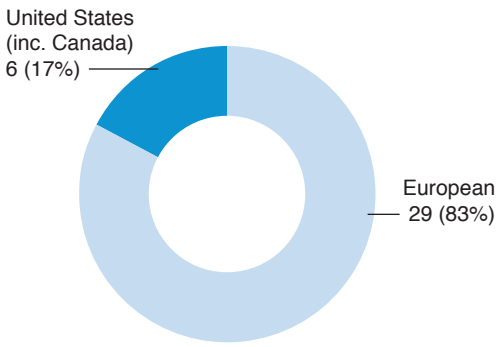
"Congratulations on the success of the Carbon Disclosure Project. It has some important messages for all of us. Crucially, it illustrates how the answer to reducing greenhouse gas emissions lies as much with companies and investors as it does with governments, international agencies and the public. No industry can afford to ignore the issue. And indeed the project demonstrates that many investors have a very comprehensive view of their fiduciary responsibilities to invest prudently, consistent with this Government's strong emphasis on improved corporate and investor governance. I hope the Project goes from strength to strength."

This year (CDP2), the globalization of the CDP has taken a giant leap forward. The CDP letter now bears the names of 95 signatories, including some of the world's largest pension funds and institutional money managers. The reasons for this success are many. However, we can speculate that the convergence of two agendas – the sustainable development and climate change issue on the one hand, and the more established corporate governance agenda – was a major contributing factor. No longer can fiduciaries claim to be unaware of what is at stake. Taking climate risks into account is now becoming part of smart financial management. Failure to do so may well be tantamount to an abdication of fiduciary responsibility.

Distribution of Signatories by Geography (CDP2)



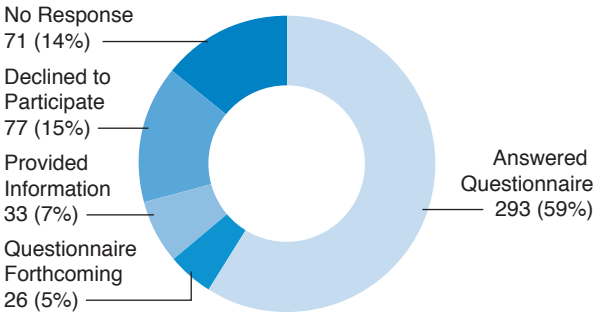
Distribution of Signatories by Geography (CDP1)



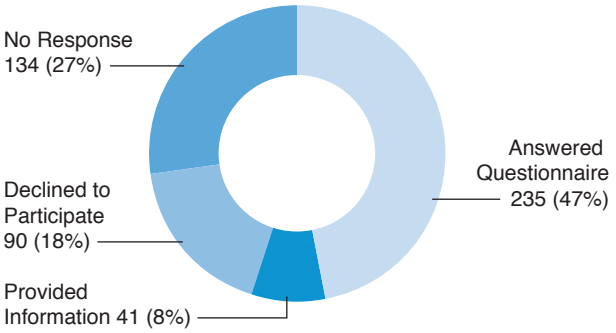
CDP signatories now represent over $10 trillion in assets, an amount roughly equal in current dollar terms to the 2003 US Gross Domestic Product. Significantly, the regional centre of gravity of the supporting institutions has begun to shift. Non-European signatories now represent some 36% of signatory assets – up from 17% in CDP1.

While support for the CDP itself has grown, the basic format of the project remains unchanged. Letters to the FT 500 companies were issued on November 1, 2003. As the chart below indicates, the response rate now stands at 59%, up from 47% in CDP1. More responses were still being received as this report went to press. CDP is able to accept corporate responses at any time (info@cdproject.net). A detailed breakdown of all responses, along geographical, industrial and content-related lines is provided in Appendix A of this report.

Responses Status (CDP2)



Responses Status (CDP1) *final adjusted figures*



This year's report will be officially launched in London on May 19, with a keynote address by Sir John Bond, Chair of the HSBC Group and in Hong Kong by Tessa Tennant, Chair ASrIA. On May 21 in New York City, with Alan Brown, Chief Investment Officer of State Street Global Advisors. Other launches will follow in Hamburg and Melbourne June 2, Tokyo June 3 as well as Paris and Toronto.

Looking further ahead, we hope the dialogue that the CDP has helped to establish between corporations and their owners on the subject of climate change will grow. A third information request is planned.

Note on the development of the questionnaire:

The CDP secretariat first began developing a questionnaire in 2001 in consultation with numerous investors, corporations and consultants. Having concluded the first iteration of the project CDP consulted with these parties to develop a more robust questionnaire leading to the 1st November 2003 information request.

II. Introducing the "Climate Leadership Index"

In this year's CDP, every response in every industrial sector has been assessed and categorised. Based entirely on the responses received by the Carbon Disclosure Project, **we have constructed a Climate Leadership Index (CLI), comprising the 50 "best in class" responses.**

Twelve high-impact sectors were selected based on their relative carbon intensity and financial sensitivity to climate-related impacts. From these sectors, companies deemed to have above-average responses were chosen as candidates for inclusion in the CLI. From this pool of above-average candidates, a shortlist of companies that provided the best responses was chosen. The companies in the CLI were selected on the basis of:

- Breadth of climate-change issues addressed (see 6-factor matrix below)
- Depth, completeness, and sophistication of the responses
- Innovest's assessment of the companies' climate-change strategies, demonstrated risk-management capability, and strategic positioning vis a vis "next-generation" opportunities.

HOW HAVE THE RESPONSES BEEN EVALUATED?

The 6 factors used to evaluate company CDP responses are based on the questions submitted to the FT500 on behalf of the signatories. These are:

1. **Strategic Awareness:** the extent to which a firm considers climate risks and opportunities to be relevant to its business
2. **Management Accountability/Responsibility:** whether and how a company has allocated responsibility for the management of climate-related issues
3. **Emissions Management and Reporting:** the progress a company has made in quantifying and disclosing/reporting its emissions profile, including the use of third-party verification
4. **Emissions Trading:** the extent to which a firm has considered emissions trading in its risk management response
5. **Programmes in Place:** quality and nature of any emissions reduction programmes, including energy efficiency, that a firm has implemented
6. **Establishment of Targets:** have formal GHG emissions/reduction targets been set with a timeline?

Almost by definition, each of the companies in the index appears to be among the sector leaders in its responses to the climate-change challenge. Not surprisingly, some industry sectors have more "best in class" respondents than others. Several caveats are, inevitably, in order:

1. The analysis is based on self-reported, non-verified responses.
2. The analysis is focused more heavily on carbon management structures and capabilities than on either company-specific levels of risk exposure, marginal abatement costs or actual emissions reductions.
3. The choice of 50 as the cut-off point for inclusion in the Climate Leadership Index was an arbitrary one. As with any effort made to "draw the line" at a particular point, a number of well-qualified firms have been excluded.

Despite these limitations it is hoped that the publication of the Climate Leadership Index will acknowledge the progress and achievements of today's strong performers, as well as create significant incentives for others to match or supplant them in the future.

The *50* companies selected comprise the 2004 Climate Leadership Index:

Sector	Companies
Metals & Mining	Alcoa Anglo American BHP Billiton Rio Tinto Nippon Steel
Integrated Oil & Gas	BG BP ChevronTexaco RD/Shell Suncor Energy
Insurance & Reinsurance	Aviva Munich Re Prudential UK Swiss Re
Electric Power N. America	AEP Entergy FPL PSEG
Electric Power International	Endesa Iberdrola Kansai Scottish Power
Diversified Financials	Citigroup ING State Street
Banks	Abbey National ABN AMRO HBOS HSBC National Australia Bank RBC UBS Westpac
Chemicals	Air Products BASF Dow Dupont
Auto	BMW DaimlerChrysler Ford Volkswagen
Food, Beverages, Food Retail	Cadbury Schweppes Heineken Imperial Tobacco Unilever
Paper and Forest Products	International Paper Stora Enso
Transportation	BAA Mitsui UPS

III. Why the CDP Matters: Climate Risk and Carbon Finance in 2004

The CDP's simple request for disclosure allows investors an easy way to signal their wishes, and gives companies an easy way to understand and achieve the benchmark. In two short years it has created a global virtuous circle and helped accelerate positive action.

To place the CDP responses into proper context, we summarise here some of the critical developments affecting the themes of climate change and carbon finance that have occurred since the launch of last year's CDP report.

The following are excerpts from CDP signatory investors and financial services responders:

"In global warming, we are facing an enormous risk to the U.S. economy and to retirement funds that Wall Street has so far chosen to ignore.... investors need to pay more attention to corporate practices that affect long-term value"

Phil Angelides
California State Treasurer
November 2003

"About 20% of (global) GDP is affected by climate risk....(climate change) is more important than interest rate risk or the foreign exchange risk"

AXA
CDP2 Response

These include:

- Greater concern on the part of business, government leaders and institutions over the impacts of climate change, and increased determination to do something about it;
- Increasing concern within the global financial community regarding climate risk and emissions management;
- Regulatory and other policy actions being taken to mitigate the threat of climate change through emissions constraints;
- Responses from financial market authorities, accounting oversight bodies and the legal profession;
- The evolution (and convergence) of the carbon, green certificate, weather derivatives and CAT bond markets;
- Increased momentum in the global clean technology and renewables markets.

Latest climate data underscores economic and social impacts

Recent reports have reaffirmed the extent of the social and economic costs of climate change and established clear links with global security risks.

- Along with 2002 and 1998, 2003 was reported to be one of the warmest years on record. The World Meteorological Office highlighted record extremes in weather all over the world and linked them to climate change.
- A Pentagon-commissioned study concluded that under extreme scenarios, climate change could result in a global catastrophe costing millions of lives in wars and natural disasters[1].
- In the UK, the government's chief scientist stated that climate change posed a bigger threat than terrorism[2].

1 The Observer, Sunday, February 22, 2004
2 www.news.bbc.co.uk/2/hi/science/nature/3381425.stm

"We view climate change as a key long-term investment theme which receives insufficient attention"

ABN AMRO Equities Research
November 2003

"There is growing demand from customers to invest in sustainable projects and companies."

ING
CDP2 Response

"As a financial institution (we are) affected by …risks from GHG emissions."

Deutsche Bank
CDP2 Response

"As a result (of climate change), the insurance industry could be destabilized, impacting the banking industry and economic development generally."

Standard Chartered
CDP2 Response

- The US National Hurricane Centre in Miami reported the first hurricane ever seen in the south Atlantic, which swirled off the coast of Brazil in March 2004[3].

- The former head of the Canadian national weather service, who now heads the Canadian Foundation for Climate and Atmospheric Sciences, reported that climate change in the Arctic could trigger a collapse in major ocean circulation patterns by the end of the century.

> "….extreme events which can be traced to climate change will have increasingly grave consequences in the future. We must reckon with new types of weather risks and greater loss potentials."
>
> Munich Re
> TOPICS geo 2003

- The World Health Organization stated that an estimated 150,000 deaths and 5.5 million Disability Adjusted Life Years were caused in the year 2000 due to climate change. In December, the WHO blamed climate change for 2.4% of all cases of diarrhoea and 2% of all cases of malaria worldwide[4].

- The UN's World Food Programme has warned that erratic weather patterns are threatening the lives of up to 16 million people in the Horn of Africa[5].

- Weather-related natural disasters caused about $70 billion damage ($18.5 billion insured) during 2003. After adjusting for inflation, economic losses since the 1960s have increased by a factor of about six, and insured losses by a factor of 10.

- According to Munich Re, the heatwave that hit central and eastern Europe last summer killed at least 20,000 people and caused economic losses far exceeding $10 billion. Swiss Re recorded a total of 142 natural catastrophes in the world last year – the highest number since reporting of this kind began in 1970.

- Both Swiss Re and Munich Re cite climate change as being a driving force behind these alarming trends. Both believe that more extreme weather should be expected in the future, and that adaptation – the process of adjusting to this "new normalcy" – will be required.

- The spectre of abrupt climate change and, in particular, the lack of adequate adaptation plans for this phenomenon, have also been raised by credible sources[6]. The US National Academy of Sciences states: "Denying the likelihood or downplaying the relevance of abrupt [climate change] events could be costly."

Although individual weather impacts cannot be explicitly attributed to human induced (anthropogenic) climate change, the aggregate trend is completely clear: climate change will have widespread social and economic implications. The chart below presents a qualitative description of how economic losses in different industry sectors may be distributed.

3 www.abc.net.au/news/newsitems/s1075194.htm
4 www.who.int/mediacentre/releases/2003/pr91/en/
5 FT, October 29, 2002
6 US National Academy of Sciences, '*Abrupt Climate Change: Inevitable Surprises*' (2002)

IMPACT OF CLIMATE CHANGE ON LOSSES IN DIFFERENT BUSINESS SEGMENTS*

	Flood, Storm Surge		Severe Weather, Flash Flood, Hail		Heatwave, Drought, Forest Fire		Cold Weather, Frost	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
Property								
Engineering								
Marine								
Agriculture								
Aviation								
Contingency Risks								
Health								
Life								

Key	Negative Effects			Insignificant	Positive Effects	
	LOW	MEDIUM	HIGH	INSIGNIFICANT	LOW	MEDIUM

Source: 'The Economy of Climate', Topics 2003, Munich Re
* Note: Table shows effects of climate change on classes of insurance in short term (5-10 yrs) and long term (10-30 yrs). It assumes no adaptation is forthcoming within each business segment.

"The challenge of climate change is to accurately interpret increasingly detailed climate projections in terms of their impact on the broad range of sectors that we support"

Barclays Bank
CDP2 Response

"In a carbon-constrained marketplace, GHG emissions will become financial liabilities on many companies' balance sheets."

Westpac
CDP2 Response

Individual companies, sectors and even some commodity markets will need to prepare themselves for the impacts – both positive and negative – of this change:

- Warmer than average weather pushed up benchmark contracts for crude oil, gasoline pump prices, and futures for grain, soy and wheat. Soybeans rose above $10 a bushel for the first time in 15 years as insufficient rain in South America threatened to damage crops[7]. Summer weather could have as decisive a role to play in determining crude oil prices as instability in the Middle East.

- Hurricanes and extreme storms directly impact insurance, hotel and leisure, and oil and gas stocks. Temperature fluctuations can boost or reduce sales in the food, beverage, brewing, retail clothing and entertainment industries. **Citigroup Smith Barney** reported that warmer than average weather across the US during spring 2004 contributed to better-than-expected sales results for **Pepsi** and **Coca-Cola**. Hot summer weather in western Europe helped **Interbrew** achieve organic volume growth of +3.4%, EBITDA of +7.6% and EBIT of +13.2%[8].

- Macroeconomic disturbances caused by climate change may be felt by both established and emerging market investors. Pressures to the public purse for spending on adaptation measures such as flood controls, protection of fragile ecosystems, fortification of coastal zones, development of alternative water supplies and new building codes may affect government fiscal policy. Political support for action to curb greenhouse gas emissions will grow, and lead inexorably towards industry-led emissions cuts. General societal concern may lead to changes in consumer spending habits, advocacy and political lobbying.

7 Bloomberg News, March 19, 2004
8 Dow Jones Newswires, March 3, 2004

"your investments will have a decisive impact on trends in future greenhouse gas emissions, and on our ability to adapt… you can encourage corporations to voluntarily reveal information about how their operations affect, and are affected by, climate change."

U.N. Secretary General
Kofi Annan
Investor Summit on Climate
Risk, New York City,
November 2003

Major banks, institutional investors increase climate awareness

New data on the impact of climate change and developments in the greenhouse gas regulatory agenda have created a fresh sense of urgency among mainstream pension fund trustees, equities analysts, bankers, insurers and portfolio managers that action on climate risk management is warranted. Investors with exposure to high-impact sectors in regions where GHG regulations are imminent are beginning to realize the importance of considering the potential impacts:

- In Europe, major banks including **UBS Warburg, Deutsche Bank, Dresdner Kleinwort Wasserstein, ABN Amro** and **JP Morgan Chase** issued detailed quantitative reports analysing the impact on European industry of the forthcoming EU Emissions Trading Scheme (ETS), due to take effect from January 2005. The German bank **West LB** estimated the Market Value at Risk for the world's equity markets to be between $192 billion and $916 billion[9].

West LB estimated the Market Value at Risk for the world's equity markets to be between $192 billion and $916 billion

- **Abbey National's** board-approved objective since 2002 has been to "assess how we can affect, and be affected by, climate change". In 2003, **ABN Amro** undertook a comprehensive study of the commercial risks and opportunities the bank faced over climate change. **National Australia Bank** Group Economics have specifically developed watching briefs in regard to climate change and carbon finance. The credit risk committee of the board is undertaking specific sector research and "seeking confirmation from" their asset managers **UBS Global Asset Management, CSFB** and **SSGA** that they are taking carbon risks into account during portfolio selection. **Westpac** has begun analyzing the greenhouse gas risk profile of customers in its debt portfolio, and plans to incorporate GHG emissions and "climate change risk" more broadly into its risk assessment policies and practices pertaining to investment, credit, business and insurance activities.

- **Barclays Bank, Deutsche Bank, Fortis, ABN Amro, Bank of Ireland, Goldman Sachs, CDC Ixis** and other banks are reported to be setting up or expanding environmental financial products desks to trade and finance carbon-, renewables- and weather-related products[10].

- At a meeting at the UN in November, addressed by the Secretary General, Kofi Annan, over $1 trillion worth of managed assets gathered for the first US institutional investor summit on climate risk. Key sponsors, presenters and attendees included CalPERS, Goldman Sachs, Bank of America, Lazard Asset Management, Lehman Brothers and INVESCO, as well as 13 US state treasurers. This event marked the launch of the Investor Network on Climate Risk (INCR), whose members include Treasurer's of the states of California, Oregon, Maryland, Maine, Connecticut, Vermont, New Mexico and Comptrollers of the State of New York and New York City.

9 'Carbonomics', West LB Equity Markets, July 2003 (www.research.westlb.com/sri/pdf/climate_change_e.pdf)
10 Environmental Finance, April 2004

"prudent fiduciaries simply cannot afford to be uninformed about the level of risk exposure – and, possibly, the opportunities – in their companies or investment portfolios".

James Martin
Former Chief Investment Officer at TIAA-CREF

- The UK's Institutional Investor Group on Climate Change (IIGCC), whose membership includes Merrill Lynch Investment Managers, BNP Paribas, Credit Agricole, Henderson Global Investors, Schroder Investment Management and USS, held its first conference, also in November, in London, on the theme of "Managing the risks and profiting from the shift to a lower carbon economy".

- In the US, 13 public pension fund leaders collectively managing assets of nearly $800 billion called on the Securities and Exchange Commission (SEC) to "eliminate any doubt" that publicly traded companies should be disclosing the financial risks of global warming in their securities filings.

- Also in the US, state, city and other institutional shareholders, collectively representing more than $250 billion in assets, have filed 30 climate risk-related shareholder resolutions with 23 companies during the 2004 proxy season. At the **Exxon Mobil** annual meeting in May 2003 a resolution calling for a report on climate-change risks received 22.2 % of the vote.

- The United Nations Environment Programme Finance Initiative, whose climate change working group includes **Dresdner Bank, Citigroup, UBS** and **Abbey National,** issued a number of reports and publications on climate risk and carbon finance, including the related **Goldman Sachs** Energy Environmental and Social Index. The **World Economic Forum** launched the Global Greenhouse Gas (GHG) Register to promote corporate GHG emission transparency.

Weather, Catastrophe (CAT) bond markets continue to expand

Investors and companies alike are finding that these new markets offer valuable risk hedging and diversification benefits. As climate change-induced weather extremes exert greater impact on company performance, the utilization of such products is expected to grow.

- Activity in the weather markets has risen considerably in recent years and this looks set to expand as exchange-based trading increases. Although details are sketchy, an estimated 2,500 weather-linked transactions were completed during 2002 with an average value in the range of $1 million. Efforts are under way to increase the appeal of these products outside of the energy sector. Weather-linked bonds that embed derivatives may allow a wider range of investors to take part[11]. Recently, **ABN Amro** was reported to be marketing a $300 million weather bond linked to a portfolio of weather risks[12].

- CAT bond issues have been increasing every year since 1997[13]. CAT bonds also offer attractive returns – spreads over three-month LIBOR typically in the region 400-1,500 basis points – and are not well-correlated with other asset classes, thereby offering the potential to reduce portfolio risk. In 2003, there were between $1.7 and $2.3 billion in new and outstanding CAT bond issues, up just over 50% from 2002. January 2004 saw the world's first CAT bond issued by a utility, **Electricité de France**.

11 Environmental Finance, March 2004
12 Ibid
13 The CAT bond, begun in 1996, is essentially a means by which capital markets investors provide natural catastrophe protection to the (re-) insurance industry. In essence, investors are paid interest by the bond issuers on the understanding that should a catastrophe occur, the bond will be "triggered" and some or all of the capital invested is paid to the bond sponsor — an insurer, reinsurer or corporation — to cover losses.

"If we do not begin to take action on climate change now, more substantial, more disruptive and more expensive change will be needed later ."

Professor Sir David King, Chief Scientific Advisor to the UK Government

The €190 million five-year bond is indexed to wind speeds across France, and was structured and marketed by **CDC IXIS** Capital Markets and Swiss Re. US wind-related transactions were the largest category of securitized perils since 1996.

- Several FT500 companies, notably **ABN Amro, Goldman Sachs, Deutsche Bank, Barclays** and **Swiss Re,** are involved in these markets, whether as a banker, insurer, broker, participant or adviser. Many electric utility firms are also believed to be active in the weather markets.

Carbon regulations are now a fact of life across the OECD

Political commitment to tackling climate risk is now firmly entrenched. Legislation encouraging the transition to low carbon intensity fuels has become a fact of life for FT500 firms across the EU as well as in many parts of the US, Japan, Australia and Canada (see map on page 14). Future deep cuts in emissions appear inevitable. The Climate Group, a not-for-profit organization heading a new coalition of the world's leading reducers of greenhouse gas emissions including, amoung others; UK Government, German Government, California EPA, Connecticut Clean Energy Fund, The State of Victoria, BP, HSBC, Lafarge, Shell Renewables, Swiss Re and the Greater London Assembly, was officially launched on April 27 by the British Prime Minister Tony Blair[14].

In January 2005, over 14,000 entities will begin trading carbon in what promises to be the largest, most liquid carbon market in the world

- As of March 1, 2004, 120 countries had ratified the Kyoto treaty on reducing GHG emissions, representing 44.2% of Annexe 1 (developed country) emissions. Russian ratification remains the critical blockage. At the ninth Conference of Parties to the UNFCCC (COP 9), positive developments were noted on CDM (Clean Development Mechanism) project activity and technology transfer, as well as early discussions about post-2012 scenarios[15]. Attention is starting to turn towards long-term climate policies that will achieve a gradual transition to an essentially emission-free economy[16].

- In June 2003, the EU Emissions Trading Scheme (ETS), the largest visible mechanism being deployed by the EU to achieve the targets set out in the Kyoto agreement, became part of European law. In January 2005, over 14,000 entities will begin trading carbon in what promises to be the largest, most liquid carbon market in the world. More emissions reductions will also need to be achieved through reduced emissions from domestic and low- to medium-scale business users. The policy devices adopted to achieve these reductions are not clear and may lead to unforeseen risks and opportunities.

- National Allocation Plans (NAPs) effectively set out each member state's emissions reduction approach. At the time of writing, nine of the 25 EU countries had submitted final NAPs: Austria, Denmark, Finland, Germany, Ireland, Luxembourg, the Netherlands, Sweden and the United Kingdom. Draft national allocation plans have been developed by Latvia, Portugal, Slovenia, Belgium, Lithuania, Italy and Estonia.

14 See: www.theclimategroup.org
15 J. Pershing, WRI, Environmental Finance 2004, Toronto, March 2004
16 www.european-climate-forum.net/pdf/science_paper.pdf

Canada

Regulatory Landscape

- Climate Change Plan for Canada established 3-pronged approach for 'Large Final Emitters'; Targets for reductions, emissions trading and technology approaches.
- Government establishes carbon price limit of C$15/t subject to various conditions
- New Prime Minister now reviewing effectiveness of Plan

Market-based Mitigation Programs

- Negotiated covenants establish emission intensity targets for industrial emitters (in place by 1/1/08).
- Cap and trade system to be established by 2008/9; free permit allocation equal to ca. 85% forecast 2010 emissions

General Trend in Corporate Awareness

- High among key industry leaders, but majority of firms adopting 'wait and see' stance pending Government review
- Major concerns over capital flight, esp. oil sands, still present

EU

Regulatory Landscape

- Parliament approves emissions trading scheme (ETS) covering 14,000 installations across 25 Member States (including Accession Countries). Scheduled to begin operating 2005.
- Linking Directive (LD) published 7/03. Connects project-based mechanisms (JI and CDM) with EU ETS. Helps 'international-ise' the carbon market.
- No sinks, no nuclear, no large hydro projects to qualify; no grid-connected renewable energy projects as JI.
- Amendments to LD proposed 2/04. Posits, inter alia, future role for forestry, earlier import of CDM and J1 offsets **independent of Kyoto entering into force**.

Market-based Mitigation Programs

- Member States to submit NAPs by March 31 2004. UK NAP widely seen as setting 'benchmark' for others.

General Trend in Corporate Awareness

- Firms are typically highly aware of regulatory developments domestically and internationally. Many are now focused on cost-effective reduction strategies.

China

Regulatory Landscape

- China has ratified Kyoto, but has no current reduction obligations due to its status as a developing country.

Market-based Mitigation Programs

- China has cooperation plans with many countries, including Canada, Australia and the US, to encourage renewable technology production. China has proposed a 5.5% Renewables Portfolio Standard policy

General Trend in Corporate Awareness

- Limited activity, however China committed to increasing wind power production from 400 million watts in early 2003 to 1.4 billion watts in 2005, partially through CDM mechanisms.

United States

Regulatory Landscape

- Primary driving force remains at State level, and firms with international regulatory exposure.
- Over 15 States have GHG mitigation measures or green power targets in place or under development
- Kerry campaign commits to bringing US back into Kyoto negotiations

Market-based Mitigation Programs

- Industry-led initiatives dominate: Chicago Climate Exchange (CCX), Climate Leaders
- Congressional support for GHG measures is strengthening

General Trend in Corporate Awareness

- Vast disparities in levels of awareness
- Leading firms united around voluntary approach but pressing behind scenes for cap and trade approach

Japan

Regulatory Landscape

- Ratified Kyoto Protocol. National emissions reduction commitment of 6% below 1990 levels.
- New CC policy programme adopted March 02.
- 2004 key review year for policy framework

Market-based Mitigation Programs

- Tax on coal @ yen230 in '03, y460 in '05, y700 in '07
- Still at experimental stage in terms of emission trading.

General Trend in Corporate Awareness

- Keidanren's voluntary reduction plan runs 2002-4, covers 35 sectors
- Corporate preparedness strong in cases, limited in many others; voluntary measures key thus far.
- RPS (Renewable Portfolio Standard) envisages 12 bn kWh by 2010. Japanese firms major players in GHG markets

S. America

Regulatory Landscape

- 8 of 12 South American states have ratified Kyoto (exempt from immediate reduction obligations)
- Chile is considering an emissions trading bill that could potentially be linked to an international market in GHG reductions under Kyoto

Market-based Mitigation Programs

- Clean Development Mechanism (CDM) project development is advancing rapidly, however barriers include lack of capital and perception of major market risk

General Trend in Corporate Awareness

- Domestic firms working within early-stage national government programs. Increasing project collaboration with IFC (International Finance Corporation)

Africa

Regulatory Landscape

- Largely in favour of Kyoto Protocol, however signatories exempt from immediate obligation requirements.

Market-based Mitigation Programs

- Africa is the region least represented in current CDM investment portfolios. It is estimated the region is responsible for less than 7% of global GHG emissions. The European Commission has funded two projects with the aim of supporting CDM implementation in Africa

General Trend in Corporate Awareness

- Limited activity, however some international firms, particularly from Europe, have developed relationships with African private sector.

Australia

Regulatory Landscape

- Australia has signed but not ratified Kyoto Protocol. Government nevertheless committed to Kyoto goals ($300 million has been allocated for renewable energy initiatives).

Market-based Mitigation Programs

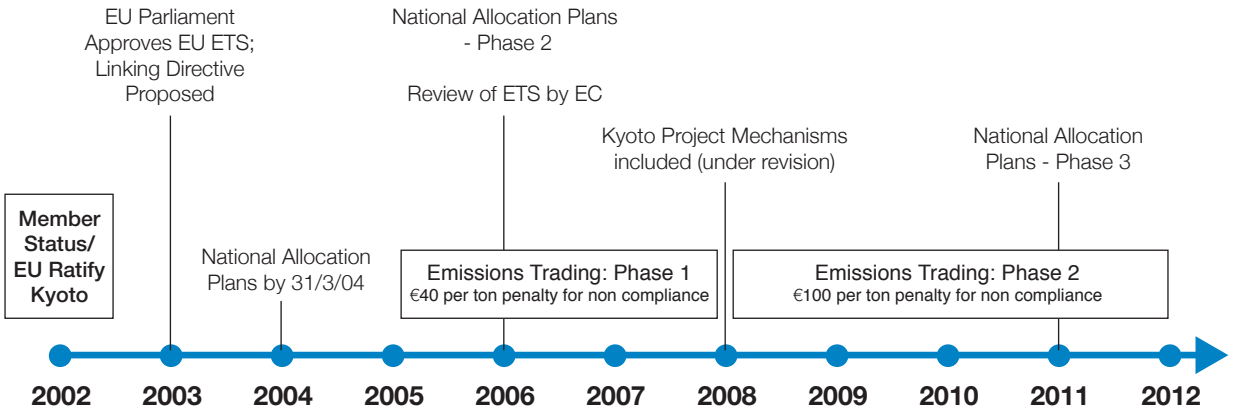
- On July 1, 2003, an agreement was reached between LogicaCMG and New South Wales Independent Pricing and Regulatory Tribunal to launch the world's first GHG trading registry.

General Trend in Corporate Awareness

- Relatively highly aware. Around 190 power stations already run on renewable energy.

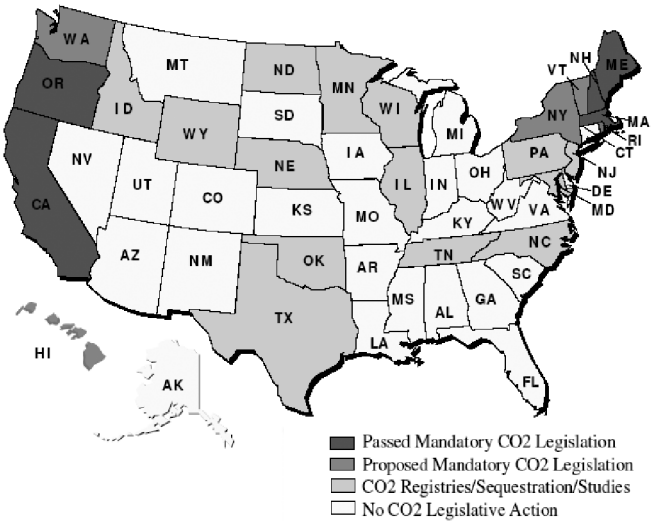
Source: Evolution Markets/Trexler Energy & Climate Services

Implementing the Emissions Trading Directive



Source: P. Vis, 'Implementing the Emissions Trading Directive', European Commission, March 2004

- The market price of carbon will be influenced by factors such as NAP methodologies, Russian ratification of Kyoto, use of Kyoto project-based flexible mechanisms (Joint Implementation and Clean Development Mechanism – JI and CDM), the effects of EU Accession Country participation, fossil fuel prices, GDP growth and weather conditions. **JP Morgan** estimates CO2 prices could fall "substantially" with JI and CDM projects in the market. It predicts prices in the range of €10 per tonne of CO2 to 2008, rising to over €20 into 2010. Whereas McKinsey, a consultancy, predicts that prices within the ETS will be more or less halved between 2007-12 if "full hot air"-based projects are included (i.e. €5-15 per tonne of CO2, compared with €15-25 under a no-hot-air scenario). **DrKW, ABN Amro, Citigroup** and **UBS Warburg** have also made predictions regarding carbon prices.



Source: CO2e.com

SARBANES OXLEY CHANGES DISCLOSURE, ACCOUNTABILITY RULES

The scope and quality of environmental liability reporting has changed under the new disclosure rules determined by Sarbanes Oxley adopted in early 2002. Company directors and officers will now have to personally sign off on financial reporting. Closer scrutiny of environmental disclosure will almost certainly result. CEOs and CFOs will also have to evaluate the effectiveness of rules and procedures for disclosing material information and delegate specific responsibility for identifying and documenting emerging trends in environmental regulation. Sarbanes Oxley also goes beyond GAAP in terms of "fair presentation" of financial condition, which now includes interpreted as "disclosure of financial information that is informative and reasonably reflects the underlying transaction and events and the inclusion of any additional disclosure necessary to provide investors with a materially accurate and complete picture of an issuer's financial condition, results of operations and cash flows."

Source: Innovest/Sarbanes Oxley Act 2002, Section 906

- In the U.S, more than 20 states have passed or proposed legislation on CO2 emissions, or have developed carbon registries, sequestration studies and similar measures. Congressional support for the McCain Lieberman Bill, which calls for a domestic cap and trade system and mandatory GHG emissions cuts, grew considerably in 2003. Attention is now focused on the November 2004 presidential election. The Democrat candidate, John Kerry, has called for a cap and trade emissions reduction programme, and has promised to "reinsert the US into international climate change negotiations"[17].

- Elsewhere, the political scene was quieter, although preparations for domestic emissions trading, carbon taxes and other measures began to firm up. The Japanese environment ministry entered into pilot phase of greenhouse gas emissions trading projects during the first half of 2004. In Canada, the federal government announced a $1 billion investment plan towards the implementation of the Climate Change Plan for Canada. Negotiations with "Large Final Emitters" (i.e. industry) continued; targets based on emissions intensity will be set with a regulatory or financial backstop. A cap and trade system is expected to be in place by 2008.

- **Approximately 29% of the FT500 companies contacted through CDP are located in countries that are included in the EU ETS.** Of those companies, we estimate approximately 32% have facilities covered by the ETS. Much of the burden for GHG reductions is placed on the power sector. However, compliance costs will be felt in other sectors. Anglo American, a metals and mining firm, reports that possible compliance costs per annum for its operations in the period to 2012 could amount to 1% of 2003 operating profit, and that, in the period to 2010, sales revenue could be hit, mainly as a result of lower coal sales to the EU (although these would be offset by the possibility of increased sales of platinum group metals for use in fuel cells).

- Heightened volatility and market uncertainty can be expected in certain key sectors, notably power, energy, insurance, transportation, heavy manufacturing and building/infrastructure. Company shares are beginning to move on account of climate change news. The German energy giants **RWE** and **E.ON** saw their stocks rise 5.2% and 3.5%, respectively, due to the German economy minister's comments on the German National Allocation Plan. Utilities and coal firms doing business in Japan have experienced share price changes on account of climate policy developments.

- In the US, it is clear many firms believe that mandatory national CO2 emissions targets are inevitable. **AEP** stated: "The United States will eventually impose caps on carbon dioxide emissions, despite pulling out three years ago from Kyoto Protocol." **Scottish Power** states that "in the US, it seems clear that, even in the absence of a firm commitment at federal level to a climate change control programme, a variety of instruments aimed at CO2 reduction will continue to be brought forward".

17 See www.johnkerry.com/issues/energy/plan.html

This conviction has led many firms to take voluntary action through, for example, membership of the Chicago Climate Exchange or the EPA Climate Leaders' programme. Of the FT500 companies contacted, 48% are based in the US and many non-US-based firms have substantial operations in the country.

FT500 companies that have joined Chicago Climate Exchange – Ford Motor Company, Dupont, Bayer, American Electric Power, Motorola, Waste Management, International Paper, Stora Enso North America, IBM, Baxter, ST Microelectronics.

FT500 companies that have joined EPA Climate Leaders – 3M, Alcan, Alcoa, American Electric Power, Bank of America, Baxter, BP, Caterpillar, Eastman Kodak, Exelon, FPL Group, Gap, General Motors, IBM, International Paper, Johnson and Johnson, Lafarge, Lockheed Martin, Pfizer, Praxair, PSEG, Raytheon, Roche Group, ST Microelectronics, Staples, Sun Microsystems, Target, Unilever, United Technologies.

Accounting, financial market authorities focusing on environment

Pressure is growing on financial market authorities, fiduciaries, company directors and officers, and accounting bodies to incorporate climate risk factors into best practice.

Awareness of environmental risks and the benefits of environmental good practice is part of the duty of pension fund trustees

- In the UK, the Department of Trade and Industry's Innovation and Growth Team for the Environmental Goods and Services sector recommended that "Government make it clear that awareness of environmental risks and the benefits of environmental good practice is part of the duty of pension fund trustees, where these impact on long-term investment returns"[18]. The terms of reference for the Operating and Financial Review (OFR) Working Group on Materiality include the development of broad principles and practical guidance on how directors can assess whether an item is material to their company and hence whether it must be included in an OFR. This will include the company's impact on the environment[19].

- In the US, the implications of the Sarbanes Oxley Act (made law in 2002) vis a vis environmental risk disclosure, became clearer (see page 16). In Canada, the Canadian Institute of Chartered Accountants makes explicit mention of environmental risk issues in its guidance on the Management's Discussion and Analysis section of company accounts[20]. The International Financial Reporting Interpretations Committee (IFRIC), part of the IASB, is seeking a change to accounting standards so that EU companies can account for the changes in value of GHG emissions allowances in their income statements[21].

- The Financial Services Authority (FSA), the UK's financial regulator, is being pressured by activist groups with respect to shortcomings in listing particulars mostly related to the disclosure of risks to coal mining firm Xstrata's business from efforts to tackle climate change[22].

18 www.eif.org.uk/news/IGT_Summary.pdf
19 www.dti.gov.uk/cld/ofrwgcon.pdf
20 Julie Desjardins and Alan Willis, on behalf of CICA, at 'Best Practices for Canadian Pension Funds and Institutional Investors: a report on the Climate Change and Investment Risk Workshop', Canadian Social Investment Organization, March 11, 2004, in Toronto
21 www.pointcarbon.com/article.php?articleID=2911&categoryID=259
22 www.environmental-finance.com/2003/0302feb/news.htm

This shift in perspective was captured recently in a research note by German bank West LB Panmure (July 2003):

"This litigation could be a catalyst or a trigger for markets to really look at climate change issues, not only with respect to the expected costs of litigation, but also in terms of a general economic assessment… Before September 11, nobody really thought about the risks or effects of terrorist attacks on equity market valuations, but afterwards, the threats of terrorism were more perceived and dominant, and this led the markets to price in the effect. Climate change litigation will similarly arouse the interest of the markets and raise the perception of the topic."

- Opinions that actuarial data may become flawed are being voiced: "Actuaries base long-term financial assumptions on the links between economic variables, such as investment return, interest rates, inflation and salary increases, which have historically been stable. It is possible climate change will 'unbundle' these variables, leading to greater unpredictability of pension and insurance costs."[23].

Climate change litigation, trade regulation effects more discernable

As national and regional climate regulation regimes take shape, we anticipate that the threat of climate litigation against major industrial emitters will rise.

- The beginning of public law challenges in 2002, with the collaboration of US cities, NGOs and citizens against the US export credit bodies[24], was followed by 12 US states, American Samoa, cities and prominent NGOs challenging the failure of the US Environmental Protection Agency to regulate greenhouse gas emissions under the Clean Air Act[25].

- Over the past year or so, the public law relevance of climate change has been accepted by US courts[26]. A Californian appeals judge has rejected the idea that "injury to all is injury to none" where "global environmental impact is threatened by a federal statutory wrong"[27], and the Inuit Circumpolar Conference has announced its development of a case against the US in the Inter-American Commission for Human Rights[28]. Of potentially greater direct impact on companies is the possibility of legal cases in which damages and monetary compensation are claimed. Legal commentators in both the US and UK have already suggested that these actions could succeed[29], although establishing legal responsibility for climate change by specific actors will be challenging. As reported by InsideEPA.com, "environmentalists and state attorney-generals are honing potential legal strategies to file tort suits against companies over their alleged contributions to global warming"[30]. On this front, environmentalists launched an international and collaborative effort to enforce the law to combat climate change[31], and began to estimate the contribution of specific companies to temperature increases, starting with Exxon Mobil[32]. Meanwhile, tort lawyers' letters were received by the directors of selected Australian companies identified as major emitters and facilitators of greenhouse gas emissions, warning them of the financial risks they faced[33].

- Arcelor, one of Europe's largest steel makers, filed a legal challenge against the EU ETS in early 2004. Although the case has little likelihood of success, commentators believe that it may spark other cases against the ETS and the National Allocation Plans themselves.

- 2003 also saw more legally significant developments of climate change science, which will help climate change victims in seeking compensation. For the first time, human influence on a climate variable other than temperature – sea-level pressure – has been found[34]. Three studies found

23 www.the-actuary.org.uk/monthsissues_frames/articles/03_05_05.asp
24 www.climatelawsuit.org/2002-08-26_Complaint.pdf
25 Commonwealth of Massachusetts, et al., Petitioners v. Environmental Protection Agency, Respondent, and Alliance of Automobile Manufacturers, et al., Intervenors, US Court of Appeals, DC Circuit, Case No. 03-1361 (consolidated with 03-1362, 03-1363, 03-1364, 03-1365, 03-1366, 03-1367 and 03-1368). www.ago.state.ma.us/press_rel/202petition2.asp?searchStr=1
26 Border Power Plant Working Group v. Dept. of Energy, et al., No. 02-CV-513-EIG (POR), Order dated May 2, 2003 (US District Court for the Southern District of California); Mid States Coalition for Progress v. Surface Transp. Bd., 2003 US App. LEXIS 20245 (US App., 2003)
27 Judge Gould in Covington v Jefferson County, US Court of Appeals, 9th Circuit, February 5, 2004. Full court judgment here: www.ca9.uscourts.gov/ca9/newopinions.nsf/D0B2D3557486B9D488256E31005D99FA/$file/0236000.pdf?openelement

If the Kyoto Protocol is not ratified, there may be an increasing likelihood that courts will see it as their role to intervene to fill the vacuum left by policymakers.

Governments will be major buyers of GHG offsets.

Several European governments are making plans to become purchasers during 2004.

human influence on regional temperature increases during the 20th century (all covering the US)[35]. A means of calculating how human activities have increased the risk of extreme events has been published.[36] And the "Ad hoc group (of climate scientists) for the modelling and assessment of contributions of climate change (MATCH)" have made progress with efforts to assess methods for calculating the contribution of different emission sources to climate change and the various impacts[37].

- If the Kyoto Protocol is not ratified, there may be an increasing likelihood that courts will see it as their role to intervene to fill the vacuum left by policymakers. Activist will primarily seek to ensure their actions are not struck out. If they succeed to this point, it would lead to extensive scope for cross-examination of executives and allow lawyers to trawl through corporate databases. Following the lead of successful tobacco litigation, claimants lawyers would be looking for evidence that defendants knew about their products' role in causing climate change, but were arguing against the connection, and were doing nothing, or actively opposing government action. Corporations can expect to face defence costs, lost management time and risks to corporate reputation.

- Countries most dependent on fossil fuels are expected to attempt to use trade rules to challenge domestic regulations that make it more costly for their products to compete with lower carbon alternatives. Loose talk of challenging international emissions trading in the World Trade Organization (WTO) has not been acted on. Progress on structured negotiations around priority environmental goods and services could lead to rapid consolidation of multilateral agreements. This could provide an opening for the WTO to help build global markets for climate change solution products and services, via the removal of barriers to trade and investment in the low carbon technology sectors.

Environmental markets can enhance project returns, hedge risk

The emerging GHG, weather and green power commodity markets are providing clear opportunities for firms to boost cash flow, hedge risk, raise capital, smooth earnings volatility, diversify investment holdings, generate new business and gain competitive advantage.

- The global carbon market has doubled in size in each of the past 2 years. Some 70 million tonnes of CO2e was traded during 2003 across all markets, against a total since 1996 of roughly 220 million tonnes[38]. A hierarchy of credit quality is emerging, with prices ranging from $2 to $16 mtCO2e, depending on contract type. Carbon funds were announced by the **Development Bank of Japan,** the **Japan Bank for International Cooperation,** German bank **KfW, CDC IXIS, Rabobank** and **EBRD**.

- Energy exchanges, including the London-based International Petroleum Exchange, the New York Mercantile Exchange, the European Energy Exchange and the Chicago Climate Exchange, are now competing for the privilege of listing ETS and other emissions contracts.

28 The full ICC resolution is here: www.inuit.org/index.asp?lang=eng&num=244. Press coverage here: BBC - www.bbc.co.uk/radio4/today/listenagain/zthursday_20031211.shtml; Reuters - www.reuters.com/newsArticle.jhtml?type=topNews&storyID=3973966

29 'Warming up to a not-so-radical idea: tort-based climate change litigation', Grossman, D., 28 Colum. J. Envtl. L. 1; Richard Lord, QC, 'Climate Change – A common law perspective', presented at a Climate Change Litigation seminar at Brick Court Chambers on February 11, 2004, chaired by Sir Sydney Kentridge QC

30 Clean Air Report via InsideEPA.com, February 26, 2004. Issue: Vol. 15, No. 5.

31 The Climate Justice Programme: www.climatelaw.org.

32 www.exxonclimatefootprint.com

33 www.cana.net.au/index.php?site_var=333

34 Detection of human influence on sea-level pressure, Gillett, N.P., Zwiers, F.W., Weaver, A.J., and Stott, P.A., Nature, March 20, 2003

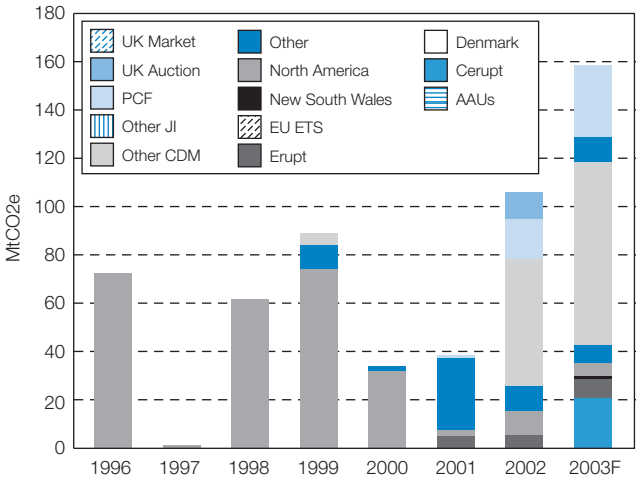
35 'Toward Regional-Scale Climate Change Detection', Zwiers & Zhang, (March 2003, Journal of Climate); 'Attribution of regional-scale temperature changes to anthropogenic and natural causes', Stott, P.A., (July 2003, Geophysical Research Letters); 'Detection of a Human Influence on North American Climate', Karoly et al., (November 2003, Science)

36 Liability for climate change: will it ever be possible to sue anyone for damaging the climate? Allen, M., 892 Nature, Vol 421, February 27, 2003

37 www.match-info.net.

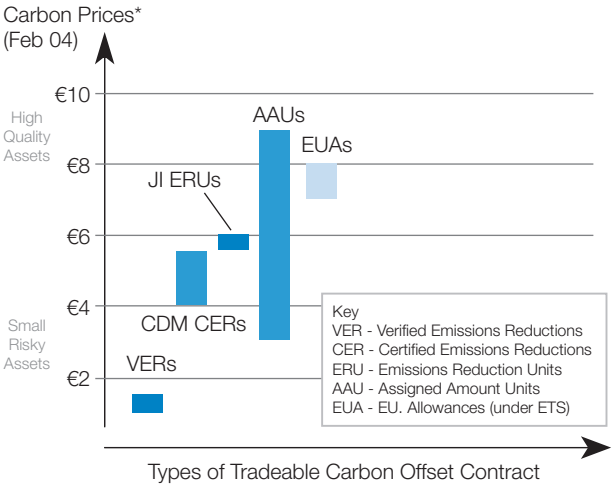
38 World Bank Prototype Carbon Fund Annual Report: State and Trends of the Carbon Market 2003.

GHG Trading Volumes...



Source: Point Carbon

.....and Prices



Source: CO2e.com/ Carbon Finance conference, Toronto, March 2004

John Browne, Group CEO, BP 26 November 2003:

"I don't think we're likely to see the sudden emergence of a single global trading system – that would be comparable to the emergence of a single global currency - but I do think there would be value in the development of the existing European emissions trading scheme as a "strong" currency - with its strength reflecting the rigour with which it is applied. A strong currency of that sort would enable all the many different fragmented activities and efforts to reduce emissions which are underway across the globe to be valued on a common basis."

39 Environmental Finance, October 2003
40 V. Bishop, World Bank Carbon Finance Business, Environmental Finance Conf, Toronto, March 2004
41 CDM & Project Finance: Issues and Opportunities, IFC, Carbon Finance 2004, Toronto, March 2004

- Governments will be major buyers of GHG offsets. Over 50% of project-based offset purchases during 2003 were made by the Dutch government and the World Bank's Prototype Carbon Fund. Several European governments are making plans to become purchasers during 2004. The Danish government recently announced plans for a $125 million allocation to carbon offsets from JI and CDM projects[39].

- Advanced carbon finance engineering techniques can provide a valuable source of additional cash flow in project settings. The early indications are that increased cash flow from carbon finance can boost internal rates of return (IRRs) by as much as 2% for renewables and energy efficiency projects, and up to 15% for methane-capture projects[40]. The International Finance Corporation (IFC) reported positive carbon impacts on projects in renewables in the region 3-6%[41].

Technology	IRR Increase @ $4/tCO2e
Hydro, Wind, Geothermal	0.5% – 2.5%
Crop/Forest Residues	3% - 7%
Municipal Solid Waste	5% - 15%

Source: World Bank Carbon Finance Business

- Revenue from the trading of renewables obligation certificates (ROCs) – also known as renewable energy certificates (RECs) or green tags – can represent a substantial proportion of the revenues flowing to renewables developers, and can be a key factor in the decision of bankers and investors to finance new projects[42]. In the UK ROCs market, the buy-out price for the year (April 1 to March 31, 2005) has been set at £31.39/mwh[43].

Two-thirds of EU utility companies expect wholesale power prices to rise by up to 20%

In the metals and mining sector a 5%increase in energy costs could reduce share price by approximately 10%

- A triple-market convergence of weather securities, GHG offsets and energy (including RECs) has begun to emerge. Integration of contracts from these previously separate areas of activity now seems inevitable.

- Looking ahead, significant obstacles to greater market expansion still remain in place[44]. Poor clarity around the establishment of title to offsets, uncertainties in the performance of offset vendors over what are often long-term forward contracts, and vendor credit risk (the majority of credit vendors are not investment-grade entities) are major deterrents to large carbon buyers. Contractual issues, project risk management and accounting, taxation and disclosure issues are also factors of increasing relevance.

Wholesale power price volatility likely to rise

Responses confirm that FT500 firms are concerned that attaching a cost to emissions of CO2 will raise energy costs. Indeed, climate policy developments will have important consequences for power generation costs, fuel choices, wholesale power prices and the profitability of many industrial companies.

- Two-thirds of EU utility companies expect wholesale power prices (WPPs) to rise by up to 20% (a fifth expect increases of 20-40%) due to the ETS. Utilities analysts at brokerages **ABN AMRO, DKW, Citigroup, Deutsche Bank** and **UBS Warburg** all predict dislocations in European utilities sector due to the EU ETS.

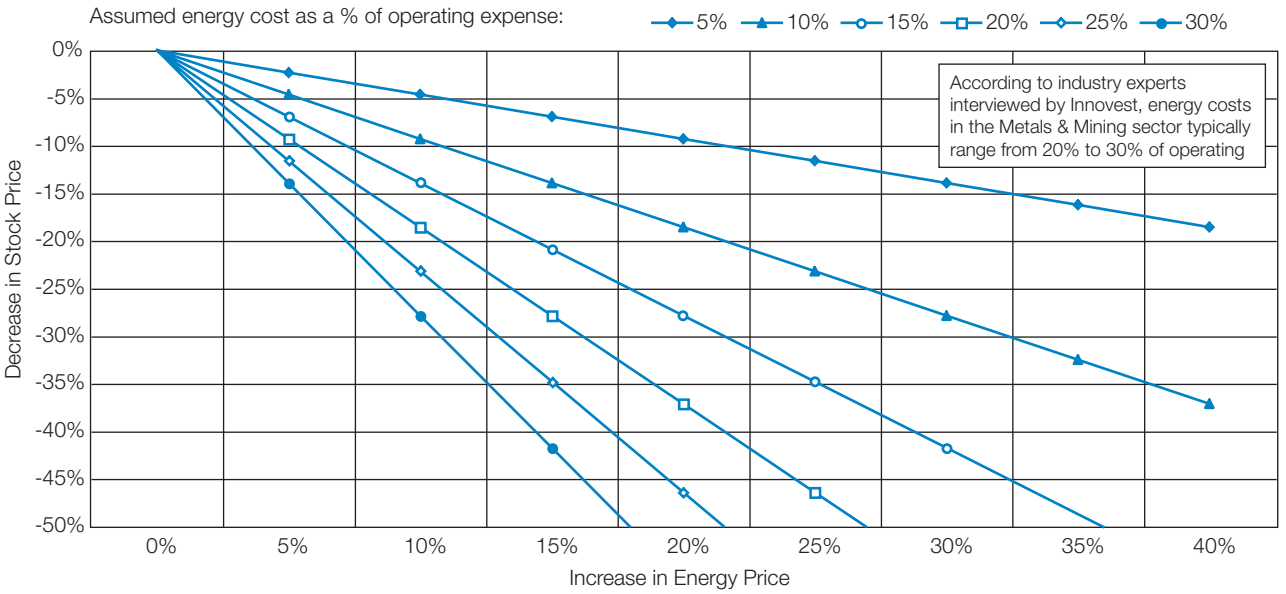
- Attaching a cost to the emission of CO2 fundamentally transforms the cost hierarchy of the available fuel alternatives for generating electricty. Spot wholesale prices are predicted to rise across the board by an amount broadly equal to the additional cost of emitting CO2 by marginal generators[45].

- The impacts of this on energy-intensive industrial companies could be significant. Higher electricity prices across the EU will reportedly mean additional costs of almost €600m ($720m) per year for the European steel industry, €500m/yr for the pulp and paper business, and €260m/yr for the cement, lime and glass industry[46].

- For companies that require large amounts of energy, this poses a direct threat to earnings and share valuation (see chart on page 22). We estimate that in the metals and mining sector, for example, a 5% increase in energy costs could reduce share price by approximately 10%. In the UK, policymakers expect the extra carbon costs will result in a 6% increase in industrial power prices, based on a carbon price of €5/tonne.

42 Under these systems, electricity suppliers are generally are required under the terms of a renewable portfolio standard (RPS) or equivalent to source a proportion of their power portfolio from green sources. Compliance may be achieved by the purchase of these certificates.
43 London (Platts)-11Mar2004/745 am EST/1245 GMT In March 2004)
44 See, for example, refer to IETA work and to Evelyn Walker (TransCanada Pipeline) pres to Carbon Finance 2004, Toronto.
45 WWF PowerSwitch! Impacts of Climate Policy on the Global Power Sector (www.panda.org)
46 Source: Carbon Finance, Feb 2004. These numbers are reportedly based on a €10/t CO2e cost and a jump in marginal power prices of €7/MWh, figures that are well below the predictions made by investment banks.

Effect of increase in energy cost on stock price
at various assumed levels of energy cost as a % of operating expense
Metals and Mining Sector



Source: Innovest (see Appendix B for methodology)

More than $2.5 billion has been invested in cleantech ventures over the past two years

Clean technology markets get fresh attention from investors

The development of low carbon technologies is a key pillar of FT500 respondents' climate risk management strategies. The fundamental growth prospects for this industry continue to impress (see Appendix C: *Renewable Energy and Clean Technology Market Overview*). Over the past 18 months, momentum in the public and private clean technology markets has picked up:

- More than $2.5 billion has been invested in cleantech ventures over the past two years – a near quadrupling of the market[47]. Energy related investments, historically low, are now particularly fast-growing, up 80% between 2002 and 2003[48]. Equity market financings in clean technology over 2003/4 exceeded $350 million in North America. Global wind power installed capacity grew by 26% to 39,000 MW in 2003, an increase worth some $9.7 billion (€8 billion)[49].

- Pension funds are becoming key players in this market. The "Green Wave" environmental investment initiative in California calls on pension fund giants CalPERS and CalSTRS to commit $1.5 billion to clean technology investments. The Clean Energy States Alliance (CESA) expects to have about $3.5 billion collectively for clean energy tech over the next decade.

- Concerns over energy security and power market volatility, consumer demand for clean technology goods and services, advancing renewables technology, plus recent events –such as the US/Canada power blackout of August 2003, the war in Iraq and the passage of the US Energy Bill – are making these markets increasingly attractive. Rising fossil fuel prices or another oil supply crunch could cause substantial upward momentum.

47 See www.cleantechventure.org
48 Ibid
49 AWEA, EWEA/Environmental Finance, April 2004

- In recent months, 14 deals in US markets totalling over $250 million, and four in the Canadian markets totalling some C$113 million have been consummated. Of the two initial public offerings in Canada since January 2004, one, CO2 Solution Inc, is explicitly based on carbon sequestration.

Recent Energy Technology Financings - US

Name	Segment	Offering	Amount	Bookrunner/Manager	Date
Plug Power	Power Tech/ Fuel Cell	Public Offering	US$58.5 m	Citigroup, Stephens	13/11/03
Millennium Cell	Hydrogen Gen./ Fuel Cell	Private Placement	US$10 m	Unknown	20/1/04
Energy Conversion Devices	Advanced Industrial Technology	Private Placement	US$25 m	Nolan Securities	7/11/03
Mechanical Tech.	Fuel Cell/ Instruments	Private Placement	US10-26 m	Fletcher International	27/1/04
UQM Technologies	Power Tech/ Fuel Cell	Public Offering	US$2.4 m	I-Bankers Securities	16/10/04
Headwaters Inc.	Advanced Technology	Public Offering	US$86.3 m	Morgan Stanley	23/12/03
Arotech Corp	Power Tech	Private Placement	US$18.5 m	Unknown	8/1/04
IMPCO	Catalysts/ Emissions Control	Private Placement	US$9.6 m	Adams, Harkness, Hill	22/12/03
Evergreen Solar	Solar/PV	Private Equity	US$29.5 m	Syndicate led by Perseus	15/5/03
American Superconductor	Power Tech	Public Offering	US$51.1 m	Needham, William Blair, RBC Capital Markets	3/11/03
WCA Waste Corp.	Waste Management	IPO	US$97.8 m	Freidman, Billings, Ramsay	9/3/04
Ultra Clean Holdings	Advanced Technology	IPO	US$100.1 m	CSFB	22/4/04

Recent Energy Technology Financings - CANADA

Name	Segment	Offering	Amount	Bookrunner/Manager	Date
Hydrogenics	PEM fuel cells, testing	PO	C$60 m	Citigroup, with NBF and TD Securities	3/2/04
Stuart Energy Systems	Hydrogen fuel cells	PO	C$21 m	NBF, with CIBC WM and RBC	12/2/04
Carmanah	Solar/LED systems	Private Placement	C$6 m	Canaccord Capital	3/2/04
Railpower Technologies	Power technology	Private Placement	C$12.5 m	NBF, Paradigm	6/11/03
Canadian Hydro Developers	Power Generation	PO	C$30 m	First Energy with Acumen and Canaccord	11/7/03
Xantrex	Advanced power tech	IPO	C$67 m	RBC, CIBC WM, UBS 10/2/04	Filed
CO2 Solution Inc	Carbon sequestration	IPO	C$4 - $1.5	CTI Capital 26/1/04	Filed

IV. Analysis of CDP Responses

For the FT500 companies, the need for a climate risk management strategy is clear:

- **Policymakers require it**
- **Shareholders are asking for it**
- **Competitors are necessitating it**
- **The market expects it**
- **Society demands it**

The results of this year's survey reflect an increased sense of urgency with respect to climate risk and carbon finance among the FT500 compared with last year. CDP responses are more numerous, more diversified by geography and industry, and more sophisticated in content than previously.

We estimate that, on aggregate, the total emissions reported to CDP2 across all sectors was 2,886,033,085 tonnes CO2e. This corresponds to roughly 13% of all emissions from fossil fuel combustion worldwide.

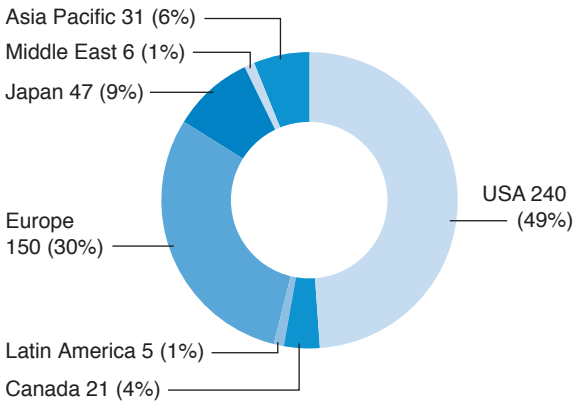
Response rates rise, geographical representation more diverse

This year, of the 500 companies contacted, 293 (59%) completed the questionnaire (in CDP1, this number was 235, or 47%); 33 (7%) referred CDP to other corporate literature or responded with a short letter (CDP1: 41, 8 %); 77 (15%) declined to respond (CDP1: 90, 18%), and 71 (14%) did not reply (CDP1: 134, 27%). At the time of writing, 26 companies (5%) report that the questionnaire is forthcoming.

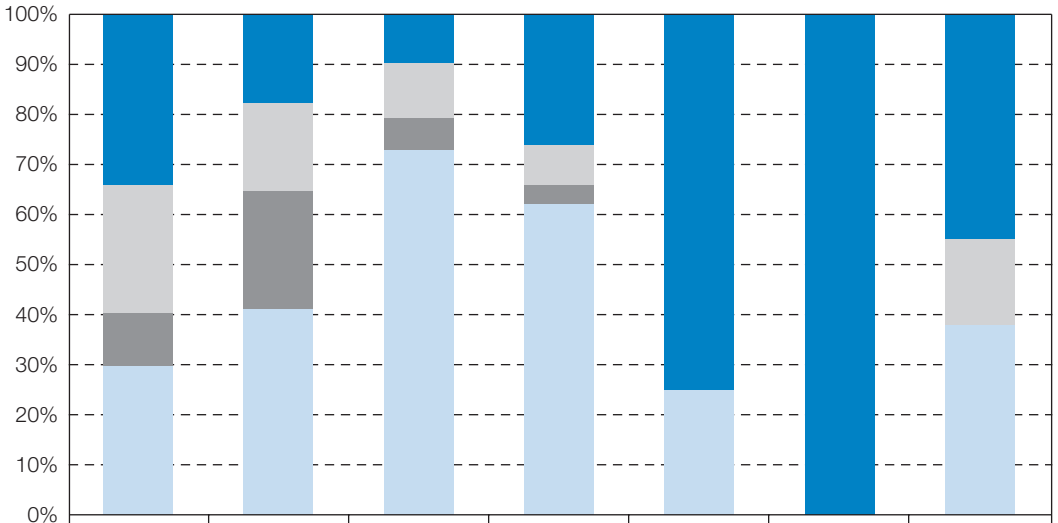
In terms of geographical representation (defined by location of company headquarters), the FT500 comprises 150 companies from Europe, 240 from U.S., 21 from Canada, 47 from Japan, 42 from Rest of World.

As was the case last year, the majority of respondents were from European-based firms. However, the percentage of non-European respondents – notably US based firms – increased appreciably.

Geographical Location of FT500 Headquarters

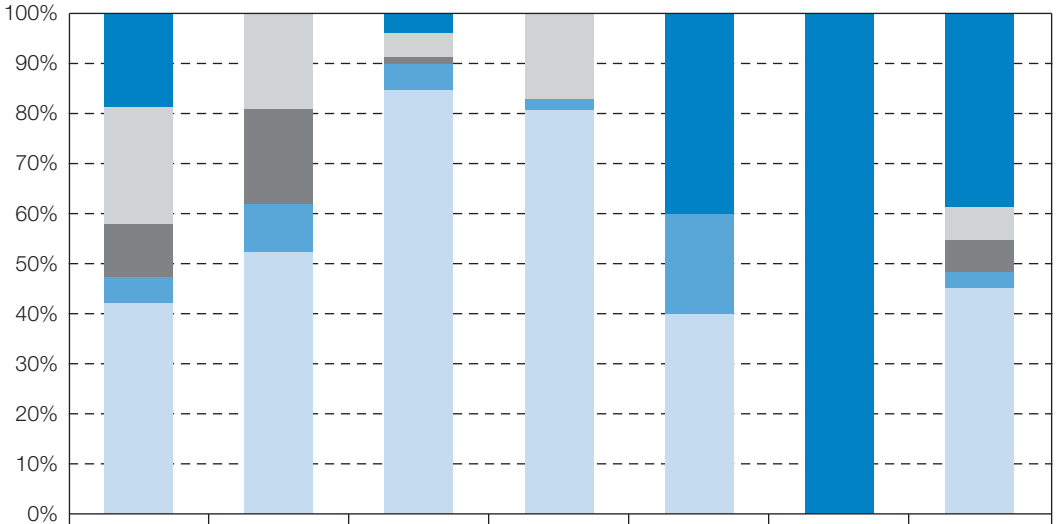


Response Rate by Geography (CDP1) Final Adjusted Figures



	USA 238	Canada 17	Europe 155	Japan 50	Latin America 8	Middle East 3	Asia Pacific 29
No Response	81	3	15	13	6	3	13
Declined To Participate	61	3	17	4	0	0	5
Provided Information	25	4	10	2	0	0	0
Answered Questionnaire	71	7	113	31	2	0	11

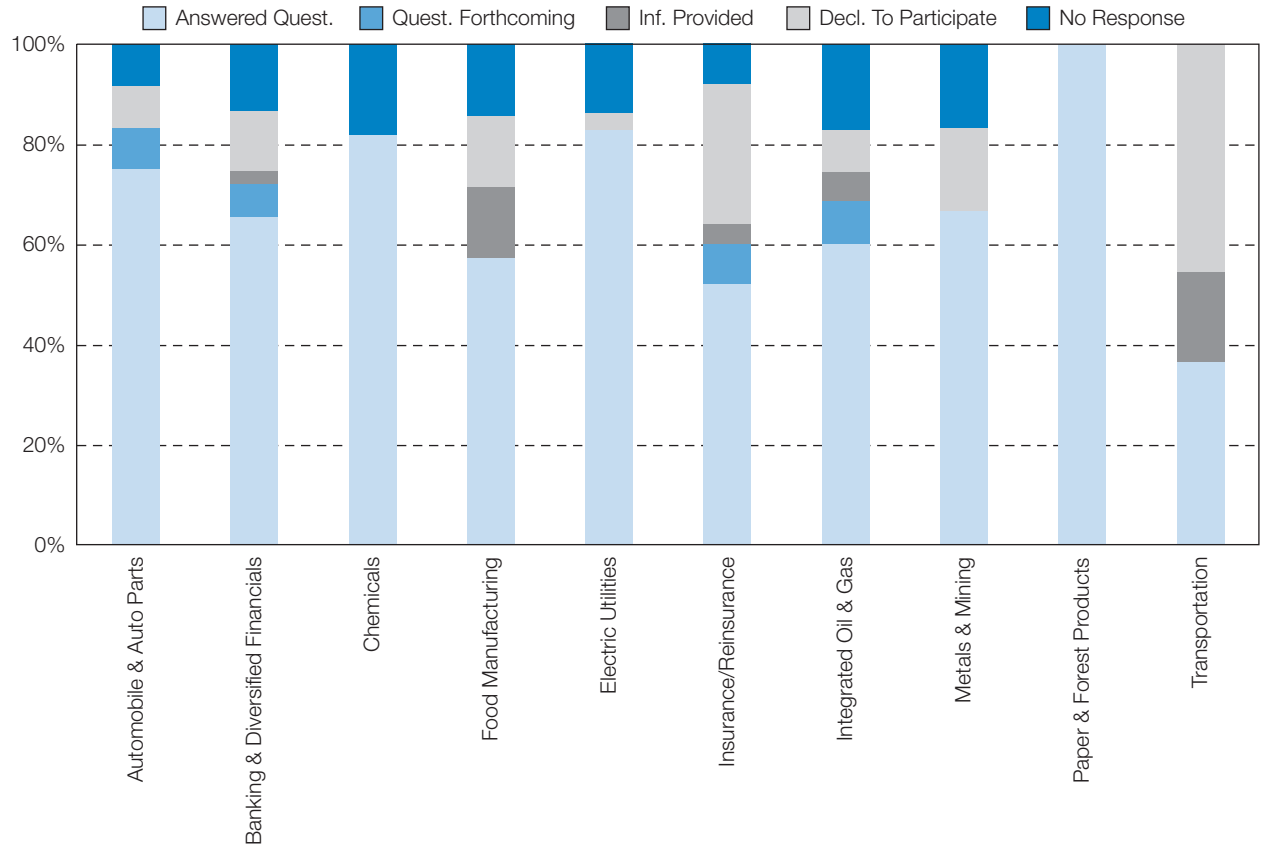
Response Rate by Geography (CDP2)



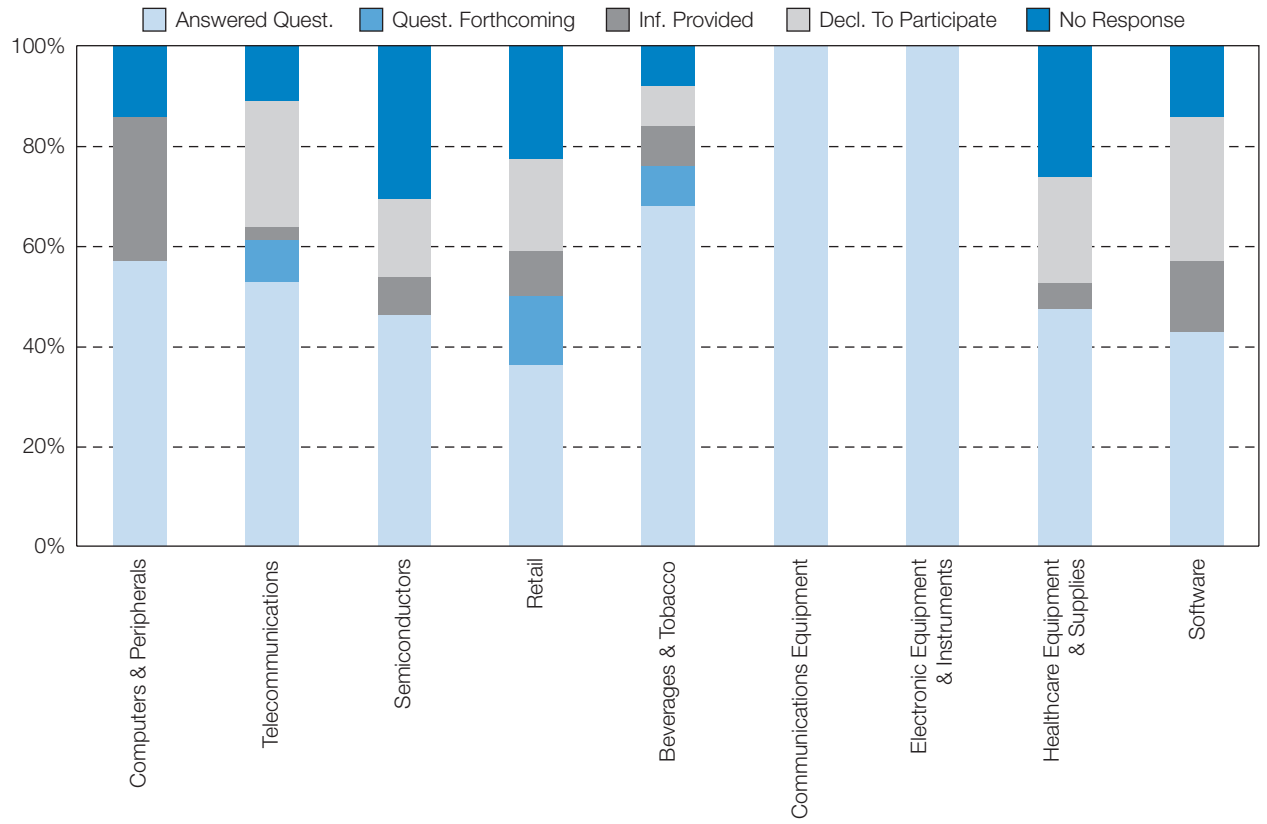
	USA 240	Canada 21	Europe 150	Japan 47	Latin America 5	Middle East 6	Asia Pacific 31
No Response	45	0	6	0	2	6	12
Declined To Participate	56	4	7	8	0	0	2
Provided Information	25	4	2	0	0	0	2
Questionnaire Forthcoming	13	2	8	1	1	0	1
Answered Questionnaire	101	11	127	38	2	0	14

Not surprisingly, response rates were higher once again among firms in carbon-intensive industries, although companies in the communications equipment, electrical equipment, beverages and tobacco, and computers and peripherals sectors also appear to be more aware of the issues involved than might be expected, which shows companies increasingly identifying risks and opportunities from their product life cycles and supply chains. Broadly speaking, companies from a wider cross-section of industries appear to be more engaged on the issue than last year.

High Impact Sectors: Breakdown of Responses (CDP2)



Medium Impact Sectors: Breakdown of Responses (CDP2)



In terms of the content of these responses, we note the following:

- Of the 16 transportation companies (includes Air Freight and Couriers, Airlines, Surface Transport, and Trading Companies and Distributors), eight responded with quantitative data. In CDP1, five out of 12 responded with measured data. This represents an improvement in response rate of 8%.

- Of the 11 auto companies contacted this year, seven provided quantitative information. In CDP1, six of the 11 responded quantitatively. This represents an improvement of 9%.

- Of 11 chemical companies, seven provided what we consider to be high quality data. Last year, we received such data from five out of nine companies. This represents an improvement of 8%.

- Of 18 international electric utilities firms, 14 presented data in their responses (although two redirected CDP to an environmental report). In CDP1, 11 out of 12 firms provided emissions data. This represents a decrease in response rate of 14%.

- Of 11 North American electric utilities, nine provided quantitative responses. In CDP1, five out of 12 respondents reported emissions data. This corresponds to a 40% increase.

- Of 23 integrated oil and gas companies, 16 provided emissions data this year. In CDP1, nine out of 19 companies supplied emissions data. This represents an improvement of 23%.

- Of eight metals and mining firms, five reported emissions both this year and last.

Trends in FT500 climate risk awareness and management begin to appear

A comparison of responses with last year highlights revealing trends in corporate climate risk awareness and management. In terms of the quality of responses, we found there was a general improvement in the depth of content and the level of awareness of the issues at stake.

- *In general, leading companies that had a firm grip on the relevant risks and opportunities in CDP1 hold those same perceptions in CDP2*. Many firms have set reduction targets over five years or further and seem convinced that achieving these goals is a strategic imperative. Less impressively, we note that many firms either provided short responses that lacked sufficient data, or simply restated their response from last year. Many companies – generally those with fewer ticks in boxes in the sectoral guidance notes in Appendix A – remain behind the curve or unwilling to disclose their activities to the CDP and in other published corporate literature.

- *The percentage of FT500 companies that consider climate change to present risks and opportunities to their business grew, from 39% to 45%.* The majority of this increase came from the banking, electric utility, integrated oil and gas, pharmaceuticals and food sectors. Evidence of concrete actions being taken to respond to climate risks and opportunities is more widespread. More firms are also quantifying GHG emissions. Last year, 51% of respondents in high-impact sectors reported they were measuring and reporting GHG emissions. This year, that number has grown to 65%.

- *For those firms providing high-quality information, corporate climate strategies appear to have become more coherent and more comprehensive.* Many firms have established multi-disciplinary teams to manage the climate risk file. **Anglo American** has formed a Carbon Working Group that brings together information and expertise from across the enterprise. **PetroCanada's** Global Climate Change Team is an internal cross-functional body with representatives from all business segments of the corporation, established in 1998. **ABN Amro** has formed a cross-functional Climate Change Working Group comprising representatives from the Financial Markets, Group Risk Management, Consumer and Commercial Clients, Equities, Integrated Energy, Project Finance, Environment and Social Risk Management and Corporate Communications business units. **Shell** has created an Environmental Products Trading Business (EPTB) with sole responsibility in the Group for emissions trading and managing the overall Group approach to the various markets. Other firms with particularly strong multifunctional climate-risk management teams include **Rio Tinto**, **Alcoa** and **ENI**. The only company that identifies the CEO as having primary responsibility for climate change was **BP**.

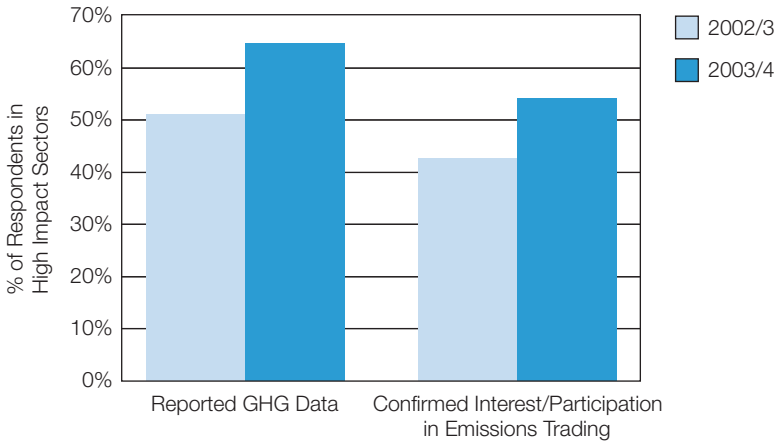
Reported emissions data is generally more complete

- *Measurement systems are becoming more rigorous, with greater uptake of standardized measurement systems* such as the WSI/WBCSD GHG Protocol, the World Economic Forum GHG Registry and the California Climate Registry (see chart below). For example, **Suncor's** GHG management system will follow international standards such as the ISO 14001 and the GHG Protocol Initiative. Others, such as **ChevronTexaco**, which uses the SANGEA™ Energy and Emissions Estimating System developed from the American Petroleum Institute Compendium of Greenhouse Gas Emissions Estimation Methodologies for the Oil and Gas Industry (API Compendium), have developed their own measurement tools.

- *Signs of progress are also evident in other sectors.* For example, the number of banks reporting an involvement in renewable energy initiatives more than doubled compared with last year (see chart on page 29).

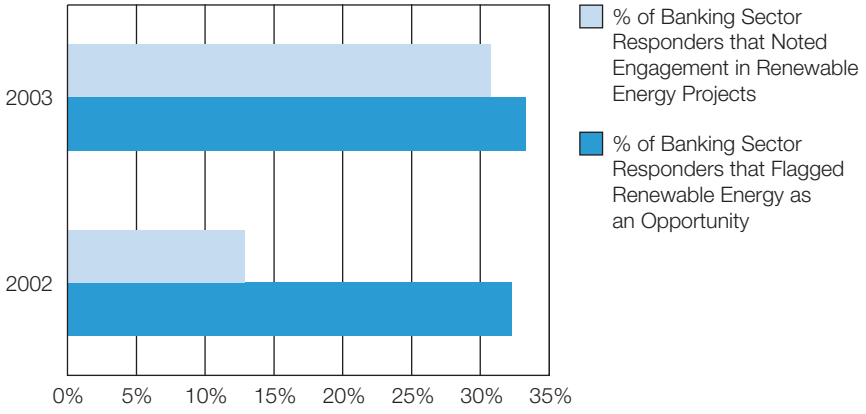
50 The CDCF will finance small and medium-sized projects to reduce greenhouse gas emissions, in particular in poorer developing countries. In return, participants in the fund will receive certified emission rights for greenhouse gases. It is intended that such projects will in future be recognized as "Clean Development Mechanisms" (CDMs) under the terms of the Kyoto Protocol.

High Impact Sectors: Reporting and Trading



Last year, 51% of respondents in high-impact sectors reported they were measuring and reporting GHG emissions. This year, that number hasgrown to 65%

Banking and Renewables



This type of trend analysis is explored on a sector-by-sector basis in Appendix A of the report.

- *As the environmental commodity markets expand, interest and engagement in emissions trading activity across the FT500 firms also appears to be growing;* of the 129 respondents in high-impact sectors last year, 43% reported involvement of some sort in emissions trading. This year, 54% of firms say they are involved in such trading, including the following cross-section of companies:

  - **BASF** is participating in the World Bank's Community Development Carbon Fund (CDCF)[50] , a pilot project to test the mechanisms of the Kyoto Protocol for global climate protection. **BASF** has agreed to provide $2.5 million over a period of about 15-17 years.

  - **Mitsui** participates in the World Bank's Prototype Carbon Fund (PCF), with investment of $6 million. They expect that Emission Reduction Units equivalent to about 1.2 million tonnes of CO2e will be distributed as a dividend. **Electrabel** has also invested $5 million in the PCF.

  - **Sanpaolo IMI Group** companies Banca OPI and its subsidiary Finopi are collaborating with various international partners to structure a dedicated climate-related fund to invest in GHG credits in the new emissions trading markets.

- **Statoil** is developing a "Carbon Treasury" as the single operational interface with the emissions trading market. The treasury will be overseen by the Senior Vice President Group Finance. Its offshore installations paid about $114 million in CO2 tax in 2003 and it expects participation in the EU ETS will allow it to cut these costs by approximately 30%.

- **BHP Billiton** is developing relationships with counterparts in the European emissions trading market and expects, in the medium term, to consider opportunities to staple carbon credits to the sale of its greenhouse gas intensive products (e.g. coal) into Europe and Japan.

- **ABN Amro** has developed in-house models to analyze the EU emissions trading regime, and examine demand and price scenarios and market supply dynamics, in an effort to enhance its capability to meet client needs.

- **RWE** reports emission trades in the UK and Denmark and via a European Pre-Compliance trade.

- A subsidiary of **Kansai Electric** has made an investment in Natsource Japan, a CO2 broker, in the hopes of gaining trading know-how and new consulting business.

- **Shell** has created an Environmental Products Trading Business (EPTB) to coordinate the company's engagement in emissions trading and to manage its approach to the various markets. The EPTB has engaged in early-stage trading via the UK Emissions Trading System, while individual business units are expected to estimate the cost of CO2 abatement opportunities in all refineries.

- **Scottish & Southern** Energy has partnered with external consultants to assess the impact of the EU ETS on its business, and is analyzing the optimum carbon management of its power generation portfolio.

- **Mitsubishi Estate** has joined the trial implementation of Japan's domestic emissions trading scheme.

- **Dexia** launched in the first quarter of 2004 a financial engineering solution that allows the bank to support GHG-reducing investments by local authorities by "upgrading" the future financial value of the emission quotas generated by these projects.

• *The potential for greater energy price volatility has meant that energy risk management and energy efficiency initiatives are taking on a new strategic importance for many firms.* Responses indicate that

- **Dupont** has estimated fuel savings versus "business as usual" at more than $2 billion since 1990 due to energy conservation. Additional savings were realized due to improved product yield and reduced waste disposal costs.

- **Exxon Mobil** reports that changes introduced via its Global Energy Management System are reducing energy costs by over $100 million per year.

- **BP** reports gains of $650 million in net present value due to various efforts to increase operational efficiency, apply technological innovation and improve energy management.

- **Alcoa's** Energy Efficiency Network has identified $55 million in energy savings in its North American operations. To date, Alcoa has captured $16 million of these savings and expects most of the rest to be achieved by 2007.

- **Bank of America's** energy team managed a $4.7 million energy capital pool which resulted in 23 million kwh of energy saved across its real-estate portfolio.

- **Johnson & Johnson** estimates that $30 million in annualized operational savings can be achieved through projects to reduce CO2 emissions

- **BAA's** target to reduce CO2 emissions from energy use by 15% by 2010 is expected to result in a net reduction in energy costs of £4.6 million.

- **Danone** anticipates its latest energy savings will translate to about €20 million per year.

- **Imperial Tobacco's** target for energy conservation opportunities offer estimated savings of £2 million per annum with a two to four-year payback period.

• *The information and telecommunications business has been particularly active with respect to energy and fuel consumption,* particularly in developing country settings.

- **Ericsson** notes that "virtual communication" through ICT solutions is cheaper and emits much less fossil carbon dioxide than physical travel and transportation. Expanding the use of ICT in the developing world is being viewed as a way to bridge the global poverty divide while avoiding a commensurate increase in fossil fuel consumption. The telecoms industry is actively pursuing this agenda through the UN Global Compact and the Global e-sustainability initiative (www.gesi.org), whose membership includes **AT&T, BT, Deutsche Telekom, Ericsson, Telefonica and Vodafone**.

• *The development of low-carbon technologies continued to be a major focus for many multinationals as part of their climate change strategy*

- In Europe, Robeco, the fund management arm of **Rabobank**, created what it calls the world's first clean technology-oriented private equity fund of funds late in 2003.

- **Santander Central Hispano** has financed more than 35 wind farms over the past five years, involving a committed investment of over €250 million. The power from these wind farms represents a saving in CO2 emissions to the environment of 2,270,000 tonnes per year.

- **BNP Paribas** is also paying particular attention to the development of renewable energy and, in particular, to the financing of wind farms. In 2003, the bank participated in a project providing facilities to RWE Innogy in order to help the company recapitalise its portfolio and acquire new wind farms in Britain.

- **RWE** Innogy's £400 million equity and debt financing of a new offshore wind farm was shifted off balance sheet, a major innovation in that it reduces RWE's gearing and provides for equity as well as debt financing.

- Spain-based utility **Endesa** recently announced plans to invest about €1.3 billion ($1.6 billion) from now until 2008 in 1,998 megawatts of renewable energy, of which 85mw will be generated from mini-hydro projects, with the remainder coming from wind farms (Renewable Energy Today, EIN, 19/04/04).

- As part of the $24 million CO2 Capture Project, **Suncor** is working with a coalition of major energy companies to support research into the viability of injecting waste carbon dioxide into underground storage reservoirs.

- The **Rio Tinto** Foundation for a Sustainable Minerals Industry is investigating the Development of advanced aluminium smelting cells with the aim of reducing electrical energy (and emissions) to produce aluminium; enhanced bio-fixation of carbon dioxide, offering the potential to produce renewable fuels from accelerated production of biomass; and the application of wind power at remote mine locations.

On an individual company basis, there were several examples of firms showing a particularly impressive improvement between CDP1 and CDP2:

Most improved company responses

- **Chevron Texaco**, a non-respondent last year, supplied a detailed, high-quality response this year that described how, for example, the firm requires its businesses to integrate greenhouse gas emissions analysis into the planning process for all major capital projects.

- **PPG Industries**, a chemical company, did not respond last year, but this year not only responded but has joined the US Business Roundtable's "Climate RESOLVE" initiative, with a reduction goal of 18% in GHG intensity by 2012.

- **Imperial Tobacco** was not in the FT500 2002, but did mention in this year's response that it was CDP1 that prompted the company to improve its reporting and disclosure. Imperial measures some of its supply chain emissions and does work with the Social Responsibility in Tobacco Production programme to help reduce emissions during the tobacco curing process.

- **State Street** did not respond last year, but this year has provided one of the most comprehensive responses in the Diversified Financials sector and has also joined as a signatory to CDP.

- **Santander Central Hispano** has moved beyond its former focus on the energy efficiency of its headquarters to a more well-rounded perspective on climate change which recognizes risks to the credit quality of customers and the opportunities afforded through financing renewable energy projects.

- **Standard Chartered** provided a far more robust response this year compared with last. The company's perception of climate change risks in the context of the financial-services industry is greatly improved and now ranks among leaders in the sector.

- **Burlington Northern Santa Fe**, a non-respondent last year, provided details of emissions, management approaches and low-carbon technologies being deployed.

Not all GHG management factors show a neat improvement

Approaches to supply chain questions are muddled, with little consensus on how to account for emissions while avoiding double-counting

For example, while **Alcatel** has implemented a system that requires its suppliers to provide either an "eco-declaration" or an environmental questionnaire, the company concedes, "it is difficult… to consolidate the emissions of our suppliers without serious risk of double counting." And **Sony**, while analysing GHG emissions for some of its more important supply chains, observes that, on the whole, "accurate calculation of GHG emissions (from our supply chain) is difficult since there is no unified standard for measurement or boundary."

Assessments of life-cycle emissions throughout product use and disposal are under development

Ericsson recently extended its system boundary to include raw material extraction, semi-manufactured construction and transport of fuel. The company conducts an environmental assessment of its main suppliers (about 230) and, based on this information, concludes that "our supply chain… is our second most important source of CO2 equivalent emissions we have an indirect control over". In the construction materials sector, **LaFarge** measures CO2 emissions generated by road transportation of its raw materials and finished products. **FedEx** has addressed GHG emissions from packaging suppliers' production and, in 1999, switched from the FedEx letter to the FedEx Envelope, which reduced production-related GHG emissions by 12% annually. **UPS** has developed a tool for its customers to approximate their emissions based on the use of **UPS** ground service in the US. Food products company leaders are examining their supply chains to determine sources of GHG emissions. **Cadbury Schweppes** determined that manufacturing process produces 89% of its emissions; the rest of its value chain accounting for 11%. Elsewhere, **Rio Tinto** estimates that emissions from the third-party transport of its products included 1.6 Mt CO2-e from **Rio Tinto**-arranged transport (CIF) and 4.0 Mt CO2-e from transport arranged by others (e.g. customers).

Exxon Mobil calculated that operational emissions on average are about 15 tonnes of CO2 for every 100 tonnes emitted by consumers

Stressing the large number of products and services associated with its business operations, **GE** observes that "making comprehensive emission measurements (of our product use and disposal) is difficult …and relatively uninformative given the rapidly changing nature of our business and our customer needs." The considerable divergence in terms of how companies within the same sector are approaching this question suggests a climate of great uncertainty and opportunity. In the Leisure Equipment and Products sector, for example, **Fujifilm** measures the environmental impact of all of its products using a product life-cycle approach (LCA), while **Eastman Kodak Co.**, a close competitor, "has no current plans to measure the emissions associated with the use or disposal of [its] products." In autos, best practice on LCA has evolved considerably recently. Leading auto companies, including **BMW, DaimlerChrysler**, and **Volkswagen**, continue to perform LCA that provides emissions associated with use and disposal of its vehicles. **ENI** estimates that the emissions generated by the use of its petroleum products are approximately equal to eight times its internal emissions. Similarly, **Exxon Mobil** calculated that operational emissions on average are about 15 tonnes of CO2 for every 100 tonnes emitted by consumer use of petroleum products throughout the global economy. **BP** estimates with some confidence that the total GHG emissions arising from the use of its products is 1,298 million tonnes of CO2 (see Oil and Gas sector analysis, Appendix A).

Several FT500 companies are openly grappling with the problem of integrating carbon costs and other climate risks into management accounting

Rio Tinto comments that the most significant source of emissions associated with its products is from the combustion of coal and the conversion of iron ore to steel. In 2003, emissions from these sources were estimated at 318 Mt CO2e and 200 Mt CO2e respectively. Finally, and impressively, **Nippon Steel** measures the effectiveness of typical high-functional steel products to reduce greenhouse gas emissions from an LCA viewpoint. According to the firm, the reduction effects of high-functional steel products for automobiles, ships, rail vehicles, construction, electric transformer, and power generation boilers are estimated to be about 6.5 million tonnes of CO2 per year.

Responses indicate that planning over longer-term horizons (five years or more) is being hindered by perceptions that rational economic decisions can be made only in the presence of greater regulatory certainty

Forest products company **Weyerhauser** believes that its activity in the carbon finance area will enable it to readily utilize financial tools in future when "generally accepted carbon accounting principles" are adopted at the national and international level.

Ricoh, a Japanese office equipment and manufacturing firm, has developed an "eco-balance" accounting system that translates the company's environmental burdens into hard figures. Despite consistent growth, the company has used this approach to reduce its global CO2 emissions by over 10% between 1990 and 2002.

BHP Billiton informs us that carbon pricing sensitivity analysis is considered in its investment decisions involving greenfield, brownfield and merger and acquisition investments with emissions of more than 100,000 tonnes of CO2 equivalent per annum.

Repsol YPF states that internal reference prices for GHGs are applied to decision making in all its global activities.

CDP responses send clear message to policymakers

Responses indicate that planning over longer-term horizons (five years or more) is being hindered by perceptions that rational economic decisions can be made only in the presence of greater regulatory certainty. For example, **British Sky Broadcasting**, a leader in the global broadcasting market, acknowledges that the most significant commercial risk associated with climate change stems from "the uncertainty regarding [national] government guidance".

Leaving aside the observation that multinationals routinely make vital strategically relevant business decisions in the face of long-term market uncertainty, the CDP responses send a clear message to policymakers, which concur with other similar studies on this topic[51]. In order to take serious steps on climate change, multinational firms need governments to:

- establish clear emissions mitigation obligations
- foster multi-industry collaboration
- support the growth of emissions trading schemes
- help commercialize clean technologies
- bolster investor confidence in the corporate governance process
- clarify the listing disclosure requirements pertaining to carbon risks

> "If the political system turns out to be incapable of dealing with it (climate change) ...the same not need be the case for the business community and the investment community… ….You have responsibility as fiduciaries...to analyze risk and look for opportunities."
>
> Former Vice President Al Gore, U.N. Investor Summit on Climate Risk November 2003

Significant differences of opinion within FT500 still exist.

It is clear that many companies within the same sector do not agree on the importance of climate change on their business and the competitive conditions in their particular industry. The following examples illustrate the differences in companies' opinions with respect to the relevance of climate change to their business:

Believe climate change not relevant to business	vs.	Believe climate change highly relevant
Chemicals		
Bayer states that "the risks of so-called 'climate change' have neither been proved nor refuted… Results by IPCC have periodically illustrated the possible risks of climate change, but they have also revealed significant uncertainties in the estimates based on the models used". However, the company does think precaution is best and does monitor and work to reduce its emissions.	vs.	**Air Products and Chemicals** not only recognize the potential impact but that understanding climate change "is critical to managing commercial risks and seizing upon new business opportunities that arise from responses to external climate-change policy drivers".
Food and Drug Retail		
Carrefour "does not currently calculate all GHG emissions".	vs.	**Tesco** is committed to reducing its emissions, and is actively looking at using more renewable energy while measuring and reporting its CO2 and HFC emissions.
Food Products		
Sara Lee has not tracked GHG emissions to date. However "due to increased global awareness of the topic, we have initiated a project designed to quantify some of these gas emissions."	vs.	**Unilever:** "CO2 emissions from our manufacturing operations are reported annually" and have been measured from worldwide operations since 1995.
Electrical Equipment/Manufacturing		
Schneider Electric, one of the world's largest manufacturers of equipment for electrical distribution and industrial control and automation, said: "[Our]GHG emissions are insignificant... [Our) manufacturing processes do not especially release greenhouse gases."	vs.	**GE**, a global leader in electrical equipment manufacturing, said: "[We] recently completed [our] first GHG inventory using the WRI/WBCSD protocol ... and calculated annual global emissions at 10.0 MMT CO2 equivalents."
Healthcare Providers/Equipment		
United Health Group, a $28 billion healthcare services provider, replied that "our mission is to facilitate and advance health... As such, impacts from climate change would be indirect or non-existent"	vs.	**Baxter**, a worldwide healthcare leader, "views climate change as one of the most significant environmental challenges facing mankind today", and "uses the WBCSD GHG protocol … to calculate all GHG emissions".

51 See, for example, the UNEP Finance Initiative study 'Climate Change and the Global Financial Markets', 2002 (www.unepfi.net)

Telecommunications

SK Telecom: "We are a telecom service provider, therefore we wouldn't be affected by climate change."

vs.

Deutsche Telekom says that measures against global climate change offer "interesting business opportunities" for innovative products and services. "We are also convinced that our telecommunications services may contribute to a substantial increase of the resources efficiency – and especially the energy efficiency – of society."

Banking

Nomura, a major Japanese bank: "We do not have any direct relations with greenhouse gas emissions with our business, therefore we neither have commercial risk nor any opportunities."

vs.

Barclays, one of the EU's largest financial services groups, observed that "climate change represents both opportunities and risks… Opportunities in respect of new products and services (for example, our Environmental Services Team in UK Banking provides financial services to renewable energy projects); and risks in respect of changing patterns of consumer demand (tourism) or crop yields (agriculture), or the curtailment of insurance cover for properties in low-lying (flood risk) areas."

Real Estate

Equity Office Property Trust, the US's largest publicly held office building owner, answered that it saw no risks from climate change or the policy responses to climate change because "EOP is not a producer of energy or a product that is energy intensive in its production".

vs.

Mitsubishi Estate, the Japanese real estate developer, states: "GHG emission reduction measures taken by the government, based on climate change and the policy responses to it, will possibly influence the profit and losses as well as the investment behaviour of our company… We will be able to have a competitive advantage among other companies by managing 'low GHG emission buildings', which will create business opportunities for us."

Insurance & Reinsurance

XL Capital, which is involved in insurance, reinsurance and financial products, states: "We actively manage a significant investment portfolio, but do not envisage climate change as representing a risk to the value of these efforts over the period we intend to hold them."

vs.

Swiss Re: "The implications of climate change pose potential risks and opportunities to Swiss Re's asset management [business], mainly in equity, venture capital and real estate investments."

Financial Services/Mortgages

Golden West, the holding firm of one of the US's largest home mortgage lenders, states: "We only make mortgage loans. We operate in the US only, and we emphasize recycling and energy efficiency in all our operations."

vs.

Abbey National: "Direct losses from damages and remediation due to climate change (namely increasing risk of flood, storm and subsidence)…. impact the company's buildings, mortgage portfolio and investments."

Such differences of opinion support the view that climate change and carbon constraints will accentuate the natural competitive conditions that exist in every industry, helping to create shareholder value for some firms, while eroding it for others. A recent survey by PricewaterhouseCoopers supports this observation[52]; with nine months to go to the launch of the EU ETS, only 45% of Europe's major utilities surveyed by PWC have implemented a climate change strategy, either partially or fully, and 22% have no strategy at all. This is despite the fact that 54% of firms believe that emissions trading will enhance their shareholder value in the long term, and 49% foresee a beneficial effect on long-term profitability.

Disconnects between response position and actions 'on the ground'.

There are many examples of "disconnects" between a company's response statements and what is known publicly about its actual climate-change stance. These point to the challenges of establishing clear internal lines of communication.

Of even greater concern, several companies failed to respond to the CDP letter, despite having a significant proportion of their outstanding common shares owned by signatories to the CDP letter. The table on page 39 shows FT500 firms that did not respond or declined to participate and the corresponding share ownership by CDP signatories shown in each company's list of top 50 stock owners. This means that the actual share ownership by all 95 signatories would generally be even greater than the figures stated.

Some of these firms are even known to be proactively engaged in reducing GHG emissions, developing low carbon technologies or improving their business via the carbon markets. Notable examples include:

- **Con Edison**, the electric utility, is known to be taking proactive action on GHG reductions and energy management.

- **Marsh & McLennan**, the insurance broker and underwriter. Through a team of dedicated carbon professionals, this firm has been active in furthering industries' understanding of the risks attached to climate change and carbon trading for several years.

- **Alcan** has an excellent GHG management programme and provided a strong response last year. This year, the merger with Pechiney caused a delayed reply as the two companies consolidated their emissions data and aligned their individual climate change strategies.

In the vast majority of cases, CDP was not made aware of the reasons why a response was not forthcoming. We can speculate that, in some cases, response failure was due to the size of the management challenge that climate change poses within the modern-day multinational company and a general lack of communication within the firm. It is worrying, however, that a major company would choose to ignore correspondence from institutional shareholders requesting disclosure on a governance-related issue, given the present mood of the market.

Climate leadership enhances brand value

"The real competitive problem is laggards versus challengers, incumbents versus innovators, the inertial and imitative versus the imaginative. …a company that cannot commit emotionally and intellectually to creating the future, even in the absence of a financially indisputable business case, will almost certainly end up a follower."

Gary Hamel and C.K. Prahalad
COMPETING FOR THE FUTURE[53]

52 'Emission critical: Connecting carbon and value strategies in utilities', PricewaterhouseCoopers, March 2004
53 'Competing for the Future', Gary Hamel, C.K. Prahalad, Harvard Business School Press, 1994

It is worrying that a major company would choose to ignore correspondence from institutional shareholders requesting disclosure on a governance-related issue

The deeper issue at stake here is, we believe, the notion of corporate leadership and brand value. To what extent does a company wish to be known as a leader in tackling what has been called the greatest environmental challenge of the 21st century? Are a company's directors, officers and employees content with being swept along, reacting to climate challenges only when compelled by others to do so? Or would they prefer to seize the initiative and press for solutions in a proactive, prudent and, ultimately, profitable fashion? The answers to these questions define leadership on the climate-risk issue.

Brand value is often cited a reason why companies should be proactive. There is little doubt that brand value is having an increasingly significant influence over the market's overall valuation of a firm's future earnings power. Few dispute that a firm's position on climate change can have a direct impact on its brand. The obvious example is **Exxon Mobil**, whose opposition to the Kyoto Protocol, for example, led to boycotts in Europe. While the impact on EXM's share price appears to have been insignificant, future risks may be greater. Writing on this issue, **Deutsche Bank** stated: "Being handed a reputation as environmental enemy number one, for such a big customer-facing business, has to be considered a brand risk."[54]

Deutsche Bank stated: ***"Being handed a reputation as environmental enemy number one, for such a big customer-facing business, has to be considered a brand risk."***

For some firms, political uncertainty around GHG mitigation has been used as a springboard to create future competitive advantage: **BP**, in the case of GHG emissions reduction; **Intel**, in respect of its chip technology (see box on page 40); **Swiss Re**, with its GHG risk solutions business unit; **Dupont** and **Shell**, in the area of emissions trading, spring readily to mind. Others include **Mitsui, BASF, Volkswagen, Cadbury Schweppes, Unilever, Heineken, Stora Enso, Westpac, Barclays, Anglo American, Nippon Steel,** and **BAA**.

Regulatory uncertainty has not prevented these firms from participating in emissions trading systems (some even helped to develop them) or investing in revolutionary low-carbon technologies or cutting GHG emissions or becoming 'GHG-Neutral'. The value these firms will create is multidimensional. It resides partly in staking out dominant positions in markets for new high-margin products, partly in driving out inefficiency and waste in operations, in their capacity to shape regulations and new industry standards and it is also present in their attractiveness to the next generation of business leaders and the quality of their relationships with stakeholders. But it also resides in the intrinsic value of corporate leadership and the type of company these organizations want to be.

54 http://a520.g.akamai.net/7/520/1534/release1.0/www.greenpeace.org/multimedia/download/1/135843/0 /deutschebank.pdf

Percentage of non-respondents common shares owned by signatories

Companies that failed or declined to respond	% of Total Common Shares Held by Signatories*
Honeywell International Inc	15.5
Sears Roebuck And Co.	15.4
Six Continents PLC	14.8
Boeing Company	13.9
Hartford Financial Services	12.5
Conagra	12.5
Target Corp.	11.7
Morgan Stanley	11.2
Marsh & McLennan	10.9
Wellpoint Health Network	10.7
Mellon Financial Corp.	10.2
Masco	10.0
Bellsouth Corp.	9.6
Nextel Communications Inc	9.3
Electronic Data Systems	9.1
Raytheon Company	9.0
Cendant Corp.	8.7
Omnicom Group Inc	8.5
Federal Home Loan M'gage	8.0
Illinois Tool Works	7.4
Guidant Corp.	7.0
Newell Rubbermaid Inc	7.0
Washington Mutual Inc	6.8
Comcast Corp.	6.6
Bed Bath And Beyond Inc	6.6
Devon Energy Corp.	6.5
Prudential Financial Inc	6.5
Sysco Corp.	6.5
TJX Companies Inc	6.4
Biomet Inc	6.4
CVS Corp.	6.4
Costco Wholesale Corp.	6.3
Keycorp	6.2
Gilead Sciences	6.1
General Dynamics	6.1
Aflac Incorporated	6.0
Avon Products Inc	6.0
Clorox Co	5.9
SBC Communications Inc	5.8

Companies that failed or declined to respond	% of Total Common Shares Held by Signatories*
Newmont Mining Corp.	5.8
Dominion Resources	5.8
Linear Technology	5.8
Aetna Inc	5.7
AT & T Wireless Services	5.7
Electronic Arts Inc	5.6
Caterpillar Inc	5.6
Alltel	5.5
Tenet Healthcare Corp.	5.5
Chubb Corp.	5.4
Cardinal Health	5.4
Wrigley William Junior	5.4
Apollo Group Inc	5.4
Home Depot Inc	5.4
Sun Microsystems Inc	5.3
Forest Laboratories	5.3
Harley-Davidson	5.3
Bank One Corp	5.2
Medimmune Inc	5.2
Safeway Inc	5.1
Analog Devices Inc	5.0
Liberty Media Corp.	5.0
MBNA Corp.	4.9
Interbrew	4.9
McKesson Corporation	4.9
Canadian National Rail	4.9
Southtrust Corp.	4.9
Marathon Oil Corp.	4.8
Union Pacific Corp.	4.8
Xilinx Inc	4.8
Bank Of New York	4.7
Intuit Inc	4.7
Progressive Corp. Ohio	4.6
Yahoo Inc	4.6
Marriott International Inc	4.6
Consolidated Edison Inc	4.6
Automatic Data Process'g	4.5
Walgreen Company	4.4
Burlington Resources Inc	4.4

Companies that failed or declined to respond	% of Total Common Shares Held by Signatories*
Kroger	4.4
Fifth Third Bancorp	4.4
Maxim Integrated Pdcts	4.4
Paychex Inc	4.3
Amgen Inc	4.3
US Bancorp Delaware	4.2
Kohls Corp.	4.1
Oracle Corp.	4.1
HCA Inc	4.1
Schwab Charles Corp.	3.9
Suntrust Banks Inc	3.8
Loews Corp.	3.8
Campbell Soup Company	3.6
Carnival	3.5
Stryker	3.5
Goldman Sachs Group Inc	3.5
America Movil	2.9
Fanuc Limited	2.7
Amazon Inc	2.7
Interactive Corp	2.5
Generali	2.5
Sun Hung Kai Properties	2.5
Kookmin Bank	2.3
Bridgestone Corp	2.2
Danske Bank A/S	2.2
Cheung Kong Holdings	2.0
BCE Inc	1.9
Kddi Corp.	1.9
Hutchison Whampoa	1.7
United Overseas Bank	1.7
Genentech Inc	1.6
H. K. Electric Holdings	1.5
Comp. Vale Do Rio Doce	1.5
T-Online AG	1.5
China Mobile (Hong Kong)	1.4
KT Corp	1.4
United Micro Electronics	1.2
AP Moller-Maersk	1.1
Gucci Group NV	1.0

* Total common shares held by CDP signatories who are top 50 shareholders in these companies

Microsoft vs Intel

Comparing the CDP responses of the two companies Microsoft and Intel illustrates the differences in thinking on climate leadership. Although the two firms are in separate but connected segments of the same industry, Microsoft in software, Intel in hardware and chip manufacturing, both can affect the life cycle impacts of computer systems around the world. Indeed, the operating systems of hundreds of millions of computers rely on Microsoft products. In it's CDP response Microsoft does not mention any steps that it is taking towards configuring its software in order to minimise energy consumption of computers. The firm's response to the CDP question 'Do you measure the emissions associated with both the use and disposal of your products and services' is:

"Due to the categories of products and services we produce, Microsoft does not quantify emissions and has no current plans to do so."

The stance contrasts starkly with the pioneering attitude of Intel, who recognise that the chips they make (that Microsoft software frequently operates), produce serious emissions:

"Intel provides Instantly Available PC (IAPC) technology that reduces the power use to < 5 watts when the PC is in "sleep mode". If all PCs in the US operate with Intel IAPC, the US EPA estimates that over 10 years IAPC would save the following over the Energy Star standard: 75 Million Metric Tons of CO2 eliminated"

V. Appendices

A. Sector Analysis of Responses

B. Methodology For Calculating Energy Price Sensitivity

C. Renewable Energy and Clean Technology: Global Market Overview

D. The FT500 List of Companies with Response Status

E. CDP Questionnaire

F. Contacts:

- CDP Signatory Contacts
- CDP Team
- CDP Advisory Board
- Innovest Strategic Value Advisors

APPENDIX A.
Sector Analysis of Responses

In this year's report, we have attempted to document and characterize every response in every industrial sector. The tables in this appendix therefore represent the responder's performance across each of the primary elements of the CDP questionnaire.

For a smaller number of "high risk" sectors, we have provided a more detailed analysis in the form of a brief reminder of the potential impacts of climate change, the inclusion of commentary on best practice taken from CDP responses, and guidance notes for investors. These sectors are:

- Automobile and Auto Parts
- Banking and Diversified Financials
- Chemicals (Specialty & Commodity)
- Food Manufacturing, Retailing, Beverages & Tobacco
- Electric Utilities
- Insurance and Reinsurance
- Integrated Oil and Gas
- Metals and Mining (including Steel)
- Paper and Forest Products
- Transportation

Key:

Answered questionnaire	AQ
Provided environmental report or other relevant information	IN
Questionnaire forthcoming at time of printing	QF
Declined to participate	DP
No response	NR

If a company has no check marks this is because their response was not sufficiently detailed to warrant any.

In other, lower-impact sectors we provide a breakdown of company response status in six categories of GHG strategy, based on the CDP question categories:

1. **Strategic Awareness**: the extent to which a firm considers climate risks and opportunities to be relevant to its business.
2. **Management Accountability/Responsibility**: whether and how a company has allocated responsibility for the management of climate-related issues.
3. **Emissions Management and Reporting**: the progress a company has made in quantifying and disclosing/reporting its emissions profile, including the use of third-party verification.
4. **Emissions Trading**: the extent to which a firm has considered emissions trading in its risk-management response.
5. **Programmes in Place**: quality and nature of any emissions reduction programmes, including energy efficiency, that a firm has implemented.
6. **Establishment of Targets**: have formal GHG emissions/reduction targets been set with a timeline?

Beginning this year, and where the available data make it possible, we have also added a trend analysis for certain sectors in which we track the GHG emissions trajectories of FT500 companies. The purpose of this additional section is to monitor the progress of FT500 companies in making the shift towards a less GHG-intensive economy and, in doing so, provide some measure of progress. This year, data quality limitations have restricted this trend analysis to the Automotive, Electric Utilities, and Integrated Oil and Gas sectors.

Finally, as in 2003, we note there are high-risk sectors that are *not* included here because of a lack of adequate representation on the FT500 list. The cement, lime, water utilities and waste management sectors are perhaps the most obvious.

Automobile & Auto Parts

(a) Impacts of Climate Change

- *Material increases in operating costs due to higher fossil fuel prices*
- *Indirect exposure to GHG emissions regulation*
- *Direct exposure to emission regulations on personal and commercial vehicles*
- *Competitive emphasis on low-emissions, high-efficiency engine technology*
- *More public policy support for hydrogen economy-related R&D*
- *Competition from sustainable pubic transport initiatives, particularly in cities*
- *Opportunities for next-generation, zero-emission vehicles, particularly in developing world markets*

(b) Analysis of CDP Responses

		AUTOMOBILE AND AUTO PARTS								
		Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
				Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Manufacturing Energy Efficiency Programs	Vehicle CO2 Reduction Programs	
Automobiles	BMW	✔	✔	✔	✔	✔		✔	✔	✔
	DaimlerChrysler AG	✔	✔	✔	✔	✔		✔	✔	✔
	Ford Motor Company	✔	✔	✔	✔	✔	✔	✔	✔	✔
	General Motors Corp.	✔	✔	✔		✔	✔	✔		✔
	Harley-Davidson	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Honda Motor Company Limited	✔	✔	✔		✔		✔	✔	✔
	Nissan Motor Company Limited	QF	QF	QF	QF	QF	QF	QF	QF	QF
	Peugeot SA	✔	✔	✔		✔	✔	✔	✔	✔
	Renault	✔	✔	✔		✔		✔	✔	✔
	Toyota Motor Corp.	✔	✔			✔		✔		✔
	Volkswagen AG	✔	✔	✔	✔	✔	✔	✔	✔	✔
Auto Parts	Bridgestone Corp.	DP	DP	DP	DP	DP	DP	DP	DP	DP
	Denso Corp.	✔	✔	✔		✔		✔	N/A	✔

(c) Guidance for Investors

- **Carbon constraints will first and foremost raise the competitive stakes surrounding vehicle fuel economy**. The race is on among auto manufacturers to continue to improve the fuel efficiency of their vehicles, both for competitive purposes, and to keep in line with regulations in the regions in which they operate. German car manufacturers have committed to reducing average fuel consumption of new vehicles by 25% by 2005, thus reducing CO2 emissions by 25%. **BMW** reached this target in 2003. Under the auspices of the ACEA, European car manufacturers – including Renault and Volkswagen – have agreed to reduce the CO2 emissions of new vehicles to 140 g/km by 2008. **Renault** is also working on new motors and power train technologies, as well as lightening materials to decrease fuel consumption. **DaimlerChrysler** will have on-road experience with more than 100 fuel-cell vehicles by the end of 2004, and it has already put Natural Gas Technology vehicles on the market.

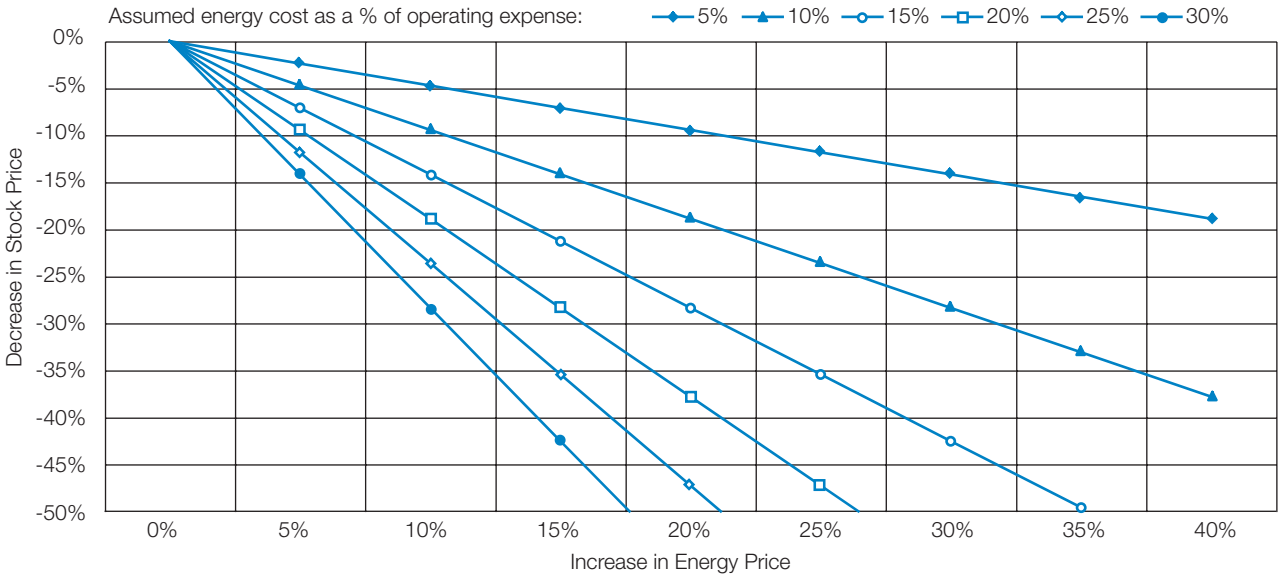
- **Auto manufacturers vary greatly in the GHG intensity of their operations** (see trend analysis on page 45).

- **More manufacturers are publicly disclosing the CO2 emissions of every car and engine they produce**, including, in their CDP responses, **BMW** and **Ford**. **Ford** describes how it is participating in the Revisions Working Group, preparing the next edition of the GHG Protocol. Ford has committed to 2% of energy supply from renewable energy in the US. **Volkswagen** is working to develop alternative fuels that will not require changes in the combustion engine, such as "SynFuel" (ex: natural gas) and "SunFuel" (biomass) both being developed through partnership arrangements.

- **Advanced vehicle technology R&D continues apace**. All of the auto majors are active in clean engine/fuel technology development. Related developments over 2003/4 include **Ford's** Escape Hybrid, which is due on the market in mid-2004 and, in the luxury class, its new Jaguar which has much improved fuel economy. **Ford** also has a hybrid fuel-cell vehicle in third-stage generation, but it is not yet commercially available. **GM** continues to focus on Gasoline Direct Injection, Displacement on Demand engines, Continuously Variable Transmissions, hybrid propulsion systems and lightweight materials for mass reduction. **GM** expects to produce the first hybrid pickup truck in North America, as well as a hybrid propulsion system for urban transit buses. **BMW's** initiatives include "Valvetronic" (a fully variable valve train), second-generation High Pressure Diesel Injection, six-speed automatic transmissions, and tyres with reduced rolling resistance. **BMW's** long-term goal is to focus on hydrogen vehicles. However, no details were provided on projects or status of developments. **DaimlerChrysler** continues with its long-term, €1 billion programme to bring fuel-cell vehicles to market. (Fuel-cell buses underwent field tests in 2003.)

- **Reducing emissions and reducing costs can go hand in hand**. As we reported last year, although CO2 emissions linked to vehicle manufacturing account for less than 10% of the CO2 produced during the entire life of a vehicle, manufacturers' own carbon emissions will directly translate into increased operating costs. These costs will take two forms: direct carbon charges or increased fuel/energy costs. This year's responses indicate that companies have been proactively addressing this issue. **BMW** reports that the cost of reducing one tonne of CO2 will range from €100 to €1,000. **Ford's** plant fuel switching project at one site will save more than $400,000 per year and result in over 12,000 tonnes of avoided CO2 emissions. **Volkswagen's** energy savings initiatives saved one plant €1.3 million each year by reducing ambient temperature by one degree.

Effect of increase in energy cost on stock price
at various assumed levels of energy cost as a % of operating expense
Automobile Sector



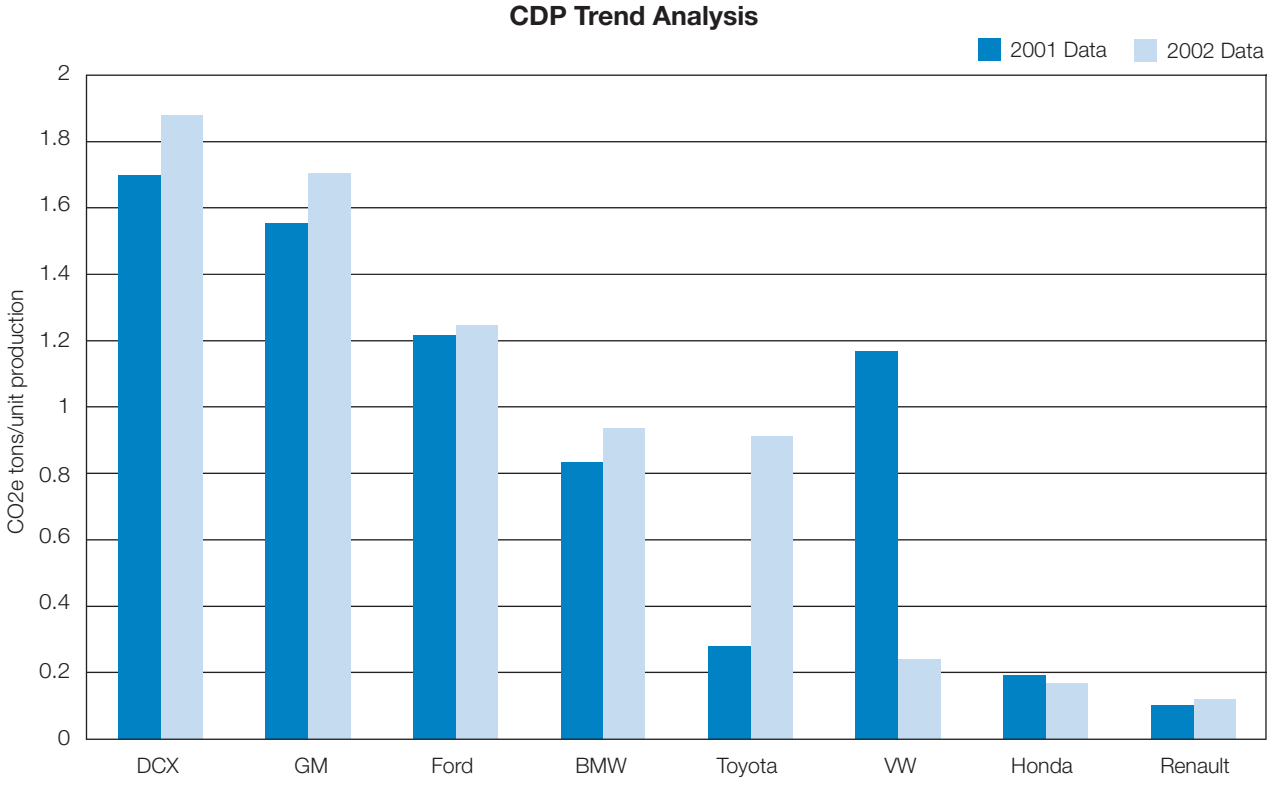
- **Regional manufacturing plant distribution will be a key determinant of exposure**. Within the Annexe 1 group, manufacturers with major plants in Ontario and Germany appear to be best off (the former because of exemptions; the latter because of the German emissions pooling arrangement). Firms with greater non-Annexe 1 manufacturing operations will clearly have lower regulatory hurdles to surmount.

- **Involvement in emissions trading activities has increased over the past year. VW**, which considers its Czech power plant at Mlada Boleslav to be one of the most important AIJ (activity implemented jointly) projects worldwide, and **Ford**, which has participated in the UK Emissions Trading Scheme and in the design phase of the US Chicago Climate Exchange, appear to be leading the way. **Ford's** involvement in the Chicago Climate Exchange, commits the company to reduce US GHG emissions by 4% by 2006. **DaimlerChrysler**, which has 13 facilities affected by the EU's Emissions Trading Directive, is "preparing internally" for participation.

- **Carbon-consciousness provides opportunities for strategic partnerships**. Responses indicate that strategic positioning (via R&D, public/private partnerships) around hydrogen-based transportation systems remains particularly important. **DaimlerChrysler's** partnerships with Ballard (fuel cells) and Choren (biofuels), both continuing in 2003, are expected to make significant contributions to the long-term competitive advantage of the firm. **Volkswagen** is also working with Choren in collaboration with DC on SunFuel technologies. **GM** and **Ford's** aluminium recycling agreements with Alcan are expected to do likewise. **Ford** now has an equity stake in Ballard, and **Volkswagen** has been teaming up with **Shell** on synthesis gas projects.

(d) CDP Trend Analysis

The charts below illustrate the changes over the past year in the top auto firms' (reported GHG emissions per vehicle produced).



Banking and Finance

(a) Impacts of Climate Change

- *Uneven and unpredictable impacts on global markets*
- *Hidden carbon liabilities change industry dynamics and impair market value of assets*
- *Impaired credit quality of GHG-intensive borrowers*
- *Compounding risk across entire portfolio of converging activities*
- *Physical damage, increased energy and insurance costs to real-estate portfolios*
- *Liability concerns over disregard for carbon risks*
- *Opportunities in financing infrastructure development re. adaptation*
- *Opportunities in $500bn-plus GHG emissions trading markets*
- *Opportunities in clean technology markets*

(b) Analysis of CDP Responses

		BANKING							
		Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place (including energy efficiency)	Formal GHG Reduction Targets Set With Timeline
				Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification		
Banks - Asia	Al Rajhi Banking & Investments	NR	NR	NR	NR	NR	NR	NR	NR
	Australia and New Zealand Banking Group	✔	✔	✔		✔		✔	✔
	BOC Hong Kong Holdings Limited	NR	NR	NR	NR	NR	NR	NR	NR
	Commonwealth Bank of Australia	IN	IN	IN	IN	IN	IN	IN	IN
	DBS Group Holdings								
	Kookmin Bank	NR	NR	NR	NR	NR	NR	NR	NR
	Malayan Banking Berhad	✔							
	Mitsubishi Tokyo Financial Group	✔		✔	✔				
	Mizuho Financial Group	DP	DP	DP	DP	DP	DP	DP	DP
	National Australia Bank Limited	✔	✔	✔	✔	✔	✔	✔	
	Saudi American Bank	NR	NR	NR	NR	NR	NR	NR	NR
	Sumitomo Mitsui Financial Group	DP	DP	DP	DP	DP	DP	DP	DP
	United Overseas Bank Limited	✔							
	Westpac Banking Corp.	✔	✔	✔	✔	✔	✔	✔	✔
Banks - Europe	ABN Amro Holding NV	✔	✔	✔	✔	✔		✔	
	Banca Intesa	QF	QF	QF	QF	QF	QF	QF	QF
	Banco Popular Espanol	NR	NR	NR	NR	NR	NR	NR	NR
	BBV Argentaria	✔	✔			✔			
	BNP Paribas	✔	✔	✔				✔	
	Credit Agricole	✔	✔	✔					
	Credit Suisse Group	✔	✔			✔	✔	✔	
	Danske Bank A/S	DP	DP	DP	DP	DP	DP	DP	DP
	Deutsche Bank AG	✔	✔	✔		✔		✔	✔

		BANKING (continued)							
		Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place (including energy efficiency)	Formal GHG Reduction Targets Set With Timeline
				Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification		
Banks - Europe	Dexia	✔	✔	✔	✔				
	KBC Bankverzekerings Holdings	✔				✔		✔	
	Nordea AB	✔	✔	✔		✔		✔	
	SAN PAOLO IMI SPA	✔	✔	✔	✔	✔		✔	
	Santander Central Hispano	✔	✔	✔		✔		✔	
	Societe Generale	✔						✔	
	Svenska Handelsbanken	✔				✔		✔	
	UBS AG	✔	✔	✔	✔	✔	✔	✔	
	Unicredito Italiano Spa	✔	✔	✔		✔		✔	
Banks - North America	Bank Of America Corp.	✔	✔			✔		✔	
	Bank Of Montreal Quebec	✔							
	Bank Of New York	NR	NR	NR	NR	NR	NR	NR	NR
	Bank One Corp.	DP	DP	DP	DP	DP	DP	DP	DP
	BB & T	✔							
	Canadian Imperial Bank Of Commerce	✔	✔	✔					
	Federal Home Loan Mortgage	DP	DP	DP	DP	DP	DP	DP	DP
	Federal National Mortgage Association	IN	IN	IN	IN	IN	IN	IN	IN
	Fifth Third Bancorp	NR	NR	NR	NR	NR	NR	NR	NR
	Golden West Financial							✔	
	Keycorp	DP	DP	DP	DP	DP	DP	DP	DP
	Mellon Financial Corp.	DP	DP	DP	DP	DP	DP	DP	DP
	National City Corp.								
	PNC Financial Services Corp.							✔	
	Royal Bank Of Canada	✔	✔	✔	✔	✔	✔	✔	
	ScotiaBank	✔	✔	✔				✔	
	Southtrust Corp.	DP	DP	DP	DP	DP	DP	DP	DP
	Suntrust Banks Inc	DP	DP	DP	DP	DP	DP	DP	DP
	Toronto Dominion Bank	IN	IN	IN	IN	IN	IN	IN	IN
	US Bancorp Delaware	NR	NR	NR	NR	NR	NR	NR	NR
	WACHOVIA CORP							✔	
	Washington Mutual Inc	DP	DP	DP	DP	DP	DP	DP	DP
	Wells Fargo And Co								
Banks - UK and Ireland	Abbey National PLC	✔	✔	✔		✔	✔	✔	✔
	Allied Irish Banks PLC								
	Bank Of Ireland	QF	QF	QF	QF	QF	QF	QF	QF
	Barclays PLC	✔	✔	✔		✔	✔	✔	✔
	Hbos PLC	✔	✔	✔	✔	✔	✔	✔	✔
	HSBC Holdings PLC	✔	✔	✔		✔	✔	✔	✔
	Lloyds TSB Group PLC	✔	✔	✔		✔	✔	✔	
	Royal Bank Of Scotland Group PLC	✔	✔	✔		✔	✔	✔	✔
	Standard Chartered PLC	✔	✔	✔		✔	✔	✔	

	DIVERSIFIED FINANCIALS						
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes	Quantified GHG Reporting		Emission Reduction Programs in Place (including energy efficiency)	Formal GHG Reduction Targets Set With Timeline
				Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification		
American Express Company	NR	NR	NR	NR	NR	NR	NR
Citigroup Inc	✔	✔		✔		✔	
Fortis	✔	✔	✔				
Franklin Resources	QF	QF	QF	QF	QF	QF	QF
Goldman Sachs Group Inc	NR	NR	NR	NR	NR	NR	NR
ING Groep NV	✔	✔		✔		✔	
JP Morgan Chase And Company	QF	QF	QF	QF	QF	QF	QF
Lehman Brothers Holdings Inc. (Peabody Energy)	IN	IN	IN	IN	IN	IN	IN
MBNA Corp.	NR	NR	NR	NR	NR	NR	NR
Merrill Lynch And Company Inc	✔	✔		✔	✔	✔	
Morgan Stanley	DP	DP	DP	DP	DP	DP	DP
Nomura Company Limited							
Power Financial Corp.	DP	DP	DP	DP	DP	DP	DP
Principal Financial Group	IN	IN	IN	IN	IN	IN	IN
Schwab Charles Corp.	NR	NR	NR	NR	NR	NR	NR
SLM Corp.	QF	QF	QF	QF	QF	QF	QF
State Street Corp.	✔	✔		✔	✔	✔	

(c) Guidance for Investors

- **Banks getting their own house in order remain good strategic bets**. Our opinion from last year holds: those banks with the most sophisticated internal GHG management systems are overwhelmingly those with the best overall risk-management approach to climate change. Further, there is a clear correlation between those banks that demonstrate the best understanding of climate-change risks and opportunities, and those that are most prepared to offer new climate-related services to clients. **ABN AMRO, HSBC, Barclays, HBOS, Lloyds TSB, RBC, ANZ, Abbey National, Deutsche Bank, UBS** and **Westpac** – all identified above as leaders in client service in emissions trading – can be singled out as having leading climate-change strategies.

- **Macroeconomic risks loom larger across the spectrum of banking activities. Firms acknowledge that climate risks may affect their business**. As this report details, climate change has the potential to cause major disruptions to a range of sectors, from tourism and agriculture to power generation and real estate. This year, several firms acknowledged this new commercial reality by highlighting the risks to their clients and showing how losses could impact the credit quality of clients and the value of equity investments. **ABN AMRO** conducted extensive interviews with corporate clients to analyze the climate impacts that face the company's cross-sector client base. In Asia, **Malayan Bank** noted that its local experiences in the late 1990s with the effects of El Nino (causing Pacific warming) and the pollution haze issue had reinforced concerns over the economic costs of climate change. In Australia, **Westpac** has joined a coalition of companies to undertake a planning exercise – mapping the economic effects of climate change across a number of key industries; **National Australia Bank** is undertaking specific analysis of the aluminium, automobile and mining sectors to better understand climate-related credit risks.

- **Credit risk and insurance losses are the focal points of management concern**. Increased risk from credit impairment was raised as a key issue by a number of banks, including **Scotiabank, Standard Chartered, HBOS, ABN AMRO** and **ANZ**. **Westpac**, in particular, has commenced analyzing the greenhouse-gas risk profiles of customers in its debt portfolio. **RBC** reports that is has developed a strategy for incorporating "carbon risk" into the risk assessment of borrowers in high-risk sectors. For banks with insurance businesses, many have flagged increasing claims due to weather damage as a major potential risk.

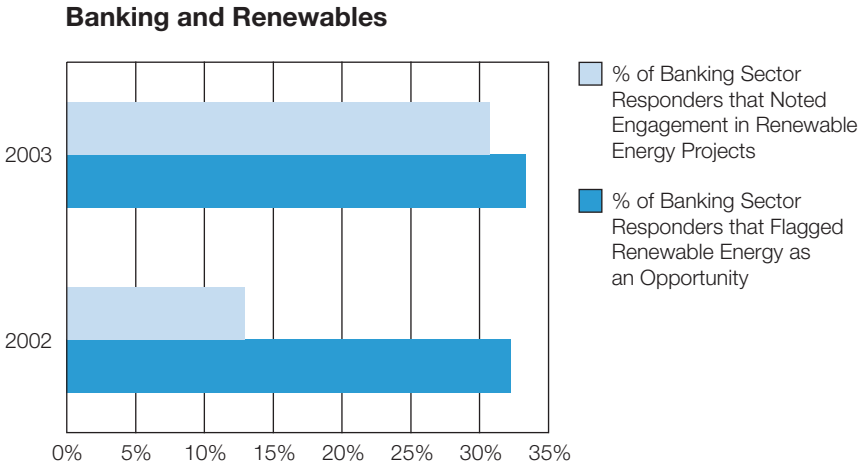
- **Structured finance market for renewable energy takes off**. Many banks have undertaken a serious assessment of climate-related market opportunities. The majority have clearly identified renewable energy projects as offering the greatest risk/return profiles in the short term. Deal making is predominantly in Europe, where renewable portfolio standards are proliferating at the most rapid pace, but some North American firms are exploring financing opportunities as well. As lead arranger on a number of syndicated renewable energy projects, **Dexia** reports that its outstanding in the renewable energy sector is now worth more than €200 million, or about 10% of the €2 billion total of syndicated renewable energy funding. **Santander Central Hispano** has financed more than 35 wind farms over the past five years with a committed investment of over €250 million. **RBC's** alternative energy portfolio includes more than 20 wind farms and its $50 million alternative energy technology venture fund. **HBOS's** Project Finance Power team reports arranging finance for multi-million-pound renewable energy projects in the UK and overseas. Scotiabank sees its positioning as a leading corporate banker to the power industry as offering tremendous opportunities to help its clients finance hydro, wind farm and biomass energy generation facilities. **Barclays, ABN AMRO, BNP Paribas** and **ANZ** also report providing financial services to renewable energy projects, primarily via structured finance deals.

- **Innovative new funds are emerging to capture opportunities**. **Dexia** is developing its *Dexia FondElec Energy Efficiency & Emissions Reduction Fund*, which was created by the ERDB and is designed to finance the reduction of energy consumption and GHG emissions in central and eastern Europe over the next 10 years. **Sanpaolo IMI** says it is working on the structuring of funds dedicated to emissions credits, financing infrastructure adaptation and energy efficiency projects. **ABN AMRO** also notes that it sees opportunities to establish funds that specialize in low-carbon investments.

- **Emissions trading markets offer new client service opportunities; market development remains critical**. Virtually every leading bank has recognized the future opportunities afforded by emissions trading (ET) market development. **ABN AMRO** has examined market supply, demand and price scenarios using in-house analytical models. It claims to have responded to client interest in the cross-border supply of contingent compliance units. Canada-based **CIBC** is monitoring the development of these markets with a view to offering emissions-trading services to clients. **RBC** – also based in Canada – has taken its efforts a step further by not only monitoring developments but also by collaborating with the International Emissions Trading Association on initiatives to develop the framework for a Canadian carbon market. In Australia, **ANZ** is reviewing the progress of various ET schemes; **Westpac** has established an Environmental Markets Group with a focus on carbon credit opportunities and Australia's renewable energy certificate market. **Sanpaolo IMI** reports that it is working towards structuring dedicated climate-related funds to invest in GHG credits. Others, such as **Abbey National** and **UBS** have extensively examined the markets in the past, and await sufficient ET market development before rolling out dedicated business units.

(d) CDP Trend Analysis

To understand how CDP respondents from the banking sector are positioning themselves on the issue of renewable energy financing, we have examined the proportion of CDP respondents with concrete initiatives in clean energy financing this year versus last.



Chemicals – Specialty and Commodity

(a) Impacts of Climate Change

- *Material increases in operating costs due to higher energy prices*
- *Exposure to national GHG emissions regulations*
- *Unplanned/premature capital outlays*
- *Altered market dynamics for agriculture products*
- *Higher transportation and distribution costs*
- *Heightened demand for clean technology-related specialty chemicals*
- *Increasing demand for technologies that reduce emissions for users/customers (ex. certain types of inhalers)*

(b) Analysis of CDP Responses

	CHEMICALS								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Air Products and Chemicals	✔	✔	✔	✔	✔	✔	✔	✔	
Air Liquide	✔	✔	✔	✔	✔	✔			
BASF	✔	✔	✔	✔	✔	✔	✔	✔	✔
Bayer	✔	✔	✔	✔	✔		✔	✔	✔
Dow	✔	✔	✔	✔	✔		✔	✔	✔
DuPont	✔	✔	✔		✔	✔	✔	✔	✔
PPG Industries	✔	✔	✔	✔	✔	✔	✔	✔	✔
Praxair	✔	✔	✔		✔	✔	✔	✔	✔
Reliance Industries	NR	NR	NR	NR	NR	NR	NR	NR	NR
Saudi Basic Industries	NR	NR	NR	NR	NR	NR	NR	NR	NR
ShinEtsu	✔	✔	✔		✔		✔	✔	✔

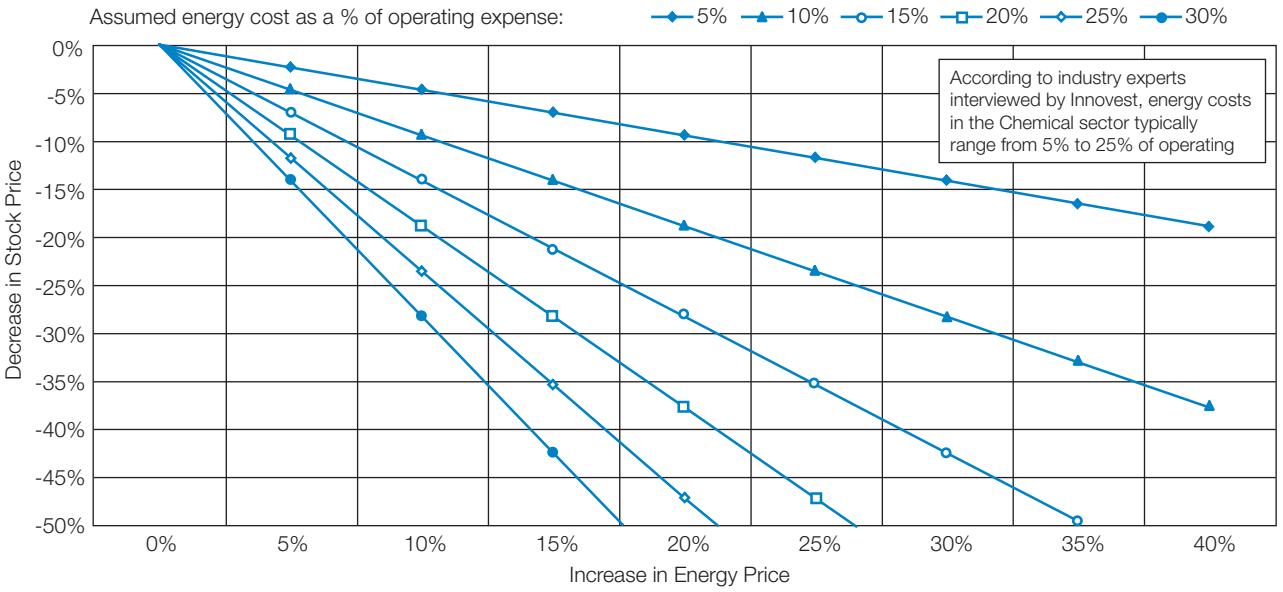
(c) Guidance For Investors

- **The hallmarks of a good climate change strategy are identifiable. Dow Chemical** maintains its leading four-pronged climate-change strategy, which covers technology, business integration, new products and stakeholder involvement. Implementation is spearheaded by a multidisciplinary Climate Change Opportunity Management Team. This year's leader, **Air Products**, is developing a range of innovative energy technologies and has begun capitalizing on business opportunities as a low carbon technology provider.

- **More firms are measuring emissions using standardized GHG measurement systems** (such as the GHG Protocol developed by WBCSD/WRI) for their own emissions. Leaders, such as **Air Products, BASF, DuPont** and **Praxair** measure emissions under both Scope 1 (direct) and Scope 2 (from imported electricity). Reductions of these emissions continue to translate into savings in operating costs.

- **Energy intensity continues to be is a key risk driver**. Last year, **BASF**, the German chemicals giant, estimated that every €0.01 increase per kilowatt hour resulted in additional costs of about €58 million for some manufacturing sites. To illustrate this point, refer to the chart below, in which we have estimated the effect on stock valuation of CDP-responding chemical companies to increases in energy costs as a percentage of operating expense. Interviews with industry experts revealed that energy costs in the chemical sector typically ranged from 5% to 25% of operating expense. All else being equal, even at a 5% assumed increase in energy costs, the downward pressure on stock price can range anywhere from 3% to 20%. As illustrated by the chart below, at higher assumed increases in energy costs, the range of negative stock-price impacts is even further amplified. This analysis is intended to be indicative of energy sensitivity in the sector and is dependent on a) any energy cost increases being permanent, and b) market conditions in which costs cannot be readily passed on to consumers. For methodology, see Appendix B.

Effect of increase in energy cost on stock price
at various assumed levels of energy cost as a % of operating expense
Chemical Sector



- **As a result, energy efficiency is at a premium**. Nearly all firms that submitted responses were spending capital on more energy-efficient equipment, or fuel switching, whose savings translate to a reduction in operating costs over time. **Air Products** was able to reduce global power consumption by 26mw in 2002 and 29mw in 2003. This is the equivalent to the annual power consumed by 56,000 average US homes and approximately 300,000 tonnes of CO2 emissions. **Dow's** energy-efficiency target, when reached in 2005, will mean the reduction of 290 trillion BTUs – equivalent to California's annual residential electricity use. **DuPont** has estimated its fuel savings at more than $2 billion since 1990 due to conservation and improved product yield.

- **Most firms are working to meet emissions targets through improved efficiency, which often involves fuel switching**. **Air Products** is involved in Gas-to-Liquid (GTL) and Liquefied Natural Gas (LNG) technologies that are expected to grow only as the natural gas market continues to expand. **Dow** is now generating 75% of its power through cogeneration, which has helped to increase its energy efficiency to nearly 80%. **PPG** installed a $242 million, 425mw cogeneration plant that is twice as fuel-efficient as previous plants.

- **New market opportunities are being pursued with enhanced vigour**. **Air Products** is working with organizations to develop and promote the commercialization of hydrogen as a fuel in portable, stationary and transportation fuel markets. It is also aiding in technology development for the CO2 Capture Project, which seeks to develop new technologies to reduce the cost of capturing CO2 from combustion sources and storing it underground. The company has also invested in a new specialty gases manufacturing plant that produces longer-living and lower-power consumption solutions for lighting applications (energy efficient light emitting diodes). **Dow** signed an agreement with GM to install GM Fuel Cells at a Dow operating plant in Texas. This will provide 2% of the plant's required electricity – the same as for 25,000 homes in one year. The firm is also working on performance plastics and engineered fibre board made from renewable resources. **PPG** is developing specialty commercial and residential glass that it says will keep out more solar heat than glass produced by its competitors.

- **Leading firms are getting involved in the carbon finance markets**. **BASF** is now a participant in the World Bank's Community Development Carbon fund, which is investing $2.5 million over 15 to 17 years to finance GHG reduction projects that can be recognized as CDMs under Kyoto. **DuPont**, a pioneer of the emissions trading markets, became a charter member of the Chicago Climate Exchange and participated in its first auction of CO2 emissions.

Electric Utilities & Power

(a) Impacts of Climate Change

- *High exposure to GHG emissions regulations*
- *Transmission efficiency may be affected by climate change*
- *Material increases in operating costs; coal to gas switching may be required*
- *Potential climate-change related damage to facilities; higher maintenance costs*
- *Premature retirement of physical stock not fully depreciated*
- *Changing seasonal electricity demand patterns*
- *Pressure to increase end-user rates*
- *More emphasis on renewable/clean power; Renewable Portfolio Standard requirements*

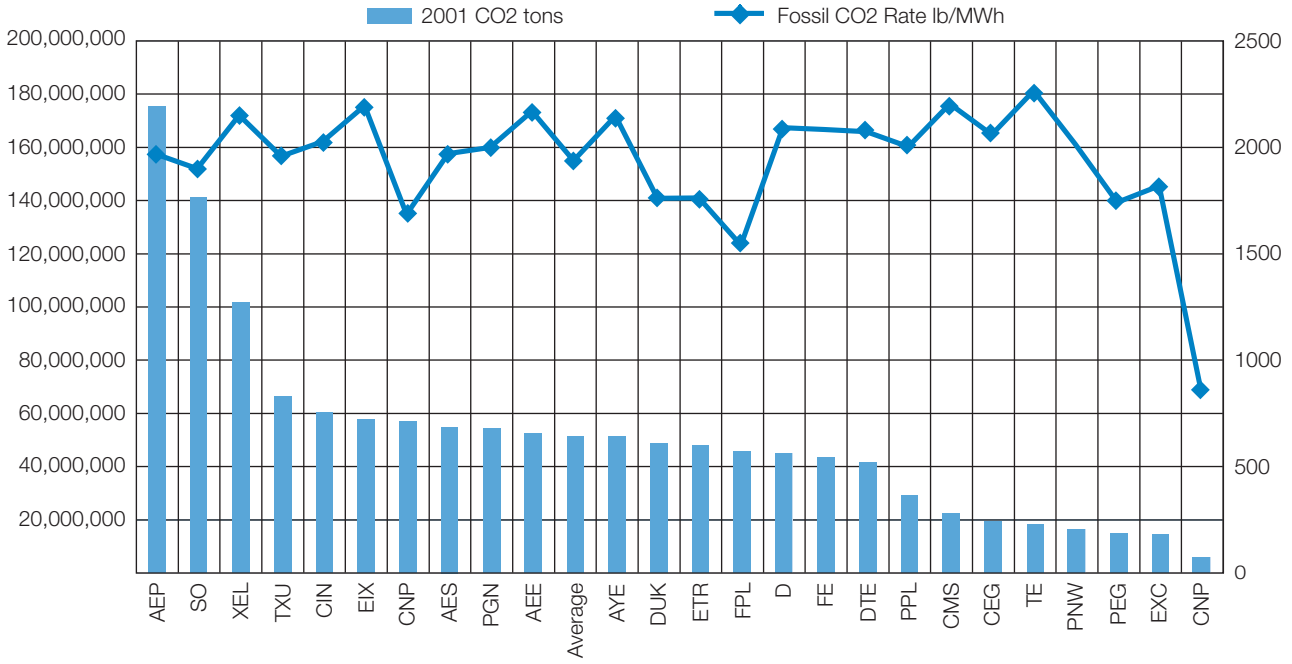
(b) Analysis of CDP Responses

		ELECTRIC POWER INDUSTRY							
		Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place	Formal GHG Reduction Targets Set With Timeline
				Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification		
Electric Utilities - N. America	American Electric Power	✔	✔	✔	✔	✔	✔	✔	✔
	Consolidated Edison	NR	NR	NR	NR	NR	NR	NR	NR
	Dominion Resources	DP	DP	DP	DP	DP	DP	DP	DP
	Duke Energy	✔	✔	✔		✔	✔	✔	
	Entergy	✔	✔	✔	✔	✔	✔	✔	✔
	Exelon	✔	✔	✔		✔	✔	✔	
	FirstEnergy	✔	✔	✔		✔	✔	✔	
	FPL Group	✔	✔	✔		✔	✔	✔	✔
	Progress Energy		✔	✔		✔	✔	✔	
	Public Service Enterprise Group	✔	✔	✔		✔	✔	✔	✔
	Southern Company	✔	✔	✔		✔	✔	✔	
Electric Utilities - International	Chubu Electric Power Company		✔			✔		✔	✔
	CLP Holdings Ltd	✔	✔			✔	✔	✔	
	E On AG	✔	✔	✔		✔			
	Electrabel	✔	✔	✔	✔	✔		✔	
	Endesa	✔	✔	✔	✔	✔	✔	✔	✔
	ENEL	✔	✔	✔		✔	✔	✔	✔
	Energie Baden-Wuerttemberg	✔	✔	✔		✔		✔	
	Hong Kong Electric Holdings Limited	NR	NR	NR	NR	NR	NR	NR	NR
	Iberdrola	✔	✔	✔		✔		✔	
	Kansai Electric Power Company	✔	✔	✔	✔	✔	✔	✔	✔
	Korea Electric Power	NR	NR	NR	NR	NR	NR	NR	NR
	National Grid Transco PLC	✔	✔	✔		✔	✔	✔	
	RWE	✔	✔	✔	✔	✔	✔	✔	
	Saudi Electricity	NR	NR	NR	NR	NR	NR	NR	NR
	Scottish & Southern Energy	✔	✔	✔	✔	✔	✔	✔	
	Scottish Power	✔	✔	✔	✔	✔	✔	✔	✔
	Tohoku Electric Power Company	✔	✔	✔		✔		✔	✔
	Tokyo Electric Power Company	✔	✔			✔	✔	✔	✔

(c) Guidance for Analysts

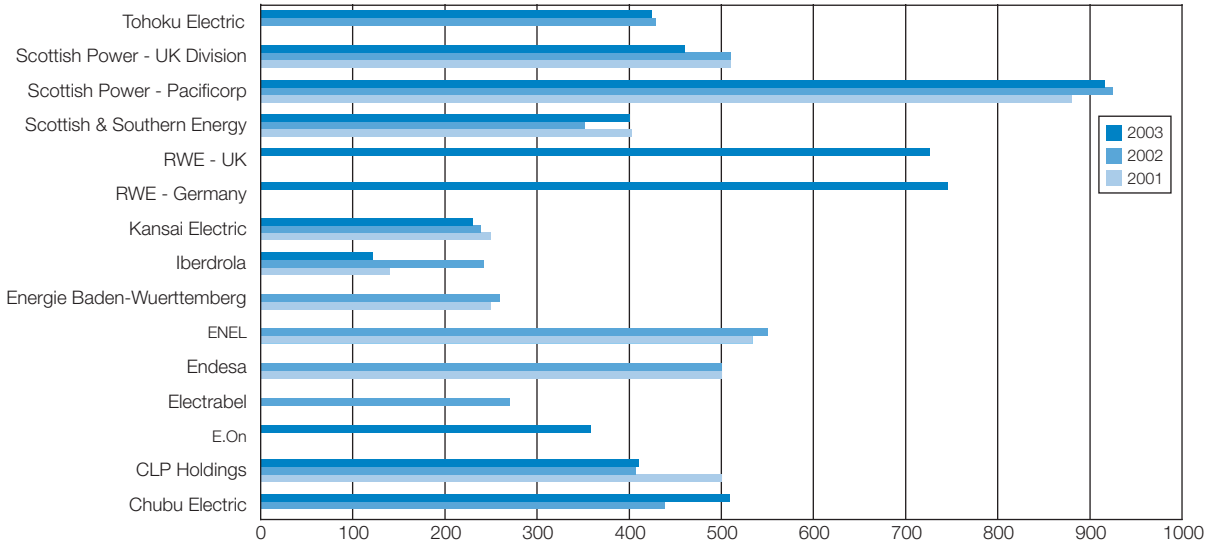
Electric Utilities vary in terms of absolute emissions and emissions intensity:

N. America: 2000 CO2 Emissions (tons) and 2000 CO2 Emissions Rate (lbs/Fossil MWh) by Company



Source: Natural Resources Defense Council and Innovest
NOTE: Data include emissions of regulated and unregulated plants

International: 2001-2003 Self-Reported CO2 Emissions Intensity (grams/kWh) by Company
Self-Reported Emissions Intensity (grams CO2/kWh)



	Chubu Electric	CLP Holdings	E.On	Electrabel	Endesa	ENEL	Energie Baden-Wuertte mberg	Iberdrola	Kansai Electric	RWE - Germany	RWE - UK	Scottish & Southern Energy	Scottish Power - Pacificorp	Scottish Power - UK Division	Tohoku Electric
2003	509	410	358					122	230	747	726	400	916	460	425
2002	439	407		270	500	550	260	242	240			352	925	510	429
2001		500			500	534	250	140	250			403	880	510	

Source: Innovest/company reports

- **Given the exposure of the sector to emissions restrictions and the length of the planning cycle in the power business, management strategy remains critical**. The central dilemma remains for utilities operators: take action to curtail emissions now, under an uncertain regulatory environment, or risk trying to catch up later, when the market value of carbon credits may be higher. We continue to hold the opinion that well-positioned firms will be those that have been taking action for several years now. **Entergy** has established a corporate-wide carbon inventory and has committed to achieve 2000 CO2 emission levels by 2005 through internal reductions (higher nuclear utilization) and external offset projects. To date, it has invested $22 million in projects with estimated CO2 reductions of 2.2 million tonnes by 2005. **Kansai Electric Power** is taking action in collaboration with Japan's Federation of Electric Power Companies, which has collectively set a reduction target of 0.34 kg of CO2 per year by 2010. **Iberdrola** has created a task force responsible for defining the company's policies and strategies regarding climate change and emissions trading. This cross-functional group reports directly to the CEO and focuses on a variety of technical, regulatory, and economic aspects of climate change. **E.ON** has established an Emission Trading Supervisory Group at the corporate level and special task forces at the subsidiary level (supervised by a board member) to assist in the management of emissions trading.

- **Asset pricing calculations increasingly incorporate a "carbon risk" premium**. A critical new tool for management planning in the electric power industry is the assumed carbon penalty when evaluating investments in generating assets. As we noted last year, we believe that the inclusion of carbon shadow prices into liquidity, valuation and balance sheet calculations is a prudent step towards managing carbon risks. The corollary of this continues to be the potential for carbon risk premiums to put upward pressure on asset pricing. This year, the leading practitioner is **Scottish Power**. Its US subsidiary Pacificorp has included a carbon valuation within its Integrated Resource Planning process. Using a range of carbon prices up to $40 per tonne of CO2, it has created scenarios surrounding optimum generation portfolios given such a price range. Like many of its European competitors, Scottish Power describes its European carbon cost scenarios as "commercially confidential" due to the competitive nature of the power market.

- **Coal-dependent utilities face the greatest risk**. Increasing evidence suggests that the "carbon intensity" of a firm's generation portfolio, which is directly related to the incidence of coal within the fuel/energy mix, is a crucial aspect in modelling corporate exposure to climate-change risks. Other factors to assess include the carbon regulatory environment, geographic distribution of generating assets, power market dynamics and the sophistication of corporate emissions management/hedging strategy. To lessen this risk exposure, several firms are taking action. **Iberdrola** is phasing out up to 4,000mw of its former fuel-oil and coal-fired plants. **Electrabel** is increasing its share of natural gas in its fuel mix, specifically at the expense of coal. Also, Electrabel Netherlands has signed a Coal Covenant with the Dutch government to have an annual absolute reduction target of 466 kton in the period 2008-2012. With the phase out of nuclear energy, German utilities **RWE, E.ON**, and **Energie Baden Wurtenburg** may face greater risks as they become more dependent on their coal facilities.

- **To balance increasing market and environmental regulatory forces, utilities are investing more in combined-cycle gas turbine (CCGT) technology plants**. In Spain, Iberdrola plans to have more than 6,000mw of CCGT installed by 2008, with investments of €2.4 billion over 2004-2008. Its current installed capacity in Spain is 3,800mw. **Electrabel** is increasing its share of CCGT plants and is currently replacing one of its German coal-CHP plants with a new CCGT-CHP facility. **Endesa** plans to increase its CCGT capacity by 2800mw, reaching 4000mw by 2008.

- **Distributed power generation market continues to mature on the back of reliability concerns and demand for better energy/transmission efficiency**. According to market experts, even the modest introduction of distributed generation (DG) technologies would significantly reduce line losses and ease the strain on an increasingly congested transmission and distribution system. This would create a growing

number of opportunities for stand-alone distributed energy sources and dependable power supplies. The backup power market alone has been estimated to be worth about $10 to $20 billion, growing at about 20% annually. **FPL Energy** is involved in this market by facilitating the interconnection of photovoltaic (PV) energy to the grid. **ConEd** promotes DG systems by allowing customers to sell back their excess wind and photovoltaic energy and by offering net metering tariffs. **Exelon** also provides various financial incentives for on-site PV and wind systems under 40kw. In Europe, **Iberdrola** reports various R&D projects focused on DG innovation.

- **Emissions trading is a key part of the near-term risk management armoury**. As the most viable current option in an embryonic and fragmented CO2 regulatory regime, emissions trading holds court as the market-based compliance mechanism of choice in the power industry. At present, most firms are still awaiting the finalization of National Allocation Plans (NAPs) before making definitive investment decisions. Despite this uncertainty, firms such as **Electrabel** have already begun to test the market through small transactions, and seem intent on involvement in regulatory discussions to define the legal nature of emissions rights, accounting issues, tax treatment of emissions rights and the development of standard trading contracts. **RWE** Trading GmbH has participated in emissions trading in the UK and Denmark, and reports participation in a European Pre-Compliance trade. In the US, despite the continuing uncertainty surrounding the structure of any national trading regime, some firms have taken anticipatory action. **AEP**, for example, is a founding member of the Chicago Climate Exchange (a voluntary pilot greenhouse gas trading programme) and the only participating US electric utility.

- **Meanwhile, firms seek out long-term technological solutions to carbon capture and storage**. Carbon sequestration technologies are gaining popularity among power generators as a long-term option to achieve cost-effective compliance in a tightening regulatory environment. The technology offers hope that power producers can continue to use vast global coal reserves while drastically reducing atmospheric GHG emissions in the process. While sequestration's technological effectiveness and political acceptance as an environmentally effective offset mechanism remains far from certain, firms continue to plough R&D resources into pilot research projects. **AEP** funds and participates in consortium efforts to research the potential of terrestrial and geological carbon sequestration. It hosts a sequestration research project at AEP's Mountaineer Plant in West Virginia to test the capability of deep saline aquifers for storage of carbon dioxide emissions. Under President George W. Bush's $1 billion FutureGen Initiative, it partners with the DOE and other utilities to develop and test a coal-derived hydrogen power plant. Endesa and Kansai are less specific in their initiatives, but each claims to be focusing on carbon sequestration.

- **Renewable energy growth continues apace as the dynamics of the energy marketplace evolve**. Environmental concerns, technological advancement, energy security issues, ongoing structural change and broader market liberalization are all contributing to the growth in opportunity for renewable energy. In general terms, the advantages of wind, geothermal, hydro, photovoltaic, biomass and the like are by now well-recognized: declining cost (in certain situations), modularity, flexibility, lack of need for large capital investments, lack of reliance on volatile fuel prices and, of course, low environmental impact. In line with this thinking, both US and European power generators continue to make early-stage investments. **Iberdrola's** Strategic Plan notes planned renewable energy investments of €1.4 billion over 2004-2008. It currently has installed renewables capacity of over 2,200mw and plans to increase this to more than 4,500mw by 2008. **FPL Energy's** 2,719mw of installed wind capacity accounts for 43% of the US total in this field. It also operates one of the world's largest solar plants in California. **Endesa** has plans to install 2,100mw of renewable energy for a total of 3,400mw by 2008. **Scottish and Southern Energy** is investing £220 million in wind energy and £250 million to upgrade its hydroelectric plants. **Scottish Power** plans to invest £500 million in additional wind energy (800mw) by 2010. While the proportion of wind in its overall fuel mix is minor, **AEP** continues to expand in this area, with about 300mw of capacity in Texas. This makes the company one of the larger wind generators in the US.

Insurance & Reinsurance

(c) Impacts of Climate Change

- *Liquidity problems for P/C insurers, reinsurers arising from large weather-related losses*
- *New and existing markets become unviable as climate change increases regional exposure*
- *Business interruption risks becoming unpredictable and more financially relevant*
- *Increases in population and infrastructure densities multiply size of maximum potential losses from extreme weather events*
- *Opportunities exist in weather derivatives, catastrophe bonds, and GHG emissions trading*
- *Increased risks to human health (thermal stress, vector-borne disease, natural disasters)*
- *Insurance of GHG offset and clean energy projects and related financial services*
- *Professional indemnity for carbon credit guarantors and certifiers provides both risk (increased liability) and opportunity (growing insurance market)*

(d) Analysis of CDP Responses

		INSURANCE & REINSURANCE							
		Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place	Formal GHG Reduction Targets Set With Timeline
				Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification		
Insurance Asia	Cathay Financial	✔		✔				✔	
	Millea Holdings	DP	DP	DP	DP	DP	DP	DP	DP
Insurance Europe	Aegon NV	NR	NR	NR	NR	NR	NR	NR	NR
	Allianz AG	a	✔	✔	✔	✔		✔	
	AXA	✔				✔	✔	✔	
	Generali	DP	DP	DP	DP	DP	DP	DP	DP
	Munich Re	✔	✔	✔	✔	✔	✔	✔	
	RAS RNC	✔	✔			✔	✔		
	Swiss Re	✔	✔	✔	✔	✔	✔	✔	✔
	Zurich Financial Services	✔						✔	
Insurance North America	Ace Limited	✔	✔					✔	
	Aflac Incorporated	DP	DP	DP	DP	DP	DP	DP	DP
	Allstate Corporation	QF	QF	QF	QF	QF	QF	QF	QF
	American International Group	✔	✔	✔				✔	
	Berkshire Hathaway	DP	DP	DP	DP	DP	DP	DP	DP
	Chubb Corp.	NR	NR	NR	NR	NR	NR	NR	NR
	Great West Lifeco Inc	DP	DP	DP	DP	DP	DP	DP	DP
	Hartford Financial Services Group	DP	DP	DP	DP	DP	DP	DP	DP
	John Hancock Financial Services	IN	IN	IN	IN	IN	IN	IN	IN
	Loews Corp.	DP	DP	DP	DP	DP	DP	DP	DP
	Manulife Financial	IN	IN	IN	IN	IN	IN	IN	IN
	Marsh & McLennan	NR	NR	NR	NR	NR	NR	NR	NR
	Metlife Inc	NR	NR	NR	NR	NR	NR	NR	NR
	Progressive Corp. Ohio	DP	DP	DP	DP	DP	DP	DP	DP
	Prudential Financial Inc	DP	DP	DP	DP	DP	DP	DP	DP
	Saint Paul Companies Inc	✔							
	Sun Life Financial	QF	QF	QF	QF	QF	QF	QF	QF
	XL Capital Limited								
Insurance UK & Ireland	Aviva	✔	✔	✔		✔	✔	✔	
	Legal & General Group PLC	✔	✔	✔		✔	✔	✔	
	Prudential PLC	✔	✔	✔		✔	✔	✔	✔

(e) Guidance for Analysts

- Potential climate risks embedded in equity holdings are leading insurers to re-examine asset allocation decisions. As we noted last year, the gearing of insurers towards equity markets increases their long-term exposure to climate change-related market losses. While even the leaders are far from fully integrating climate risks into their investment mandates, several firms have made leaps forward in systematically considering these risks. **Munich Re** continues its interdisciplinary Challenge of Climate Change Project. One of its arms – the Asset Management Working Group – undertook a risk analysis of climate change that has now been incorporated in the mandate of **Munich Re's** asset management company, MEAG. Other firms continue to explore climate risks, albeit at a more conservative pace. Both **Allianz** and **Aviva** report that climate change is taken into consideration as a supplementary condition in asset allocation, but only in their socially responsible investment portfolios.

- Increased loss expenses and loan defaults remain the principal risks. The insurance industry faces perhaps the widest financial exposure to damages that may result from climate change. Insurance products that provide risk-transfer services for the agriculture/food industry, the real-estate sector, the tourism industry and others are all facing the prospect of increasing claims as losses mount due to climate-induced crop damage, flood damage and the like. As was the case last year, the major reinsurers, **Munich Re** and **Swiss Re**, continue to bear the brunt of the risk and are the most highly sensitized to the scope and severity of climate-change risks.

- Meanwhile, opportunities to generate new business are becoming more broadly recognized. Some insurers have begun to explore the market for new products that may offer new revenue opportunities. **Cathay Financial** believes that while its life insurance, non-life insurance and banking clients could be adversely impacted by climate change, growing numbers of natural disasters could also result in increased coverage and lending opportunities. **AXA** has partnered with Meteo France to provide clients with insurance coverage for climatic uncertainty. The most aggressive companies in this market are the reinsurers. **Munich Re's** New Products/Markets Working Group has been assigned to uncover market opportunities relating to the Kyoto Protocol's flexible mechanisms (including joint implementation and clean development mechanisms). **Swiss Re's** Greenhouse Gas Risk Solutions is a dedicated unit developed specifically with the aim of providing structured finance, investment services and insurance solutions across the spectrum of emerging environmental markets.

- Emissions trading continues to attract serious attention. While we hold our position that the revenue opportunities that the emissions trading markets present to insurers are not yet materializing, there is evidence that insurers are prepared to wait. **Allianz** claims that emissions trading has been chosen as a centre of competence at **Dresdner Bank** in order to advise clients. **Swiss Re** has begun to integrate carbon finance into the range of insurance and financial functions it provides. **Munich Re** has analyzed the emissions trading markets to identify existing market players, trends, opportunities and risks, and says it has identified and evaluated new business opportunities.

- The best indicator of risk awareness continues to be the quality of internal GHG management programmes. While most insurers face few material risks from their own direct emissions, we believe that high-quality strategic efforts to manage emissions remain an excellent proxy for a firm's overall awareness of climate-change risks. **Swiss Re** has committed to becoming "greenhouse neutral" by reducing internal emissions by 15% to 2014 and offsetting the remainder via investments in the World Bank Community Development Carbon Fund (about 37,000 tonnes of CO2 per year). **Legal & General** has set a target to have a carbon management plan in place that covers all L&G operations. **Aviva** has taken a decentralized approach to management, allowing for flexibility in different markets. Its UK operations have set targets to

reduce electricity consumption by 20,000kwh by the end of 2004 and have entered renewable energy contracts. **AXA** has also signed green energy contracts with its electricity provider, EDF, and will have the energy savings certified by the Renewable Energy Certificate System (RECS) at the European level.

Food Products, Retailing, Beverages and Tobacco

(a) Impacts of Climate Change

- *Risk of global food supply interruption*
- *Cost and losses to agricultural producers from drought*
- *Increased cost of new or supplemental water resource development; increased irrigation costs*
- *Greater risk from animal infection (ex: BSE, avian flu) insect infestation, plant disease, wildlife damage etc*
- *Extra costs and productivity losses to livestock producers*
- *Decline in food production/disrupted food supply/increased food prices*
- *Market opportunities for sequestration capacity in agricultural and tobacco growing sectors and in forestry for packaging materials*
- *Opportunities for technological advancements*

(b) Analysis of CDP Responses

		FOOD PRODUCTS, RETAILING, BEVERAGES AND TOBACCO								
		Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
				Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Food Products	Cadbury Schweppes PLC	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Campbell Soup Company	DP	DP	DP	DP	DP	DP	DP	DP	DP
	Conagra	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Danone	✔	✔	✔		✔		✔	✔	✔
	General Mills	✔	✔			✔		✔		
	Heinz HJ	✔	✔	✔	✔	✔		✔		
	Kellogg	IN	IN	IN	IN	IN	IN	IN	IN	IN
	Kraft Foods Inc	DP	DP	DP	DP	DP	DP	DP	DP	DP
	NestlÇ	✔	✔	✔	✔	✔		✔		
	Sara Lee		✔	✔						
	Unilever PLC	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Wrigley William Junior Company	NR	NR	NR	NR	NR	NR	NR	NR	NR
Food and Drug Retailing	Carrefour	✔	✔					✔		
	CVS Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
	George Weston Limited	✔						✔		
	Ito Yokado Company Limited	✔	✔	✔		✔		✔	✔	
	Kroger	NR	NR	NR	NR	NR	NR	NR	NR	NR
	Loblaw	✔						✔		
	Safeway PLC	DP	DP	DP	DP	DP	DP	DP	DP	DP
	Seven-Eleven Japan Company Limited	✔	✔	✔		✔	✔	✔		
	Sysco Corp.	IN	IN	IN	IN	IN	IN	IN	IN	IN
	Tesco PLC	✔	✔	✔	✔	✔		✔	✔	✔
	Walgreen Company	DP	DP	DP	DP	DP	DP	DP	DP	DP
Beverages and Tobacco	Altria Group Inc	DP	DP	DP	DP	DP	DP	DP	DP	DP
	Anheuser-Busch Companies Inc	QF	QF	QF	QF	QF	QF	QF	QF	QF
	British American Tobacco PLC	✔	✔			✔	✔	✔	✔	✔
	Coca Cola Company	✔	✔			✔		✔		
	Coca Cola Enterprises (see Coca Cola Company									
	Diageo PLC	✔	✔	✔		✔		✔	✔	✔
	Heineken NV	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Imperial Tobacco Group	✔	✔	✔	✔	✔	✔	✔	✔	✔
	Interbrew	DP	DP	DP	DP	DP	DP	DP	DP	DP
	Pepsico Inc	✔	✔					✔	✔	

(c) Guidance for Investors

- **Food retailers continue to be active in GHG management**. Best practice in this industry group is found among the food processors, manufacturers and packagers. **Carrefour** has an excellent Sustainable Development report, including its breakdown of CO2 emissions from each source at an average retail outlet. **Tesco** expects average capital spending per year to be £4 million to reach its annual 5% emissions reduction target. **Tesco's** fuel stations are offering Greenergy Global Diesel that offers a 5% reduction in GHGs. **Ito Yokado** in Japan discloses its emissions as "CO2 emission per ¥100 million in sales", which for 2002 was 45.4 t-CO2. **Cadbury Schweppes** is engaging in fuel-switching activities. In 2004 alone, it expects to reduce its total global emissions of CO2 by 1%. **Imperial Tobacco** has developed a climate change strategy that is rooted in the findings of the **Carbon Disclosure Project** of last year. Imperial Tobacco states that the forecasted 30% increase in electricity prices in 2004/5 will impact on its overheads within the EU – although it does not say by how much – in the short term. Continuation of this trend will strengthen the case for energy conservation, energy efficiency and CO2 emissions cuts.

- **Appreciation of supply chain exposure to weather-related phenomena is growing**. As we noted last year, companies with important raw materials suppliers in high-impact agricultural regions will be especially at risk. **Unilever's** tea plantations in Kenya and Tanzania have been affected by prolonged drought. **Imperial Tobacco** says that sensitivity to climate change in tobacco-producing regions could affect the growing and harvesting of crops – potentially affecting yields. Imperial grows less than 2% of the tobacco it uses, so supply-chain impacts can be disproportionately large. The Sustainable Agriculture Initiative (SAI) (www.saiplatform.org) formed by Danone, Nestlé and Unilever, was set up partly in response to such concerns.

- **Fuel usage – and switching to renewables – is a key area of focus**. Several FT500 firms in this sector describe their efforts to diversify and/or reduce fuel consumption to meet emissions targets and cut costs. To recap from last year, **Unilever's** use of renewable fuels now accounts for 11% of fuel needs. **Diageo** has implemented a policy for haulers that defines minimum standards for fuel efficiency and emissions. **Japan Tobacco** has reduced CO2 from distribution by improving transport routes and using some natural gas-fuelled trucks. **Nestlé** is even using spent coffee grounds as a fuel for some manufacturing processes. This year, we note that **Cadbury Schweppes** has measured its supply-chain CO2 emissions to help it ascertain where its reduction programmes should be focused. **PepsiCo** has converted its delivery trucks to EPA clean diesel fuels and is replacing older trucks with more fuel-efficient vehicles. **BAT** is helping farmers to improve the fuel efficiency of the tobacco-curing process to reduce CO2 emissions. **Heineken** is using biogas from its anaerobic waste-water treatment plants and is further researching into green energy such as the use of spent brewers grain as biofuels.

- **CO2 reduction strategies have translated to bottom-line savings for many firms**. Unilever's Bestfoods have saved £1.34 million since 2001 through energy conservation measures. **Danone** hopes that its latest energy savings will translate to about €20 million per year. **Imperial Tobacco's** target for energy conservation opportunities offers an estimated saving of £2 million per annum with a two to four-year payback period.

- **More companies are considering entering the emissions trading markets**. **Nestlé** and **Unilever** (via the UK ETS) have been the primary participants from this sector so far. **Imperial Tobacco** expresses the belief that emissions trading may provide a further financial benefit in the form of sequestration opportunities within agricultural and tobacco-growing business segments.

Regional Food & Agriculture Implications of Climate Change

Africa: Grain yields are projected to decrease for many scenarios, diminishing food security, particularly in small food-importing countries. Desertification would be exacerbated by reductions in average annual rainfall, run-off and soil moisture, especially in Southern, Northern and Western Africa. Significant extinctions of plant and animal species are projected and would affect rural livelihoods, tourism and genetic resources.

Asia and the Pacific: Decreases in agricultural productivity and aquaculture due to thermal and water stress, sea-level rise, floods and droughts, and tropical cyclones would diminish food security in many countries of arid, tropical and temperate Asia; agriculture would expand and productivity would increase in northern areas. Climate change would exacerbate threats to biodiversity due to land-use and land-cover change and population pressure in Asia. In Australia and New Zealand, the net impact on some temperate crops of climate and CO2 changes may initially be beneficial but this balance is expected to become negative for some areas and crops with further climate change. Some species with restricted climatic niches and which are unable to migrate due to fragmentation of the landscape, soil differences or topography could become endangered or extinct.

Europe: There will be some positive effects on agriculture in northern Europe; productivity will decrease in southern and eastern Europe. The rate of biodiversity loss would increase.

Latin America: Yields of important crops are projected to decrease in many locations in Latin America, even when the effects of CO2 are taken into account; subsistence farming in some regions of Latin America could be threatened. The rate of biodiversity loss would increase.

Polar: Natural systems in the polar regions are highly vulnerable to climate change and current ecosystems have low adaptive capacity; technologically developed communities are likely to adapt readily to climate change but some indigenous communities, in which traditional lifestyles are followed, have little capacity and few options for adaptation.

Small Island States: The projected sea-level rise of 5 mm/year for 100 years would cause enhanced coastal erosion, loss of land and property, dislocation of people. Limited arable land and soil salinization makes agriculture of small island states, both for domestic food production and cash crop exports highly vulnerable to climate change.

Source: Innovest Global Food Industry Report, 2004.

Metals & Mining (Including Steel)

(a) Impacts of Climate Change

- *Material increases in operating costs due to higher energy prices*
- *Exposure to national GHG emissions regulations*
- *Unplanned/Premature capital outlays on emissions controls*
- *Increased demand for commodities such as Platinum Group Metals (PGMs) and aluminium that facilitates transition to less emissions-intensive economy*
- *Sequestration opportunities relating to reforestation of marginal land*

(b) Analysis of CDP Responses

	METALS & MINING, STEEL								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Alcan	QF	QF	QF	QF	QF	QF	QF	QF	QF
Alcoa	✔	✔	✔	✔	✔	✔	✔	✔	✔
Anglo American	✔	✔	✔	✔	✔	✔	✔	✔	✔
Barrick	✔				✔	✔	✔		
BHP Billiton	✔	✔	✔	✔	✔	✔	✔	✔	✔
Newmont	DP	DP	DP	DP	DP	DP	DP	DP	DP
Rio Tinto	✔	✔	✔	✔	✔	✔	✔	✔	✔
Vale Rio Doce (CVRD)	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nippon Steel	✔	✔	✔	✔	✔	✔	✔	✔	✔

(c) Guidance for Investors

- **The type of commodity produced is critical to determining market risks and opportunities**. Several firms with large exposures to coal markets have begun to analyze the strategic implications of GHG regulations. **BHP Billiton** has included GHG regulation scenarios in its calculations of base case supply and demand forecasts for its Energy Coal business. Others are investing in clean coal technologies in an attempt to circumvent the possibility of declines in global coal consumption due to climate-change concerns. Both **Rio Tinto** and **BHP Billiton** participate in industry and government-sponsored research programmes to commercialize clean coal technologies.

- **Conversely, significant market opportunities also exist for those firms with strong positions in commodities such as aluminium, platinum group metals and high-performance steel**. As we noted last year, each of these commodities is an essential material in applications that are expected to provide technological solutions to climate change. In particular, **Alcoa** and **Rio Tinto** see market opportunities for their aluminium products as lightweight components that reduce emissions in transport applications. **Alcoa** has conducted research on the GHG and fuel efficiency impacts of using aluminium in a host of transportation applications. **Nippon Steel** research suggests that the reduction effects of high-functional steel products for automobiles, ships, rail vehicles, construction and power generator boilers are approximately 6.5 million tonnes of CO2 per year.

- **Location, Location, Location. Financial exposure to GHG regulations is defined by the location of GHG-emitting assets**. In this sector, the search for low-cost, high-quality ore bodies is driving exploration and production into increasingly far-flung regions. This operational expansion results in a diversity of corporate exposures to GHG regulations. For some firms, mineral reserves must be mined in regions with tight GHG regulations (such as Canada and the EU), while others may have their reserves concentrated in regions with no current – and limited foreseeable – GHG regulations (such as Africa and South America). A case in point is **Anglo American**, which believes that its operating focus in developing nations places it in a lighter regulator regime than some competitors. By contrast, **Nippon Steel** says that a ¥3,000 ($27) per tonne carbon tax could cost the steel industry a total of ¥150 billion($1.36 billion), with Nippon Steel bearing an estimated ¥50 billion of this.

- **Internal GHG reduction programmes become ever more sophisticated in search of least-cost options**. While companies in this sector are keeping an eye on potential technology breakthroughs, the search continues for internal efficiency gains that can serve the dual goals of reducing both GHG emissions and costs. Foremost among these internal efforts continues to be energy efficiency. **Anglo American** has conducted energy audits in various businesses, and its technical division has initiated a review of energy options across the company. Likewise, most companies in the sector are able to point to some variety of energy efficiency initiative in their operations.

- **The search for breakthrough technologies continues. The buzz words in the metals and mining industry are** Clean Coal, Zero-Emissions Aluminium smelting, carbon capture and sequestration, as the industry searches for technological innovations that will enable the cost-effective reduction of GHG emissions. A major driver of this push towards technology is the diminishing returns from internal efficiency efforts. As the available opportunities to cut corporate emissions through energy efficiency, process enhancements and the like dry up, the pressure is on to find new efficiencies by advancing the technology front. **Rio Tinto** and **BHP Billiton** placed the most emphasis on clean-coal initiatives this year, while **BHP Billiton** was the front-runner in funding research into geological sequestration. **Rio Tinto** takes a diversified approach with its Foundation for a Sustainable Minerals Industry, whose mandate is to support research and technical development on a number of GHG-related fronts. **Nippon Steel** participates in the International Iron and Steel Institute's "CO2 Breakthrough Programme", a global initiative to achieve radical CO2 reductions through technology. Meanwhile, **Alcoa** continues its long-running pursuit of inert anode technology (which it believes can virtually eliminate direct GHG emissions from the smelting process).

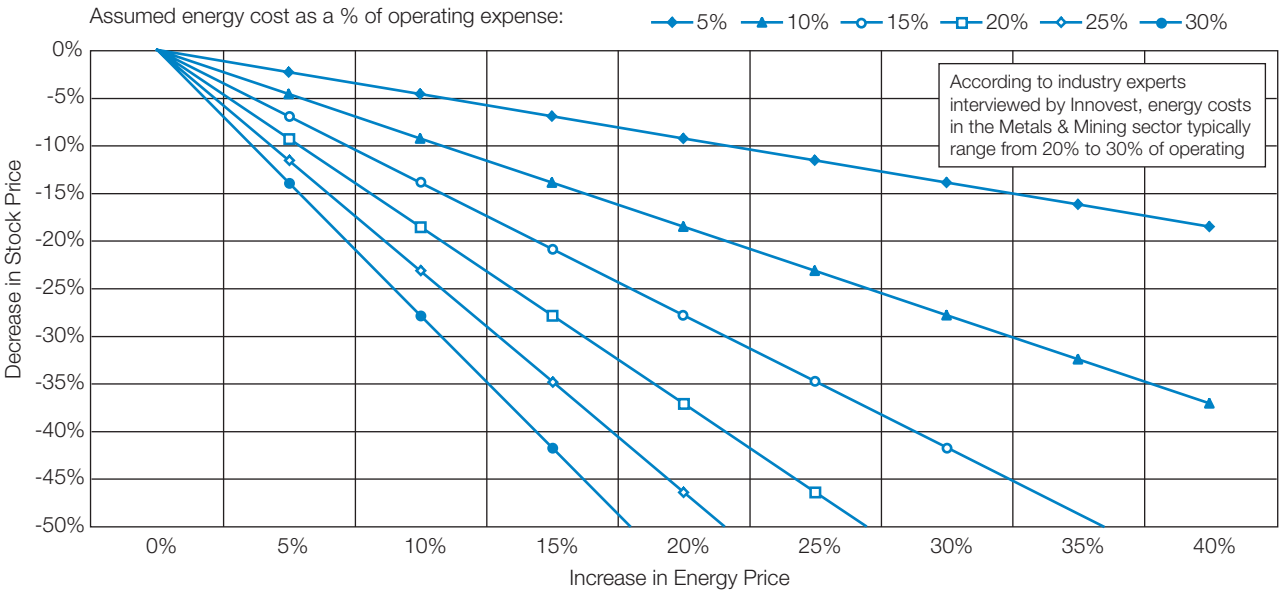
- **As technology develops, the best interim strategy is to continue seeking recourse to the emissions trading market**. As the mining majors seek out paths of cost-effective achievement of reduction goals, a key strategy for each company surveyed is emissions trading. **Alcoa** is engaged in GHG regime development in Europe and Quebec. **BHP Billiton** is engaged in Europe and Australia. **Rio Tinto** sees emissions trading as a vital component of its greenhouse response, and has undertaken trades in the UK and bought renewable energy certificates in the US and Australia. **Anglo American's** industrial minerals operations and pulp/paper mills will be included in the EU ETS. There are also alternatives to emissions trading, primarily through the Kyoto Protocol's proposed Clean Development Mechanisms. Both **Anglo American** and **BHP Billiton** are examining cheap reduction opportunities in developing nations that may be available via this route.

- **Pricing Carbon into decision making**: the new practitioners. We continue to believe that the inclusion of carbon shadow prices into liquidity, valuation and balance-sheet calculations is a prudent step towards managing carbon risks. In 2003, we noted that **BHP Billiton** was the sole company to be actively integrating carbon shadow prices into investment decisions involving investments with emissions over 100,000 tonnes of CO2 per year. In 2004, **Anglo American** declared that it, too, was incorporating the cost of GHG emissions into future investment decision making.

- **Management continues to plough resources into carbon management**. A year after the first Carbon Disclosure Project, corporate mechanisms to manage climate risks continue to evolve, signifying the continued belief that carbon risks must be appropriately managed. Last year, the leading companies were **Rio Tinto** (with its Climate Change Executive), **Alcan** (with its GHG Programme) and **BHP Billiton** (with its GHG Management Plans for operations). This year, we add **Anglo American** to the ranks, with its creation of a multi-disciplinary Carbon Working Group, and its appointment of a corporate manager for climate change. Also, **Alcoa** continues its leadership via its Climate Change Strategy Team.

- **Policy design and implementation remains a key economic uncertainty, clouding the ability of firms to determine new cost structures reliably in a GHG-constrained world**. **Rio Tinto** is particularly vocal regarding the competitive implications of policy development and implementation. It sees the threat of poor policy as a distorting force on market signals that could unfairly discriminate against its coal products, aluminium-smelting operations, and iron ore and steel-making technologies.

Effect of increase in energy cost on stock price
at various assumed levels of energy cost as a % of operating expense
Metals and Mining Sector



Paper & Forest Products

(a) Impacts of Climate Change

- *Material increases in operating costs for pulp and paper operators due to higher energy prices*
- *Exposure of pulp and paper operators to national GHG emissions regulations*
- *Possible opportunities to enhance cash flow from carbon sequestration in forest operations*
- *Opportunities in biomass-based power production, sequestration in forests, and for biofuels in agriculture and forestry*
- *Increased risk from fire and pest problems*
- *Decreased value of land assets due to climate extremes and secondary effects*

(b) Analysis of CDP Responses

	PAPER AND FOREST PRODUCTS								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
International Paper Company	✔	✔	✔	✔	✔	✔	✔	✔	✔
Stora Enso Corp.	✔	✔	✔	✔	✔	✔	✔	✔	✔
Svenska Cellulosa	✔	✔	✔	✔	✔		✔	✔	
Weyerhaeuser Company	✔	✔	✔				✔	✔	✔

(c) Guidance For Investors

- **Carbon sequestration opportunities edging towards reality for forest management and plantation operators**. CO2 trading markets offer huge opportunities for forest companies, particularly in view of the progress made on land use and forestry in the Kyoto negotiations. **International Paper** reports that it has sold carbon credits in the Chicago Climate Exchange (CCX). International Paper was a founding partner in the CCX and is committed to reducing emissions 4% from 1998 by 2001. It was also a founding member of the US EPA's Climate Leaders' Programme, and has agreed to voluntary reductions of 15% from 2000 by 2010. **StoraEnso** is also a founding member of the Chicago Exchange.

- **Forest, pulp and paper operators benefit from use of biomass energy in internal energy mix**. More activity was reported in the use of biomass as a clean and increasingly efficient form of electricity generation. **Weyerhaeuser** has committed to meeting two-thirds of its pulp and paper mill energy requirements from GHG neutral biomass fuels recovered from its manufacturing processes. **Svenska Cellulosa** is another large user of bio-fuel, which provides 37% of its fuel requirements. SCA has large areas of growing forest land. Standing timber volume has increased by 40% over the past 50 years. The net increase in timber corresponds to CO2 absorption by SCA forests of one million tonnes per year. **Weyerhaeuser** is working on the development of biomass "gasification" technology, which could significantly reduce CO2 emissions beyond what can be achieved through conventional biomass energy technologies.

- **Firms' continued efforts to quantify GHG emissions. International Paper** has reported annual CO2 emissions from fossil fuels since 1996, and is using the GHG protocols established by the WRI/WBCSD. **Weyerhaeuser** also participates in the development and updating of the WRI and WBCSD GHG Greenhouse Gas Protocol and the related "Project Quantification Standard" initiatives, and reports that it is still in the process of quantifying its GHG emissions. **StoraEnso** uses the NCASI Protocol, which is based on WRI/WBCSD methodology.

- **Involvement in regulatory/policy making is positioning leading firms to seize carbon-credit opportunities**. The industry recognizes that any additional costs associated with primary fuel and energy inputs, together with any costs to reduce direct GHG emissions, could have a substantial effect on profitability. Accordingly, many firms within this sector are actively seeking ways to cut emissions in a proactive fashion. **Weyerhaeuser** and **StoraEnso** are members of the American Forest and Paper Association, which has a voluntary agreement with its partners to reduce GHG emission intensity by 12% between 2000 and 2012. **Weyerhaeuser** continues to direct efforts through its relationships with the US government's "Climate Vision" programme, the California Climate Action Registry, the Pew Centre on Global Climate Change, the WRI and other business, NGO and related stakeholder organizations.

- **Sustainable forestry/afforestation projects seen as an opportunity**: **Weyerhaeuser** is working to deploy sustainable forest management practices to maintain the large pools of carbon dioxide sequestered in its forests. The firm is also investing in afforestation ventures in Uruguay – new forests that will sustainably sequester millions of tonnes of CO2, even when future harvests are taken into account. The Uruguay project is tentative, as the status of emerging rules for Kyoto CDM projects remains uncertain.

Oil & Gas

(a) Impacts of Climate Change

- *Increases in operating costs due to higher energy prices (esp. downstream/chemicals)*
- *Exposure to national/regional GHG emissions regulations*
- *Business interruptions due to storm activity (esp. Gulf of Mexico)*
- *Strategic opportunities in natural gas/LNG/midstream power sectors*
- *Erosion of fossil fuel market share in power production and vehicle propulsion markets*
- *Strategic opportunities in carbon sequestration*
- *Unplanned/Premature capital outlays for emissions control technology*
- *Strategic opportunities in clean technologies and renewables*

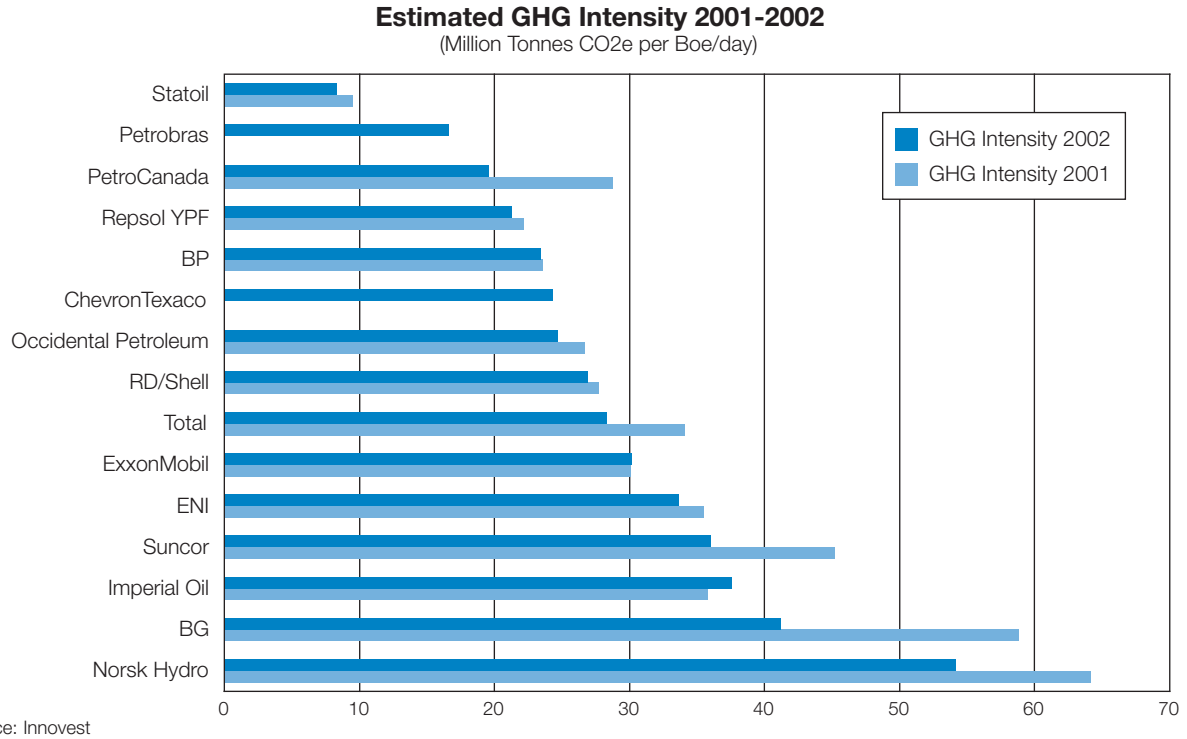
(b) Analysis of CDP Responses

	INTEGRATED OIL & GAS							
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place	Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification		
BG Group	✔	✔	✔	✔	✔	✔	✔	
BP	✔	✔	✔	✔	✔	✔	✔	✔
ChevronTexaco	✔	✔	✔	✔	✔	✔	✔	
ConocoPhillips	✔	✔	✔	✔	✔		✔	
ENI	✔	✔	✔	✔	✔		✔	
Exxon Mobil	✔	✔	✔	✔	✔	✔	✔	
Gazprom	NR	NR	NR	NR	NR	NR	NR	NR
Imperial Oil	✔	✔			✔	✔	✔	
Lukoil OAO	NR	NR	NR	NR	NR	NR	NR	NR
Marathon Oil	DP	DP	DP	DP	DP	DP	DP	DP
Norsk Hydro	✔	✔	✔	✔	✔	✔	✔	
Occidental Petroleum	✔	✔	✔		✔	✔	✔	
Petro-Canada	✔	✔	✔	✔	✔	✔	✔	
Petrobras	✔	✔	✔	✔	✔		✔	
Repsol YPF	✔	✔	✔	✔	✔	✔	✔	
RD/Shell	✔	✔	✔	✔	✔	✔	✔	✔
SIBNEFT- Siberian Oil	NR	NR	NR	NR	NR	NR	NR	NR
Statoil	✔	✔	✔	✔	✔	✔	✔	✔
Suncor Energy	✔	✔	✔	✔	✔	✔	✔	✔
Surgutneftegaz	NR	NR	NR	NR	NR	NR	NR	NR
Total	✔	✔	✔	✔	✔	✔	✔	✔
Yukos Oil Company	QF	QF	QF	QF	QF	QF	QF	QF

	OIL & GAS EXPLORATION & PRODUCTION							
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place	Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification		
Anadarko Petroleum	NR	NR	NR	NR	NR	NR	NR	NR
Apache Corp.	QF	QF	QF	QF	QF	QF	QF	QF
Burlington Resources Inc	DP	DP	DP	DP	DP	DP	DP	DP
Devon Energy Corp.	DP	DP	DP	DP	DP	DP	DP	DP
Encana Corp.	IN	IN	IN	IN	IN	IN	IN	IN
Oil & Natural Gas	NR	NR	NR	NR	NR	NR	NR	NR
CNOOC								

(c) Guidance for Analysts

- **Oil and gas majors vary considerably in terms of the GHG intensity of their operations** (see chart below)



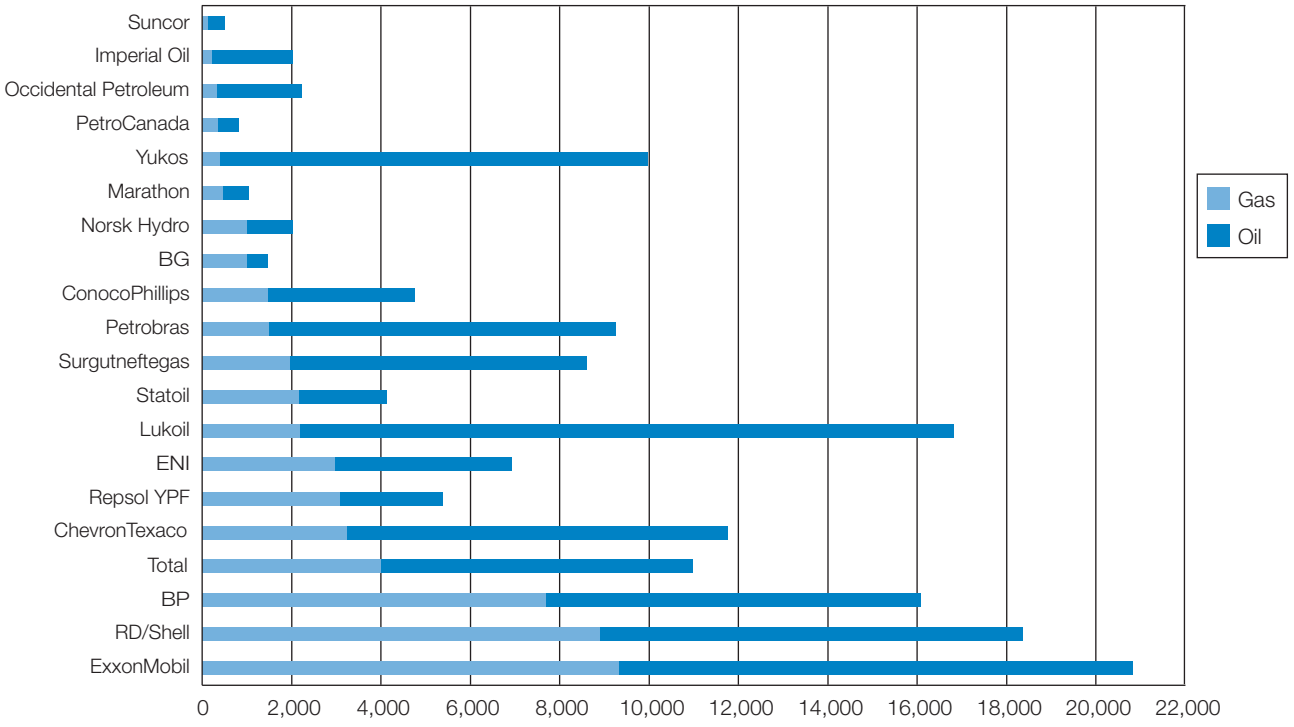
Source: Innovest

- **The short-term: clean technologies seen to pay the most immediate dividends**. While breakthrough technologies await commercialization, several companies are developing clean-energy technologies that will allow firms to profit now. **Exxon Mobil** is researching economically competitive options such as advanced fuels and lubricants, new combustion technologies and hybrid engines that help reduce GHG emissions. It has invested more than $100 million in Stanford University's Global Climate and Energy Project, a commercial research effort on GHG-reducing technology solutions. **PetroCanada** has collaborated with the biotech company Iogen to commercialize a process for producing ethanol from waste by-products from the agricultural industry. In April 2004, Iogen announced that it produced the world's first cellulose ethanol fuel for commercial use. Energy experts expect the global market for bio-fuels such as ethanol to exceed $10 billion by 2012. **Suncor** announced in 2004 that it would build a $120 million ethanol plant in Canada. **Chevron Texaco** has created Sasol Chevron Holdings, a joint venture based on gas-to-liquids (GTL) technology, which it sees as a promising clean-fuel prospect. In Nigeria, the firm plans to bring its first project, the 33,000 barrel-per-day Escravos GTL plant, on stream by 2005.

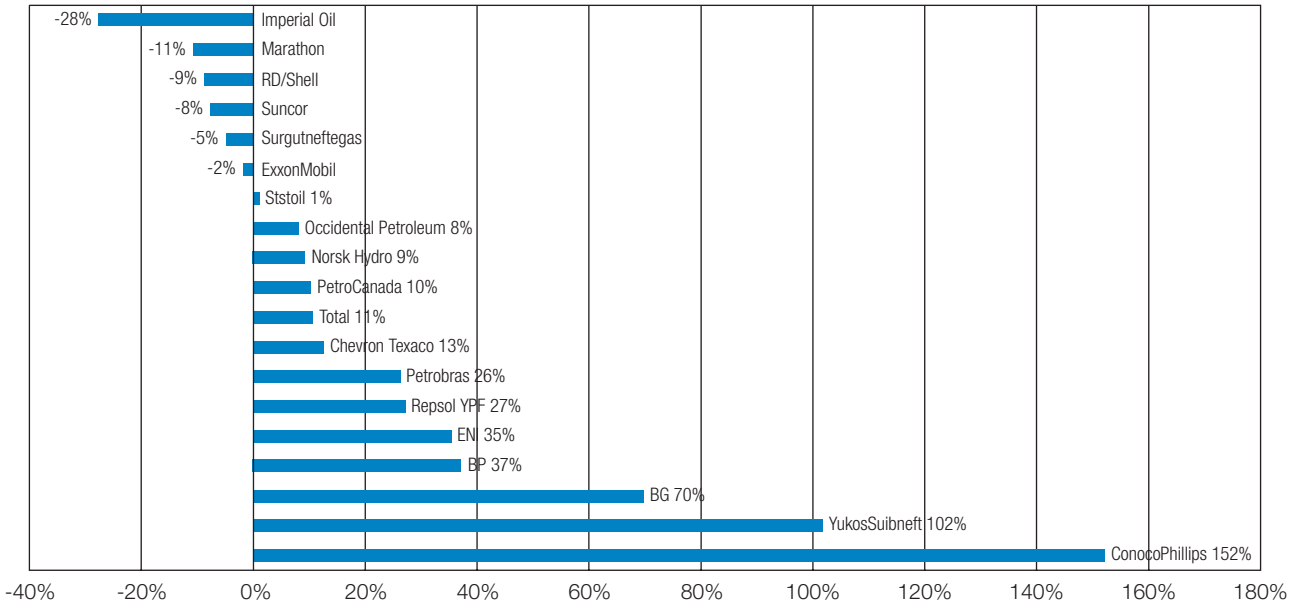
- **The medium-term: energy firms attempt to bolster reserve strength in natural gas to position for future clean-energy demand**. Despite its recent reserve-accounting woes, **Royal Dutch Shell** continues to look favourably on natural gas as a transition fuel to bridge the gap between coal and oil and future alternative energy technologies. In the past 12 months, the firm has made strides in Liquefied Natural Gas (LNG) via its Sakhalin development and its new LNG receiving terminal in Mexico. **ENI** sees natural gas as the fuel of choice in the short and medium term and has identified gas development as a strategic priority.

In addition to reserves, **ENI** is developing advanced energy infrastructure, including the Bluestream and Greenstream deep offshore pipelines connecting Libya and Italy. **BG** states that gas's ability to form part of the solution to climate change – by displacing higher carbon-content fuels – will allow the company to benefit from climate-change policies and measures. **Exxon Mobil** identifies natural gas as offering significant global opportunities as a substitute for coal in electricity generation. The company believes that its leading position in gas supply can help enable manufacturers and power producers to reduce GHG emissions through fuel switching.

Oil, Gas Reserves Split for 2002 (M Boe)



4-Year Gas Reserve Growth 1999-2002 (%)



- **The long-term: companies seek early advantages in renewable energy markets**. In 2000, **Suncor** announced plans to invest CDN$100 million (US$73m) in renewable energy projects by the end of 2005. To date, the company reports a partnership with Enbridge in the 11mw, $22 million SunBridge Wind Power Project and a partnership with EHN Wind Power in a separate 30mw, $48 million project. The two schemes are expected to provide 115,000 tonnes of CO2 emission reductions annually. **Royal Dutch Shell** continues to grow its wind energy business with a target portfolio of 1,600mw by 2005, while Shell Solar GmbH and Gesellschaft für Solarenergie (GEOSOL) are building the world's largest solar power station in Germany. **BP's** solar business has seen its sales increase from 32mw to 71mw over the past four years. **Petrobras's** renewables development programme focuses on solar, wind, biomass, biofuels and hydrogen. The company is making annual investments of $21 million towards these efforts. **Chevron Texaco** has also invested in solar, wind and geothermal projects, in the belief that these energy sources will be important in the overall energy mix of the future global economy. Fuel cells also remain a future growth area. **PetroCanada** has teamed with Ballard Power Systems and Methanex Corp to prepare the way for a commercially viable fuel distribution network to meet demand from fuel-cell vehicles. **Chevron Texaco** is focusing on hydrocarbon liquid production as a fuel source for fuel-cell systems.

- **Climate change is increasingly seen as a strategic imperative requiring comprehensive management**. As was the case last year, virtually all firms surveyed have developed carbon management strategies, albeit of varying quality. Key initiatives include GHG reduction efforts – notably energy efficiency, reduced gas flaring and cogeneration – investments in renewable energy, development of emissions trading expertise and shifts towards low-carbon natural gas in reserves. In the gas-flaring area alone, **Chevron Texaco** says it is leading several billion-dollar efforts to reduce flaring from its operations. Measurement and reporting systems continue to evolve, with management structures such as **Suncor's** GHG Methodology Task Team gaining prominence. Dedicated carbon management teams are also cropping up. **ENI** is developing a network of GHG Managers operating at the corporate level, business unit level and site level. **Royal Dutch Shell** has appointed a corporate Group Climate Change Adviser, and has similar posts in regions where regulations are most imminent, including Canada and Europe. Since 1998, **PetroCanada** has had in place its internal cross-functional Global Climate Change Team. **Repsol YPF** has its Climate Change Unit, and **BP** named its CEO, Lord Browne, as having ultimate management control over the company's strategy for climate change.

- **Costing carbon into new investments continues to attract attention as a risk-management tool**. Last year, we noted that **BG** and **Shell** were known to be incorporating shadow carbon prices into investment appraisals. This year, **Repsol YPF** said it had begun using internal CO2 reference prices in the evaluation of all new investments. Most firms are keeping shadow price estimates proprietary in the interests of competitive positioning. **Chevron Texaco** requires all new capital projects to undergo GHG emissions analysis as part of their appropriations requests.

- **Emissions trading expertise continues to be a 'must'; more companies join the ranks of practitioners**. Every oil and gas major that responded to the CDP information request has some level of engagement in emissions trading (ET) markets. **BP** and **Shell** continue to be recognized as housing some of the world's leading expertise on emissions trading, and most other firms are rapidly increasing their know-how. **Repsol YPF** has appointed a Head of Carbon markets and created an EU ETS Working Group with the aim of reducing transaction costs, managing compliance and preparing to conduct actual trades. **ENI** is attempting to minimize its emission certification costs by defining an audit/certification plan within the company. **Statoil** has designated its SVP Group Finance as responsible for its corporate "Carbon Treasury" which will be the company's single interface with emission trading markets. **Shell Trading** developed its Environmental Products Trading Business to oversee all emissions trading activities and has gained early experience in trading via voluntary participation in the UK Emissions Trading

Scheme. **Chevron Texaco** has undertaken baseline studies on fuel switching, flare reduction and geothermal power projects to determine if such projects could qualify for saleable emissions credits. **Suncor**, operating in the embryonic Canadian ET market, has approached regulatory uncertainty by taking anticipatory action. It completed the world's first cross-border emission reduction trade in 1999 and is highly involved in discussions with the Canadian government regarding ET market development.

BP is one of the first companies to attempt accurate calculation of the emissions associated with its their product use and disposal. This is a large number, but the company is to be greatly complimented on the foresight to make and state the calculation:

Emissions from end-use of BP Products

	(Million tonnes CO2)
Coal (divested during 2003)	15
Fuels and lubricants	590
Gas	610
Chemicals (assumes combustion)	83
TOTAL	1,298

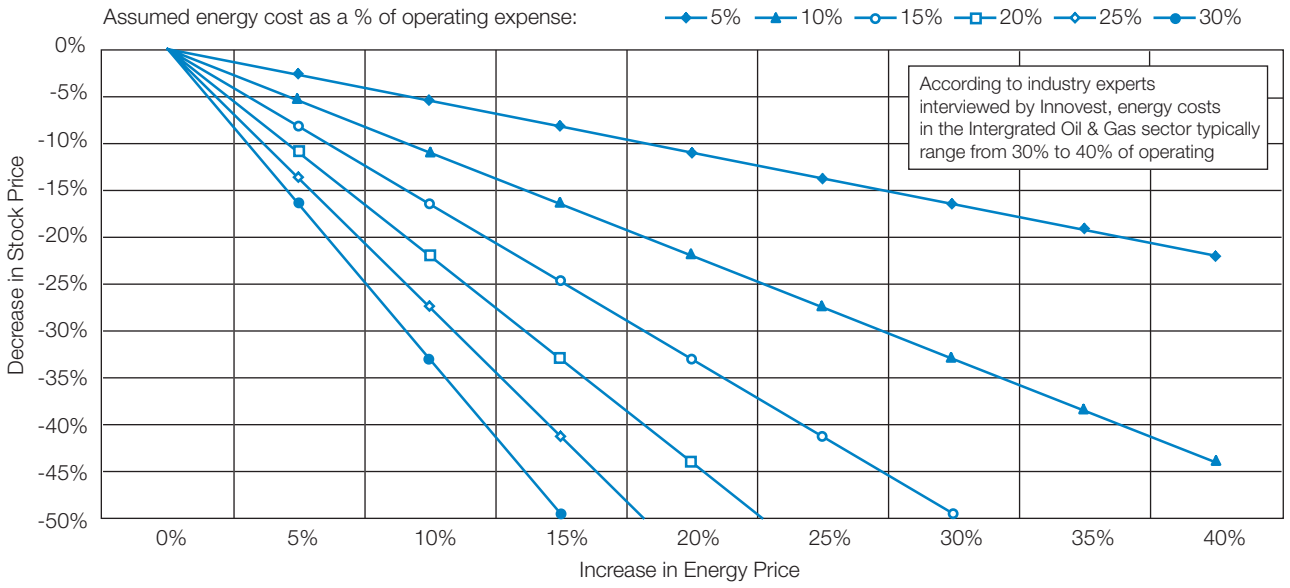
"Assuming that all of our products were consumed and therefore converted to CO2, emissions in 2003 were 1,298 million tonnes from the end use of the products we sell"

- **Compliance with emerging GHG regulations requires solutions; carbon sequestration emerges as a key technology option**. In addition to recourse to the emissions trading markets, several companies are seeking low-cost compliance solutions via carbon sequestration technologies. Several companies drew attention to their participation in the $28 million CO2 Capture Project which supports research into the viability of capturing carbon dioxide from combustion sources and storing the gas underground in geologic formations. Participating companies include **BP, Chevron Texaco, Norsk Hydro, Statoil, Shell,** and **Suncor**. Separately, **Petrobras's** R&D centre is looking at sequestration options from various vegetable formations (algae, swamps, forests) and the viability of carbon dioxide injection in depleted oil fields.

- **Niche markets continue to add value in a shifting energy market**. Beyond their core competencies in oil and gas, several firms are staking out positions in other markets that are expected to benefit from climate-related shifts. **Chevron Texaco's** Chevron Energy Solutions unit targets the demand-side management market by delivering customized, cost-reducing energy solutions to commercial and industrial businesses. The US market it targets has an estimated yearly energy demand – excluding energy commodity sales – of more than $100 billion. **Norsk Hydro's** aluminium interests continue to benefit from increased demand in vehicle technologies, as automakers seek out ways to lower vehicular weight to achieve greater fuel economy and compliance with tougher emissions rules. **BG** expects to launch its micro combined heat and power technology in 2005, and believes that it can contribute significantly towards the UK's Kyoto target while also generating new revenue.

- **As with other resource sectors, energy efficiency is at a premium**. All of the integrated firms that submitted responses were conscious of their exposure to rising energy costs, and were therefore focusing on energy-efficient projects to reduce operating expenditures and hedge risk.

Effect of increase in energy cost on stock price
at various assumed levels of energy cost as a % of operating expense
Integrated Oil & Gas Sector



Transportation

(a) Impacts of Climate Change

- *Material increases in operating costs due to higher fuel prices*
- *Exposure to national/global GHG emissions regulations*
- *Risks of reduced demand for coal transportation services*
- *Opportunities in clean fuel markets, logistics*
- *Increased opportunities and public sector support for less GHG-intense transportation forms (e.g. light rail transit)*
- *Disruptions to packaging, transportation regulations*
- *Weather disruptions to schedules, operating viability*

(b) Analysis of CDP Responses

		TRANSPORTATION								
		Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
				Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Surface Transport	AP Moller-Maersk	DP	DP	DP	DP	DP	DP	DP	DP	DP
	Autostrade									
	BAA PLC	✔	✔	✔	✔	✔		✔	✔	✔
	Burlington Northern Santa Fe Corp	✔	✔			✔	✔	✔	✔	✔
	Canadian National Railway Company	DP	DP	DP	DP	DP	DP	DP	DP	DP
	Central Japan Railway Co	DP	DP	DP	DP	DP	DP	DP	DP	DP
	East Japan Railway Company	✔	✔			✔		✔	✔	✔
	Norfolk Southern Corp.	IN	IN	IN	IN	IN	IN	IN	IN	IN
	Union Pacific Corp.	DP	DP	DP	DP	DP	DP	DP	DP	DP
Trading & Distribution	Mitsubishi Corp.	✔	✔	✔	✔	✔	✔	✔		✔
	Mitsui & Company Limited	✔	✔	✔	✔	✔	✔	✔	✔	✔
Air Freight & Couriers	Deutsche Post AG	✔	✔	✔		✔		✔	✔	✔
	Fedex Corp.	✔	✔	✔				✔	✔	
	TPG NV	✔	✔			✔		✔	✔	
	United Parcel Service Inc	✔	✔	✔		✔	✔	✔	✔	✔
Airline	Southwest							✔		

(c) Guidance For Investors

- **Higher operating costs will squeeze margins and place a premium on efficiency**. We reiterate last year's view that margins will be squeezed by CO2 emissions abatement expenses and higher fuel prices (caused by higher costs upstream in the energy business). Diesel fuel expenses are a sizeable percentage of overall operating expenses for the larger firms (typically 5% to15% and sometimes higher). **BAA** is among the top 20 energy users in the UK and admits that it will be greatly affected by carbon charges. Rail firms believe that they have a natural advantage here. **BNSF**, a US rail company, points to the fact that Railroad Energy Intensity (BTU per ton-mile) is 346 compared with 444 for waterborne commerce and 3,337 for trucks. Moreover, rail freight fuel efficiency is up to 404 miles/gallon of diesel from 332 miles in 1990.

- **Transport firms have moved to more common/more sophisticated approaches to quantifying internal emissions**. **Deutsche Post** measures all emissions from all its business segments, and calculates emissions per average piece of mail (DP claims that the offset for GHG emissions would cost approximately 10 – 20 €/t CO2e). **TPG** measures emissions from all segments. **UPS** uses the GHG Protocol (but focuses only on the US). **BAA** measures all CO2 emissions. **East Japan Railway** uses fuel consumption coefficients to determine emissions, while **BNSF** reports CO2 emissions using the US Department of Energy procedure. **BAA** is supported by the Carbon Trust through a voluntary agreement and is a participant in the Carbon Management Pilot Programme.

- **Pursuing emissions trading trials provides another competitive dimension for diversified companies**. The Japanese firms **Mitsubishi** and **Mitsui** have continued their financial stake in emissions trading firms, the former with Natsource and the latter with CO2e.com. **Mitsui** also joined the World Bank's Prototype Carbon Fund with a $6 million investment expecting a 1.2 million ton CO2e to be the dividend. The firm also maintains about 40,000 hectares of forest land in Japan, sinking 172,000 tCO2e/year, and spends $3 million annually on its maintenance.

- **Research into alternative fuels for ground vehicle and rail fleets continues**. **UPS** maintains its R&D on hybrid electric and fuel-cell vehicles in partnership with undisclosed automotive manufacturers, and reports that it operates the world's largest private sector fleet of alternative fuelled vehicles. **BAA** is exploring on-site embedded generation, securing an off-site supply of renewable energy. **BNSF** is purchasing new locomotives with advanced microprocessors and other features that translate to fuel efficiency gains, and remains committed to meeting White House Council on Environmental Quality targets to reduce GHG intensity by 18% by 2012.

- **Government partnerships continue to expand as regional transportation policies shift in favour of low GHG intensity programmes**. As we noted last year, rail companies, logistics firms, courier and express delivery services and other integrated transportation modes that produce fewer life-cycle GHG emissions are involved with public-private partnerships around the world. For example, both **FedEx** and **UPS** are participating in the "Smartway Transport" scheme under the US EPA's Climate Leaders Programme to reduce GHG emissions from the ground transportation sector, and many rail firms have begun to market their services on the strength of their low carbon characteristics. **East Japan Railway** is pushing for the promotion of inter-modal shift for individual transport/commuting, and **Autostrade** is working with the Environment Minister in Italy in order to optimize energy consumption and traffic management.

Matrices for Remaining Sectors

	ADVERTISING								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Omnicom Group Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR

	AEROSPACE AND DEFENCE								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Boeing Co.	NR	NR	NR	NR	NR	NR	NR	NR	NR
General Dynamics	NR	NR	NR	NR	NR	NR	NR	NR	NR
Honeywell International Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lockheed Martin Corp.	IN	IN	IN	IN	IN	IN	IN	IN	IN
Northrop Grumman Corp.	DP	DP	DP	DP	DP	DP	DP	DP	DP
Raytheon Co.	QF	QF	QF	QF	QF	QF	QF	QF	QF
United Technologies Corp.	✔	✔	✔		✔		✔	✔	✔

	BIOTECHNOLOGY								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Amgen Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Genentech Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Genzyme	✔	✔	✔				✔		
Gilead Sciences	NR	NR	NR	NR	NR	NR	NR	NR	NR
Medimmune Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Serono	IN	IN	IN	IN	IN	IN	IN	IN	IN

BROADCAST AND CABLE TV

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
British Sky Broadcasting Group	✔	✔	✔		✔	✔	✔	✔	✔
Clear Channel Communications	NR	NR	NR	NR	NR	NR	NR	NR	NR
Comcast Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cox Communications, Ltd.							✔		
General Motors CL H (see General Motors)									
Liberty Media Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mediaset	QF	QF	QF	QF	QF	QF	QF	QF	QF

BUILDING PRODUCTS

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Masco	NR	NR	NR	NR	NR	NR	NR	NR	NR
Saint-Gobain	✔	✔	✔	✔	✔		✔	✔	✔

COMMERCIAL SERVICES AND SUPPLIES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Automatic Data Processing	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cendant Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Dai Nippon Printing Group	✔	✔	✔	✔	✔	✔	✔	✔	✔
First Data Corp.									
H&R Block									
Paychex Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Pitney Bowes	✔	✔			✔	✔	✔	✔	✔

COMMUNICATIONS EQUIPMENT

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Alacatel	✔	✔	✔		✔	✔	✔	✔	✔
Cisco Systems	✔	✔	✔				✔	✔	
Ericsson	✔	✔			✔		✔	✔	✔
Motorola	✔	✔	✔	✔	✔	✔	✔	✔	✔
Nokia	✔	✔			✔		✔	✔	
Nortel Networks	✔	✔			✔	✔	✔	✔	
Qualcomm	✔	✔	✔		✔	✔	✔		

COMPUTERS AND PERIPHERALS

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Dell	✔	✔	✔		✔	✔	✔	✔	✔
EMC Corp.	IN	IN	IN	IN	IN	IN	IN	IN	IN
Hewlett-Packard	✔	✔	✔	✔	✔	✔	✔	✔	✔
IBM	✔	✔	✔		✔		✔	✔	✔
Lexmark	IN	IN	IN	IN	IN	IN	IN	IN	IN
Sun Microsystems	NR	NR	NR	NR	NR	NR	NR	NR	NR
Toshiba	✔	✔	✔		✔		✔	✔	✔

CONSTRUCTION AND FARM MACHINERY

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Caterpillar Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
John Deere & Co.	IN	IN	IN	IN	IN	IN	IN	IN	IN
Volvo AB	✔	✔	✔		✔	✔	✔	✔	✔

CONSTRUCTION MATERIALS

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
CRH	✔	✔	✔	✔	✔	✔	✔	✔	✔
LaFarge	✔	✔	✔	✔	✔	✔	✔	✔	✔

CONSUMER AND HOUSEHOLD SERVICES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Apollo Group Inc	NR	NR	NR	NR	NR	NR	NR	NR	NR

ELECTRICAL EQUIPMENT

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Emerson	✔	✔	✔				✔	✔	✔
Schneider Electric							✔		

ELECTRONIC EQUIPMENT AND INSTRUMENTS

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Canon Inc.	✔	✔	✔		✔		✔	✔	✔
Hitachi Ltd.	✔	✔	✔		✔	✔	✔	✔	✔
Kyocera	✔	✔	✔		✔	✔	✔	✔	✔
Murata Manufacturing Co. Ltd.	✔	✔	✔		✔		✔	✔	✔
Ricoh Co. Ltd.	✔	✔	✔	✔	✔	✔	✔	✔	✔

ENERGY EQUIPMENT AND SERVICES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Baker Hughes Inc.	QF	QF	QF	QF	QF	QF	QF	QF	QF
Halliburton Energy Services	✔	✔	✔		✔	✔	✔		
Schlumberger Inc.	✔	✔					✔		

HEALTHCARE EQUIPMENT AND SUPPLIES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Baxter Int.	✔	✔	✔	✔	✔	✔	✔	✔	✔
Beckton Dickenson		✔			✔	✔			
Biomet Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Boston Scientific	✔	✔	✔		✔		✔	✔	
Guidant Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Medtronic		✔	✔				✔		
St. Jude Medical CRMD					✔		✔		
Stryker	NR	NR	NR	NR	NR	NR	NR	NR	NR
Zimmer Holdings	✔	✔	✔				✔		

HEALTHCARE PROVIDERS AND SUPPLIES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Aetna Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Anthem									
Cardinal Health	NR	NR	NR	NR	NR	NR	NR	NR	NR
HCA Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
McKesson Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Tenet Healthcare Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
United Health Group									
Wellpoint Health Network Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR

HOTELS, RESTAURANT AND LEISURE

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Carnival	NR	NR	NR	NR	NR	NR	NR	NR	NR
Compass Group PLC	IN	IN	IN	IN	IN	IN	IN	IN	IN
Marriott	DP	DP	DP	DP	DP	DP	DP	DP	DP
McDonald's	DP	DP	DP	DP	DP	DP	DP	DP	DP
Six Continents PLC	DP	DP	DP	DP	DP	DP	DP	DP	DP
Starbucks	✔	✔	✔		✔	✔	✔		

HOUSEHOLD DURABLES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Matsushita Electric	✔	✔	✔	✔	✔	✔	✔	✔	✔
Newell Rubbermaid Inc	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nintendo	✔	✔	✔				✔	✔	✔
Philips Electronics	QF	QF	QF	QF	QF	QF	QF	QF	QF
Sharp	✔	✔	✔		✔		✔	✔	✔
Sony	✔	✔	✔		✔	✔	✔	✔	✔
Thomson	✔	✔			✔		✔	✔	✔

HOUSEHOLD AND PERSONAL PRODUCTS

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Avon Products Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beiersdorf	IN	IN	IN	IN	IN	IN	IN	IN	IN
Clorox	NR	NR	NR	NR	NR	NR	NR	NR	NR
Colgate	✔	✔	✔		✔	✔	✔	✔	✔
Gillette	✔	✔	✔		✔	✔	✔	✔	✔
Henkel	✔	✔	✔		✔	✔	✔		
Kao	✔	✔	✔	✔	✔	✔	✔	✔	✔
Kimberly-Clark	✔	✔	✔	✔	✔	✔	✔	✔	✔
L'Oreal	✔	✔			✔	✔	✔	✔	
Proctor & Gamble	✔	✔	✔		✔	✔	✔	✔	✔
Reckitt Benckiser PLC	✔	✔	✔	✔	✔	✔	✔	✔	✔

INDUSTRIAL CONGLOMERATES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
3M	✔	✔	✔	✔	✔	✔	✔	✔	✔
General Electric	✔	✔	✔	✔	✔	✔	✔	✔	✔
Hutchison Whampoa Limited	NR	NR	NR	NR	NR	NR	NR	NR	NR
Siemens	QF	QF	QF	QF	QF	QF	QF	QF	QF
Tyco International Limited	DP	DP	DP	DP	DP	DP	DP	DP	DP

INDUSTRIAL MACHINERY

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Danaher	✔						✔		
Fanuc Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Illinois Tool Works	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mitsubishi	✔	✔	✔		✔	✔	✔	✔	✔

INTERNET SOFTWARE AND SERVICES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
T-Online AG	NR	NR	NR	NR	NR	NR	NR	NR	NR
USA Interactive	NR	NR	NR	NR	NR	NR	NR	NR	NR
Yahoo Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR

IT CONSULTING AND SERVICES

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Electronic Data Systems Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
NTT Data Corp.	✔	✔	✔		✔		✔	✔	✔

LEISURE EQUIPMENT AND PRODUCTS

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Eastman Kodak Co.	✔	✔	✔		✔	✔	✔	✔	✔
Fuji Photo Film Co. Ltd.	✔	✔	✔	✔	✔	✔	✔	✔	✔
Mattel		✔					✔		

MEDIA

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
AOL Time Warner	IN	IN	IN	IN	IN	IN	IN	IN	IN

MOVIES AND ENTERTAINMENT

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Fox Entertainment	NR	NR	NR	NR	NR	NR	NR	NR	NR
News Ltd.	✔	✔	✔		✔	✔	✔	✔	✔
Viacom Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vivendi Universal	✔	✔			✔		✔	✔	✔
Walt Disney Co.	IN	IN	IN	IN	IN	IN	IN	IN	IN

MULTILINE RETAIL

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Amazon Inc.	DP	DP	DP	DP	DP	DP	DP	DP	DP
Costco Wholesale Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
eBay	✔						✔		
GUS Plc.	✔	✔	✔		✔	✔	✔	✔	✔
Kohls Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Marks and Spencer	✔	✔	✔		✔	✔	✔	✔	✔
Sears Roebuck Co.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Target Co.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Wal Mart De MEX SA de CV							✔		
Wal Mart Stores Inc.	IN	IN	IN	IN	IN	IN	IN	IN	IN
Woolworths Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR

	PHARMACEUTICALS								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Abbott Laboratories	✔	✔	✔	✔	✔		✔	✔	✔
Allergan	IN	IN	IN	IN	IN	IN	IN	IN	IN
AstraZeneca	✔	✔	✔		✔	✔	✔	✔	✔
Aventis	✔	✔	✔		✔	✔	✔	✔	✔
Bristol-Meyers Squibb	✔	✔	✔		✔	✔	✔	✔	✔
Eli Lilly	✔	✔	✔		✔		✔	✔	
Forest Laboratories	NR	NR	NR	NR	NR	NR	NR	NR	NR
GlaxoSmithKline	✔	✔	✔	✔	✔	✔	✔	✔	✔
Johnson & Johnson	✔	✔	✔	✔	✔	✔	✔	✔	✔
Merck	IN	IN	IN	IN	IN	IN	IN	IN	IN
Novartis International	✔	✔	✔		✔	✔	✔	✔	✔
Novo Nordisk	✔	✔	✔	✔	✔		✔		✔
Pfizer	✔	✔	✔	✔	✔	✔	✔	✔	✔
Pharmacia Corp. (acuqired by Pfizer)									
Roche	✔	✔	✔		✔	✔	✔	✔	✔
Sanofi Syntelabo	✔		✔		✔	✔	✔		
Schering	✔	✔	✔		✔	✔	✔	✔	✔
Schering - Plough	✔	✔	✔		✔	✔	✔	✔	✔
Takeda	✔	✔	✔		✔		✔	✔	✔
Wyeth	✔	✔	✔		✔	✔	✔	✔	
Yamanouchi	✔	✔	✔		✔		✔	✔	✔

	PUBLIC SERVICES								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
SUEZ	✔	✔	✔	✔	✔	✔	✔	✔	
"Waste Management, Inc."	✔	✔	✔	✔			✔	✔	✔

PUBLISHING

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Gannett	DP	DP	DP	DP	DP	DP	DP	DP	DP
McGraw Hill Co.	IN	IN	IN	IN	IN	IN	IN	IN	IN
Reed Elsevier	✔	✔			✔		✔	✔	✔
Tribune Co.		✔			✔		✔	✔	

SEMI-CONDUCTOR EQUIPMENT AND PRODUCTS

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Analog	NR	NR	NR	NR	NR	NR	NR	NR	NR
Applied Materials	✔	✔	✔						
Infineon	✔	✔	✔		✔	✔	✔	✔	✔
Intel	✔	✔	✔	✔	✔	✔	✔	✔	✔
Linear Technology	NR	NR	NR	NR	NR	NR	NR	NR	NR
Maxim Integrated Products Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Rohm	✔	✔	✔		✔		✔		✔
Samsung	IN	IN	IN	IN	IN	IN	IN	IN	IN
ST Microelectronics	✔	✔	✔	✔	✔	✔	✔	✔	✔
Taiwan Semiconductor Manufacturing Co.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Texas Instruments	✔		✔			✔	✔	✔	✔
United Micro Electronics	NR	NR	NR	NR	NR	NR	NR	NR	NR
Xilinx Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR

SOFTWARE

	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
"Computer Associates International, Inc."	NR	NR	NR	NR	NR	NR	NR	NR	NR
Electronic Arts Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Intuit Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Microsoft		✔					✔		
Oracle	DP	DP	DP	DP	DP	DP	DP	DP	DP
SAP			✔				✔		
Veritas	✔	✔	✔				✔		

	TEXTILE AND APPAREL								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Gucci Group NV	NR	NR	NR	NR	NR	NR	NR	NR	NR
LVMH	✔	✔			✔	✔	✔		
Nike Inc.	✔	✔			✔	✔	✔	✔	✔

	SPECIALTY RETAIL								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Bed Bath and Beyond Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Best Buy Co. Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Gap Inc.									
H & M	✔	✔			✔	✔	✔		
Home Depot Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Inditex Group	✔	✔			✔		✔	✔	✔
Kingfisher PLC	QF	QF	QF	QF	QF	QF	QF	QF	QF
Lowe's Companies Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
TJX Companies Inc.	DP	DP	DP	DP	DP	DP	DP	DP	DP
Staples Inc.	QF	QF	QF	QF	QF	QF	QF	QF	QF

	TELECOMMUNICATIONS								
	Considers Climate Change to Present Risks and/or Opportunities	Responsibility Allocated for Management of Climate Change Related Issues	Strategy to Prepare for Emissions Trading Regimes		Quantified GHG Reporting		Emission Reduction Programs in Place		Formal GHG Reduction Targets Set With Timeline
			Monitoring Developments	Evidence of Early Engagement	Emissions Data Disclosed	Use of Third Party Reporting Protocol/Verification	Energy Efficiency Programs	CHG Reduction Programs	
Alltel	DP	DP	DP	DP	DP	DP	DP	DP	DP
American Movil	NR	NR	NR	NR	NR	NR	NR	NR	NR
AT & T Corp.	QF	QF	QF	QF	QF	QF	QF	QF	QF
AT & T Wireless Services Inc.	DP	DP	DP	DP	DP	DP	DP	DP	DP
BCE Inc.	DP	DP	DP	DP	DP	DP	DP	DP	DP
Bellsouth Corp.	DP	DP	DP	DP	DP	DP	DP	DP	DP
BT Group PLC	✔	✔	✔		✔	✔	✔	✔	✔
China Mobile (Hong Kong) Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Deutsche Telecom	✔	✔	✔	✔	✔	✔	✔	✔	✔
Etisalat	NR	NR	NR	NR	NR	NR	NR	NR	NR
France Telecom	✔	✔	✔	✔			✔		
Japan Telecom Holdings Co. Ltd.	DP	DP	DP	DP	DP	DP	DP	DP	DP
Kddi Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
KPN	✔				✔		✔	✔	
KT Corp.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nextel Communications Inc.	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nippon Telegraph and Telephone Co.	✔	✔	✔		✔	✔	✔	✔	✔
NTT Docomo Inc.	✔	✔	✔		✔		✔	✔	
Orange (see France Telecom)									
Portugal Telecom		✔	✔		✔	✔	✔	✔	✔
Saudi Telecom	NR	NR	NR	NR	NR	NR	NR	NR	NR
SBC Communications Inc.	DP	DP	DP	DP	DP	DP	DP	DP	DP
Singapore Telecom Ltd.	NR	NR	NR	NR	NR	NR	NR	NR	NR
SK Telecom									
Sprint	IN	IN	IN	IN	IN	IN	IN	IN	IN
Swisscom	✔	✔	✔		✔		✔	✔	✔
TeliaSonera	✔	✔	✔		✔		✔		
Telecom Italia/Olivetti	✔	✔	✔	✔	✔	✔	✔	✔	✔
Telecom Italia Mobile	✔		✔		✔	✔	✔	✔	✔
"Telefonica, S.A."	✔	✔	✔		✔	✔	✔	✔	✔
Telefonos de Mexico	QF	QF	QF	QF	QF	QF	QF	QF	QF
Telstra Co. Ltd.	✔	✔	✔		✔		✔	✔	✔
Verizon Communications Inc.	✔	✔	✔	✔	✔	✔	✔	✔	
Vodafone	✔	✔	✔		✔	✔	✔		

APPENDIX B. Methodology For Calculating Energy Price Sensitivity

1) For each company in the sector, we used consensus financial forecasts from Thomson/First Call for current year forecasts. This includes Sales, Operating Profit, Net Income, Earnings Per Share. We use Current Stock Price and forecast EPS to determine implied forward Price/Earnings Ratio.

		Anglo American PLC
Sales	(1)	$ 23,329
Operating Expenses		$ 18,943
Operating Profit	(1)	$ 4,385
Net Income	(1)	$ 2,297
Shares Outstanding		1,278
EPS Median Curr F Yr 1	(1)	$1.80
Current Stock Price		$21.61
Implied P/E Ratio		12.02

2) For each company in the sector, we then determined the effect of energy price increases. Starting with Thomson/First Call forecasted Operating Expense, we assumed a) the level of energy cost as a percentage of operating expense, and b) the increase in energy cost. In this example, we assumed that energy was 25% of operating expense and that prices would increase by 5%. We then calculated the amount of the increase in expenses, and deducted this from forecasted Net Income. Using implied forward Price/Earnings Ratio, we then determined adjusted stock price and market capitalization.

	Assumptions	Anglo American PLC
Energy Cost as % of Operating Expenses	25%	$ 4,735.85
Energy Cost Change	5%	$ 236.79
Adjusted Net Income		$ 2,060.21
Adjusted EPS		$ 1.61
Adjusted Stock Price		$ 19.38
Change in Stock Price		$ 2.23
% Change in Stock Price		-10.3%
Adjusted Market Cap		$ 24,772
Change in Market Cap		$ (2,847)

3) Calculations across the companies in the sector were then averaged. (Note that the maximum P/E ratio used for this average in Metals & Mining is 30; Barrick Gold traded at a significantly higher P/E of 58, reflecting the current asset value of its gold reserves.) Using these calculations, we were able to perform a sensitivity analysis on both assumptions, providing a range of results depending on energy price change and the cost of energy as a percentage of operating expense.

APPENDIX C.
Renewable Energy and Clean Technology: Global Market Overview

- The World Energy Council estimates that the global market for renewable energy could be $625 billion by 2010 and $1,900 billion by 2020. Non-hydro renewables are expected to grow faster than any other primary energy source to 2030, by an average of 6% per annum. Europe is being most aggressive. It aims to generate 50% of its energy needs from renewables by 2050, corresponding to some $90-$135 billion.

IEA World Power Market Overview

Looking towards the long-term, world primary energy demand is expect to grow by 1.7% annually to 2030 according to the IEA. A business as usual trajectory would see fossil fuels account for 90% of this increase. CO2 emissions in this scenario would rise by 1.8% per year to reach 38 billion tonnes in 2030, or 70% above present day levels, with 2/3 of this coming from developing countries. Electricity demand growth will be particularly strong; 2.4% per year, an effective doubling over the period. Demand for natural gas as fuel of choice is also projected to double to 2030, with gas-fired power stations being the main factor. Oil consumption is expected to rise by 1.6% annually, mostly on account of transportation needs. Coal demand growth is projected to be lower than this, however, it is expected to remain the dominant fuel type in power generation. China and India are anticipated to account for 2/3 of global demand increase to 2030. China ranks second to the U.S. in energy consumption, and is expected to triple power generating capacity by 2015 (from 1995 levels), requiring some $449 billion in total investment. The IEA expects nuclear's role in power generation to shrink everywhere outside of Asia.

Non-hydro renewables are expected to grow faster than any other primary energy source, by 6% per annum. Total output from renewables will increase 6-fold over this period. Worldwide, the growth in electricity from renewable energy is projected to rise by 9-10% annually, compared with 2.4% for electricity from conventional fossil fuel sources (Navigant Consulting, June 2003). This translates into a market of approximately $35 billion by 2013, up from roughly $17 billion at present. IEA reckons that wind and biomass will account for 80% of this increase.

Capital and generating costs of renewables are expected to fall dramatically over the next decade, making clean electricity more competitive. Worldwide capacity additions from renewables are expected to be in the region 400 GW, compared with 2,000 GW (or 40% of total) for natural gas, 1,400 for coal and 400 for hydro. Total worldwide capacity additions are expected to be roughly 5,000 MW. Approximately 33% of this will be in Asia. 2,000 MW of capacity, corresponding to some $1,740 billion in cumulative investments, will be needed in OECD countries to replace aging plants and meet rising demand *(World Power 2003, IEA World Energy Outlook).*

- Governments around the world reiterated their support for dealing with climate change via a portfolio of low-carbon technologies, from greater energy efficiency and hybrid electric vehicles, to coal-based integrated gasification combined cycle (IGCC) with carbon capture and sequestration and fuel cells. Many have set clear targets for renewables.

- The **European Union's** official target is 12% of energy from renewables by 2010, a target that requires annual growth in production of renewable electricity of 5.7%. Europe also aims to generate 50% of its energy needs from renewables by 2050. (See map for details of individual country renewable energy targets and incentives.)

- The **UK** government's target is to source 15% of national power from renewables by 2015 (it is currently around 3%). In 2003, the government invited bids from companies to invest up to £6 billion into offshore wind in the biggest boost the UK's green energy sector has ever seen.

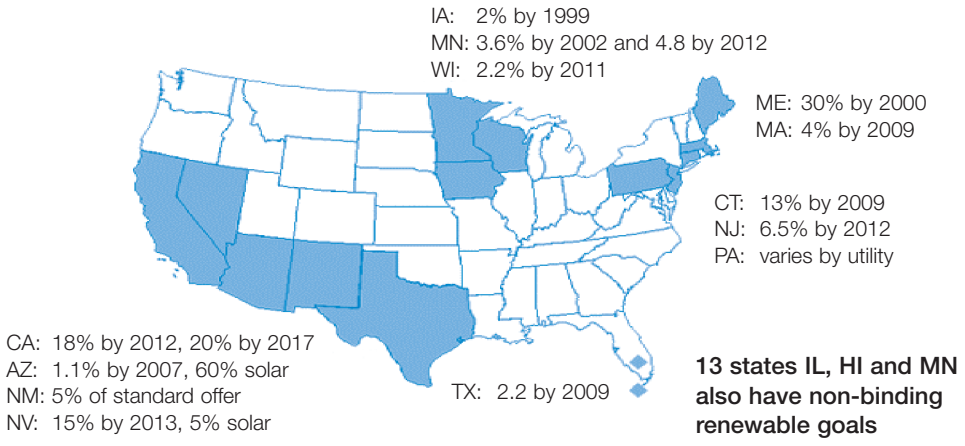
- In the **US**, most states have renewables targets of one form or another. The Bush administration's Climate and Energy Policies provide for $7 billion in tax credits for clean energy initiatives over the next 10 years. Plans promoted by the Democratic presidential candidate, John Kerry, envisage producing 20% of US energy from renewable fuels by 2020.

- The Mandatory Renewable Energy Target in **Australia** aims to generate 9,500gwh of renewable energy annually by 2010, and 20,000gwh by 2020. This equates to roughly 2% market share for renewables by 2010. Since 2001, A$900 million (US$648m) has reportedly been invested in the Australian renewables market, with a further A$1 billion planned or committed.

- The **Canadian** federal government has launched a CDN$1 billion (US$730m) Climate Change Action Plan. Sustainable Development Technology Canada (SDTC) will allocate over $300 million of capital into the clean-tech sector in the coming months in partnership with private-sector investors.

- In **Japan**, electricity generation targets to 2010 range from increases of 10% for hydro to 50% for some solar PV and wind installations. A 50% capital subsidy for the construction of wind plant and 20% for geothermal will also spur the market. The "Green Credit System" is designed to give electricity producers additional incentives to purchase renewable energy.

Renewable Energy Standards



Source: CO2e.com

Renewable Energy (Re) Targets & Incentives Across Europe

BENELUX COUNTRIES (BELGIUM, NETHERLANDS, LUXEMBOURG)

Belgium *RE 2010 Target*: **6%**. *RE Financial Incentives*: Certain regions: €0.03/kWh market price + €0.07/kWh for the tradeable green certificates. Systems in operation since 2002. €100 penalty cost for not meeting target.
Netherlands RE 2010 Target: **9%**. In 2002, electricity production from RE totaled 3644 GWh, representing 3.4% of total electricity consumption. Among other incentives, consumption of renewable energy is encouraged by an ecotax exemption for most forms of renewable electricity. *RE Financial Incentives*: €0.029/kWh price for green certificates. Feed-in tariffs = €0.07/kWh (except for onshore wind and biomass = €0.05/kWh) financed by a levy on connections to the grid.
Luxembourg *RE 2010 Target*: **5.7%**. Luxembourg has stated that it can meet its 2010 objective only if total electricity consumption in 2010 does not exceed that of 1997. Recent estimates put the proportion of total domestic energy consumption flowing from RE at 2.5%. *RE Financial Incentives*: €0.03/kWh (mkt price) + €0.025/kWh (premium).

UK AND IRELAND

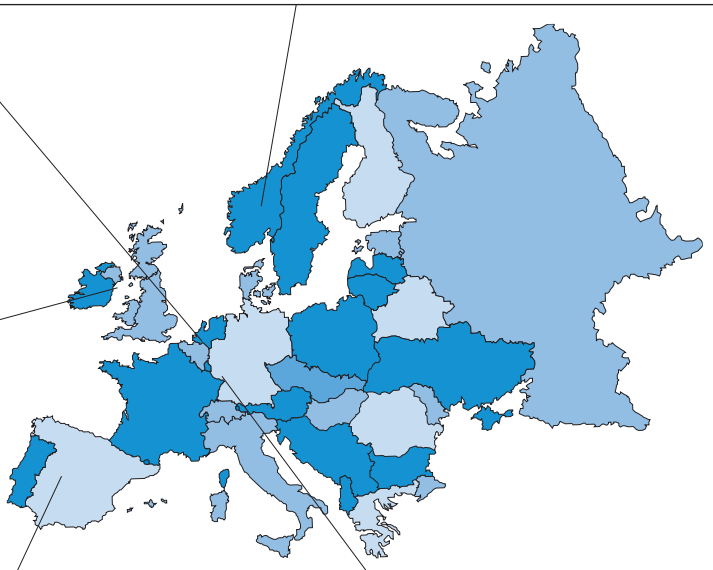
United Kingdom *RE 2010 Target*: **10%**. Renewable electricity supply is forecast to reach about 10% by 2010. Most of the required growth will come from wind power, both on and off-shore. *RE Financial Incentives*: Renewables Obligation: €46.3/MWh penalty (buy-out price). Certificates for each MWh generated from RE (ROCs) are tradeable. ROCs are currently trading at around £47/MWh and are likely to fall to c. £30/Mwh by 2010 (UBS Warburg, 2003). Offshore wind projects get 40% capital grants. €0.03/kWh (mkt price) + €0.07kWh (green certificate).
Ireland *RE 2010 Target*: **13.2%**. RE currently provides approximately 2% of Ireland's electricity production. *RE Financial Incentives*: Small hydro: €0.06/kWh; wind: €0.05/kWh; biomass: €0.06/kWh.

SOUTHERN EUROPE (GREECE, ITALY, PORTUGAL, SPAIN)

Greece *RE 2010 Target*: **20.1%**. In 2002, RE constituted 2.4% of Greece's total electricity consumption. RE development in Greece is characterized by a lack of overall specialized physical planning. At the end of 2003, total RE production amounted to 4257 MW. *RE Financial Incentives*: €0.07/kWh + c 0.8-1/kWh extra.
Italy *RE 2010 Target*: **25%**. Italy has stated that 22% is a realistic figure on the assumption that in 2010 gross national electricity consumption will be 340 TWh. *RE Financial Incentives*: Italy requires power suppliers to purchase 2% of electricity from RE sources. 1 green certificate in Italy corresponds to 100 MWh of RE production. €0.05/kWh (mkt price) + €0.08/kWh (GC price).
Portugal *RE 2010 Target*: **39%**. In 2002, the share of electricity produced from RE was 32.5%. It should be stressed that in countries with a large share of hydroelectricity production (such as Portugal and Sweden), the chances of meeting targets depends heavily on variations in and distribution of rainfall. *RE Financial Incentives*: €0.08/kWh except biomass = €0.06/kWh.
Spain *RE 2010 Target*: **29.4%**. Total RE production grew 17.8% from 2001–2002. Taking into account large-scale hydro, it is estimated that over 30% of Spain's total energy demand in 2010 will be derived from RE. *RE Financial Incentives*: €0.065/kWh (€0.035/kWh pool price + €0.03 premium) for plants using cogen ad RE at a capacity less than 50MW.

NORTHERN EUROPE (DENMARK, FINLAND, SWEDEN)

Denmark: *RE 2010 Target*: **29%**. Proportion of RE as part of the country's gross electricity consumption rose from 6% to 20% during the 1995-2002 period. It is expected to reach 29% by 2005. Denmark is the continental leader in the offshore wind power market (402 MW installed in 2003). *RE Financial Incentives*: wind: new onshore €0.04/kWh mkt price + 0.01/kWh premium.; bBiomass: €0.04/kWh.
Finland *RE 2010 Target*: **31.5%**. Driven by strong growth in the bio-energy sector, RE currently accounts for 25% of Finland's total energy consumption. *RE Financial Incentives*: Small hydro: €0.035/kWh + €0.004/kWh premium;. wWind/biomass: same mkt price + €0.007/kWh premium. Subsidies for 30% investment costs also available.
Sweden *RE 2010 Target*: **60%**. It is estimated that RE accounts for approximately 45.2% of Sweden's total electricity consumption. Despite record growth in Sweden's wind power market, RE production as a whole is constrained by the relatively large number of unexploited rivers protected by domestic law (as a source of small-scale hydro power). *RE Financial Incentives*: Small hydro: €0.035/kWh (pool price) + €0.01/kWh premium + 10% subsidies of capital cost;. wWind is premium of €0.03/kWh; biomass: same as hydro but 25% subsidies of capital cost.



WESTERN EUROPE (AUSTRIA, FRANCE, GERMANY)

Austria *RE 2010 Target*: **78.1%**. RE growth is led by the wind power and biomass sectors. *RE Financial Incentives*: Feed-in tariffs for old plants:– wind: €0.07 /kWh – €0.09/kWh depending on region;, biomass: €0.05 – €0.18/kWh,; small hydro: €0.06/kWh – 0.03/kWh depending on volume of power produced. For new plants: wind is €0.08/kWh, biomass: €0.16-0.1/kWh, depending on power produced, and small hydro: €0.06/kWh.
France *RE 2010 Target*: **21%**. RE electricity production grew from 64.5 TWh in 1997 to 70.6 TWh in 2002, an increase of nearly 10%. In 2002, RE-produced electricity represented over 15% of total domestic electricity production. *RE Financial Incentives*: Subsidies provided for RE through ADEME. Feed-in tariffs vary by technology: wind: = €0.084/kWh (for 5 yrs), subsequently €0.03-0.08/kWh depending on generation volume;. Small hydro: = €0.08/kWh (winter) and €0.04/kWh (summer); biomass: = €0.05/kWh; geothermal: = €0.076/kWh.
Germany *RE 2010 Target*: €**12.5%**. As of 2002, 8% of domestic energy consumption in Germany came from RE. This figure is expected to reach 12.5% by 2010, driven largely by growth in the wind power market and the relatively favourable regulatory environment (i.e. few procedural obstacles in German law). *RE Financial Incentives*: Fixed tariffs. Electricity from hydro will be paid €0.07/kWh, wind farms will be paid €0.09/kWh over the first 5 years, and over 9 years for offshore wind farms (similar rates for biomass). In return for a voluntary agreement from the power industry to use cogen technologies, the government has pledged $3.5 billion.

- **China** is hoping to increase wind power production from 400 million watts in early 2003 to 1.4 billion watts in 2005, partially through clean development mechanisms (CDMs). In its 10th Five-Year Plan, China proposed a 5.5% Renewables Portfolio Standard Policy. Transmission efficiency technologies and off-grid applications for remote locations offer tremendous opportunities. China's State Development and Reform Commission said in February that it was ready to invest 10 billion yuan ($1.2 billion) in solar photovoltaic (PV) technology and implementation in the next five years.

- **India** already generates more than 2,100mw through wind power. This is to increase to 5,000mw by 2007. There are plans to add about 10,000mw generating capacity from renewables by 2012 (of which 6000mw would come from wind). Indian companies have exported wind turbines to many countries including the US and Australia.

- The energy future of these countries, particularly that of **China**, is seen as pivotal to the future worldwide GHG emissions profile. Because of the size and growth rate of their market, energy technology choices made by Chinese political leaders will have profound effects across a number of energy and environmental markets. Despite soaring discrepancies in living standards across the country, aggregate energy use in China is skyrocketing, driven largely by increasing consumer demand for home appliances, lighting, gas-powered cooking and, most importantly, automobiles. Car sales in China grew by 82% during the first half of 2003 compared with the same period in 2002. It is worth noting that if the average Chinese consumer used as much oil as the average American, China would require 90 million barrels per day – 11 million more than the entire world produced each day in 2001. The question of how China's mounting energy demands will be met is of crucial concern to future coal, natural gas, oil and global GHG emissions scenarios. International energy experts, including the Director of energy and water at the World Bank, recently urged China to step up efforts to improve its energy efficiency and reduce reliance on fossil fuels.

- One school of thought suggests that a country without elections, such as **China**, may be better able to make the logical case for investment in emissions reduction, based on self-preservation. This is because an undemocratic government, that does not need to face elections every five years, may be better able to act in the mid- to long-term national interest. Tragically the urgent action required seems beyond the intelligence of the democracies – at least over the 1992 to 2004 period for implementation of the UN Framework Convention on Climate Change (UNFCCC).

APPENDIX D.
The FT500 List of Companies with Response Status

Key:	
Answered questionnaire	AQ
Provided environmental report or other relevant information	IN
Questionnaire forthcoming at time of printing	QF
Declined to participate	DP
No response	NR

3M Company US	AQ
Abbey National UK	AQ
Abbott Laboratories US	AQ
ABN Amro Holding Netherlands	AQ
Ace Limited US	AQ
Aegon Netherlands	NR
Aetna US	NR
Aflac US	DP
Air Liquide France	AQ
Air Products & Chemicals US	AQ
Al Rajhi Banking & Investment Saudi Arabia	NR
Alcan US	QF
Alcatel France	AQ
Alcoa US	AQ
Allergan US	IN
Allianz Germany	AQ
Allied Irish Banks Ireland	AQ
Allstate US	QF
Alltel US	DP
Altria Group US	DP
Amazon US	DP
America Movil Mexico	NR
American Electric Power Company US	AQ
American Express Company US	NR
American International Group US	AQ
Amgen US	DP
Anadarko Petroleum US	NR
Analog Devices US	DP
Anglo American UK	AQ
Anheuser-Busch Companies US	QF
Anthem US	AQ
AOL Time Warner US	IN
AP Moller-Maersk Denmark	DP
Apache US	QF
Apollo Group US	DP
Applied Materials US	AQ
Astrazeneca UK	AQ
AT & T US	QF
AT & T Wireless Services US	DP
Australia And New Zealand Banking Group Australia	AQ
Automatic Data Processing US	DP
Autostrade Italy	AQ
Aventis France	AQ
Aviva UK	AQ
Avon Products US	NR
AXA France	AQ
BAA UK	AQ
Baker Hughes US	QF
Banca Intesa Italy	QF
Banco Popular Espanol Spain	QF
Bank Of America US	AQ
Bank Of Ireland Ireland	QF
Bank Of Montreal Canada	AQ
Bank Of New York US	NR
Bank One US	DP
Barclays UK	AQ
Barrick Gold US	AQ
BASF Germany	AQ
Baxter International US	AQ
Bayer Germany	AQ
BB& T US	AQ
BBV Argentaria Spain	AQ
BCE Canada	DP
Becton Dickinson US	AQ
Bed Bath And Beyond US	NR
Beiersdorf Germany	IN
Bellsouth US	DP
Berkshire Hathaway US	DP
Best Buy Company US	QF
BG Group UK	AQ
BHP Billiton UK	AQ
Biomet US	NR
BMW Germany	AQ
BNP Paribas France	AQ
BOC Hong Kong Holdings Hong Kong	NR
Boeing Company US	NR
Boston Scientific US	AQ
BP UK	AQ
Bridgestone Japan	DP

Bristol Myers Squibb US	AQ
British American Tobacco UK	AQ
British Sky Broadcasting Group UK	AQ
BT Group UK	AQ
Burlington Northern Santa Fe US	AQ
Burlington Resources US	DP
Cadbury Schweppes UK	AQ
Campbell Soup US	DP
Canadian Imperial Bank Of Commerce Canada	AQ
Canadian National Railway Canada	DP
Canon Japan	AQ
Cardinal Health US	DP
Carnival US	NR
Carrefour France	AQ
Caterpillar US	NR
Cathay Financial Taiwan	AQ
Cendant US	DP
Central Japan Railway Japan	DP
Centrica UK	AQ
Cheung Kong Holdings Hong Kong	NR
Chevron Texaco US	AQ
China Mobile (Hong Kong) Limited Hong Kong	DP
Chubb US	NR
Chubu Electric Power Company Japan	AQ
Cisco Systems US	AQ
Citigroup US	AQ
Clear Channel Communications US	QF
Clorox US	DP
CLP Holdings Hong Kong	AQ
CNOOC Hong Kong	AQ
Coca Cola Enterprises US	IN
Coca Cola US	IN
Colgate-Palmolive US	AQ
Comcast US	DP
Commonwealth Bank Of Australia Australia	IN
Companhia Vale Do Rio Doce Brazil	NR
Compass Group UK	IN
Computer Associates International US	IN
Conagra US	NR
ConocoPhillips US	AQ
Consolidated Edison US	NR
Costco Wholesale US	NR
Cox Communications US	AQ
Credit Agricole France	AQ
Credit Lyonnais France	see Credit Agricole
Credit Suisse Switzerland	AQ
CRH Ireland	AQ
CVS US	NR
D/S 1912 Denmark	See AP Moller Maersk
Dai Nippon Printing Japan	AQ
Daimler-Chrysler Germany	AQ
Danaher US	AQ
Danone France	AQ

Danske Bank Denmark	DP
DBS Group Singapore	AQ
Deere US	IN
Dell US	AQ
Denso Japan	AQ
Deutsche Bank Germany	AQ
Deutsche Post Germany	AQ
Deutsche Telekom Germany	AQ
Devon Energy US	DP
Dexia Belgium	AQ
Diageo UK	AQ
Dominion Resources US	DP
Dow Chemicals US	AQ
Du Pont El De Nemours US	AQ
Duke Energy US	AQ
E On Germany	AQ
East Japan Railway Japan	AQ
Eastman Kodak US	AQ
Ebay US	AQ
Electrabel Belgium	AQ
Electronic Arts US	DP
Electronic Data Systems US	DP
Eli Lilly US	AQ
EMC US	IN
Emerson Electric US	AQ
Encana Canada	IN
Endesa Spain	AQ
ENEL Italy	AQ
Energie Baden-Wuerttemberg Germany	AQ
ENI Italy	AQ
Entergy US	AQ
Equity Office Properties Trust US	AQ
Ericsson Sweden	AQ
Etisalat United Arab Emirates	NR
Exelon US	AQ
Exxon Mobil US	AQ
Fanuc Japan	DP
Federal Home Loan Mortgage US	DP
Federal National Mortgage Association US	IN
Fed-Ex US	AQ
Fifth Third Bancorp US	NR
First Data US	AQ
Firstenergy US	AQ
Fleetboston Financial US	see Bank of America
Ford Motor US	AQ
Forest Laboratories US	NR
Fortis Belgium	AQ
Fox Entertainment US	NR
FPL Group US	AQ
France Telecommunications France	AQ
Franklin Resources US	QF
Fuji Photo Film Japan	AQ
Gannett US	IN

Gap US	AQ
Gazprom Russia	NR
Genentech US	NR
General Dynamics US	NR
General Electric US	AQ
General Mills US	AQ
General Motors CL H US	see General Motors
General Motors US	AQ
Generali Italy	DP
Genzyme US	AQ
George Weston US	AQ
Gilead Sciences US	DP
Gillette US	AQ
Glaxosmithkline UK	AQ
Golden West Financial US	AQ
Goldman Sachs Group US	NR
Great West Lifeco Canada	DP
Gucci Group Italy	NR
Guidant US	DP
GUS UK	AQ
H & M Hennes & Mauritz Sweden	AQ
H & R Block US	AQ
Halliburton US	AQ
Hang Seng Bank Hong Kong	see HSBC
Harley-Davidson US	NR
Hartford Financial Services US	DP
Hbos UK	AQ
HCA US	DP
Heineken Netherlands	AQ
Heinz HJ US	AQ
Henkel Germany	AQ
Hewlett-Packard US	AQ
Hitachi Japan	AQ
Home Depot US	DP
Honda Japan	AQ
Honeywell International US	DP
Hong Kong Electric Hong Kong	NR
Household International US	see HSBC
HSBC UK	AQ
Hutchison Whampoa Hong Kong	NR
Iberdrola Spain	AQ
Illinois Tool Works US	DP
Imperial Oil Canada	IN
Imperial Tobacco UK	AQ
Inditex Spain	AQ
Infineon Technologies Germany	AQ
ING Netherlands	AQ
Intel US	AQ
Interbrew Belgium	DP
International Business Machine US	AQ
International Paper US	AQ
Intuit US	NR
Ito Yokado Japan	AQ

Japan Telecom Holdings Japan	DP
John Hancock Financial Services US	see Manulife
Johnson And Johnson US	AQ
JP Morgan Chase US	QF
Kansai Electric Power Japan	AQ
Kao Japan	AQ
KBC Belgium	AQ
KDDI Japan	DP
Kellogg US	IN
Keycorp US	DP
Kimberly-Clark US	AQ
Kingfisher UK	QF
Kohls US	NR
Kookmin Bank South Korea	NR
Korea Electric Power South Korea	NR
KPN Netherlands	AQ
Kraft Foods US	DP
Kroger US	NR
KT Corp South Korea	DP
Kyocera Japan	AQ
Lafarge France	AQ
Legal & General UK	AQ
Lehman Brothers Holdings US response from Peabody Energy	AQ
Lexmark International US	IN
Liberty Media US	NR
Linear Technology US	NR
Lloyds TSB UK	AQ
Loblaw US	AQ
Lockheed Martin US	IN
Loews US	DP
L'Oreal France	AQ
Lowe's Companies US	IN
Lukoil Russia	NR
LVMH France	AQ
Malayan Banking Malaysia	AQ
Manulife Financial US	IN
Marathon Oil US	DP
Marks & Spencer UK	AQ
Marriott International US	IN
Marsh & McLennan US	NR
Masco US	NR
Matsushita Electric Japan	AQ
Mattel US	AQ
Maxim Integrated Products US	NR
MBNA US	NR
McDonalds US	DP
McGraw-Hill US	IN
McKesson US	NR
Mediaset Italy	QF
Medimmune US	NR
Medtronic US	AQ
Mellon Financial US	DP

Merck US	IN
Merrill Lynch US	AQ
Metlife US	NR
Microsoft US	AQ
Millea Holdings Japan	DP
Mitsubishi Estate Japan	AQ
Mitsubishi Heavy Industries Japan	AQ
Mitsubishi Japan	AQ
Mitsubishi Tokyo Financial Japan	AQ
Mitsui Japan	AQ
Mizuho Financial Japan	DP
Morgan Stanley US	DP
Motorola US	AQ
Munich Reinsurance Germany	AQ
Murata Manufacturing Japan	AQ
National Australia Bank Australia	AQ
National City US	AQ
National Grid Transco UK	AQ
Nestle Switzerland	AQ
Newell Rubbermaid US	DP
Newmont Mining US	DP
News Corporation Australia	AQ
Nextel Communications US	NR
Nike US	IN
Nintendo Japan	AQ
Nippon Steel Japan	AQ
Nippon Telegraph & Telephone Japan	AQ
Nissan Japan	QF
Nokia Finland	AQ
Nomura Japan	AQ
Nordea Sweden	AQ
Norfolk Southern US	IN
Norsk Hydro Norway	AQ
Nortel Networks Canada	AQ
Northrop Grumman US	DP
Novartis Switzerland	AQ
Novo Nordisk Denmark	AQ
NTT Data Japan	AQ
NTT DoCoMo Japan	AQ
Occidental Petroleum US	AQ
Oil & Natural Gas India	NR
Olivetti Italy	see Telecom Italia
Omnicom Group US	DP
Oracle US	DP
Orange France	see France Telecom
Paychex US	NR
PepsiCo US	AQ
Petro-Canada Canada	AQ
Petroleo Brasileiro Brazil	AQ
Peugeot France	AQ
Pfizer US	AQ
Pharmacia US	see Pfizer
Philips Electronics Netherlands	QF

Pitney-Bowes US	AQ
PNC Financial Services US	AQ
Portugal Telecom Portugal	AQ
Power Financial US	DP
PPG Industries US	AQ
Praxair US	AQ
Principal Financial US	IN
Procter & Gamble US	AQ
Progress Energy US	AQ
Progressive Corp US	DP
Prudential Financial US	DP
Prudential UK	AQ
Public Service Enterprise Group US	AQ
Qualcomm US	AQ
RAS Italy	AQ
Raytheon US	QF
Reckitt Benckiser UK	AQ
Reed Elsevier Netherlands / UK	AQ
Reliance Industries India	NR
Renault France	AQ
Repsol YPF Spain	AQ
Ricoh Japan	AQ
Rio Tinto UK	AQ
Roche Switzerland	AQ
Rohm Japan	AQ
Royal Bank Of Canada Canada	AQ
Royal Bank Of Scotland Group UK	AQ
Royal Dutch / Shell Netherlands / UK	AQ
RWE Germany	AQ
Safeway US	DP
Saint Gobain France	AQ
Saint Jude Medical US	AQ
Saint Paul Companies US	AQ
Samsung Electronics South Korea	IN
San Paolo IMI Italy	AQ
Sanofi-Synthelabo France	AQ
Santander Central Hispano Spain	AQ
SAP Germany	AQ
Sara Lee US	AQ
Saudi American Bank Saudi Arabia	NR
Saudi Basic Industries Saudi Arabia	NR
Saudi Electricity Saudi Arabia	NR
Saudi Telecom Saudi Arabia	NR
SBC Communications US	DP
Schering Germany	AQ
Schering-Plough US	AQ
Schlumberger US	AQ
Schneider Electric France	AQ
Schwab Charles US	NR
ScotiaBank Canada	AQ
Scottish & Southern Energy UK	AQ
Scottish Power UK	AQ
Sears Roebuck US	NR

Serono Switzerland	AQ
Seven-Eleven Japan	AQ
Sharp Japan	AQ
Shell Canada Canada	AQ
Shin-Etsu Chemical Japan	AQ
SIBNEFT Russia	NR
Siemens Germany	QF
Singapore Telecom Singapore	QF
Six Continents UK	DP
SK Telecom South Korea	AQ
SLM US	QF
Societe Generale France	AQ
Sony Japan	AQ
Southern Company US	AQ
Southtrust US	DP
Southwest Airlines US	IN
Sprint US	IN
Standard Chartered UK	AQ
Staples US	QF
Starbucks US	AQ
State Street US	AQ
Statoil Norway	AQ
STmicroelectronics France	AQ
Stora Enso Finland	AQ
Stryker US	NR
Suez France	AQ
Sumitomo Mitsui Financial Japan	DP
Sun Hung Kai Properties Hong Kong	NR
Sun Life Financial Canada	QF
Sun Microsystems US	NR
Suncor Energy Canada	AQ
Suntrust Banks US	DP
Surgutneftegaz Russia	NR
Svenska Cellulosa Sweden	AQ
Svenska Handelsbanken Sweden	AQ
Swiss Reinsurance Switzerland	AQ
Swisscom Switzerland	AQ
Sysco US	IN
Taiwan Semiconductor Taiwan	NR
Takeda Chemical Japan	AQ
Target US	DP
Telecom Italia Italy	AQ
Telecom Italia Mobile Italy	AQ
Telefonica Spain	AQ
Telefonos de Mexico Mexico	QF
TeliaSonera Sweden	AQ
Telstra Australia	AQ
Tenet Healthcare US	DP
Tesco UK	AQ
Texas Instruments US	AQ
Thomson Canada	AQ
TJX Companies US	DP
Tohoku Electric Power Japan	AQ
Tokyo Electric Power Japan	AQ
Tokyo Gas Japan	AQ
T-Online Germany	DP
Toronto Dominion Bank Canada	IN
Toshiba Japan	AQ
Total France	AQ
Toyota Japan	AQ
TPG Netherlands	AQ
Travelers Property Casualty US	see St. Paul Companies
Tribune US	AQ
Tyco International US	DP
UBS Switzerland	AQ
Unicredito Italy	AQ
Unilever UK	AQ
Union Pacific US	DP
United Micro Electronics Taiwan	NR
United Overseas Bank Singapore	AQ
United Parcel Service US	AQ
United Technologies US	AQ
Unitedhealth Group US	AQ
US Bancorp US	NR
USA Interactive US	DP
Veritas Software US	AQ
Verizon Communications US	AQ
Viacom US	NR
Vivendi Universal France	AQ
Vodaphone UK	AQ
Volkswagen Germany	AQ
Volvo Sweden	AQ
Wachovia US	AQ
Wal Mart Stores US	IN
Walgreen US	DP
Wal-Mart De Mexico Mexico	AQ
Walt Disney US	IN
Wanadoo France	see France Telecom
Washington Mutual US	DP
Waste Management US	AQ
Wellpoint Health Network US	NR
Wells Fargo US	AQ
Westpac Australia	AQ
Weyerhaeuser US	AQ
Woolworths Australia	NR
Wrigley William Junior US	NR
Wyeth US	AQ
Xilinx US	DP
XL Capital Bermuda	AQ
Yahoo US	NR
Yamanouchi Pharmaceutical Japan	AQ
Yukos Oil Russia	QF
Zimmer Holdings US	AQ
Zurich Financial Services Switzerland	AQ

APPENDIX E.
CDP Questionnaire
1 November 2003

Carbon Disclosure Project (CDP) Greenhouse Gas Emissions Questionnaire

We request as full a reply as possible to the following questions by no later than 29 February 2004. Please send responses electronically in English to the Project Coordinator at info@cdproject.net. If you already publish the relevant information, please indicate for each question how to access this. If at this stage you can only provide indicative information we would still welcome this; "a best guess" is more valuable to us than no response. If you are unable to answer any of these questions please state the reasons why.

Governance and Strategy:

1. Do you believe climate change, the policy responses to climate change and/or adaptation to climate change represent commercial risks and/or opportunities for your company?
   - If yes, specify the implications, detail the strategies adopted and actions taken to date.
   - If no, please indicate why.

2. Do you have a strategy regarding preparation for emerging greenhouse gas emissions regulation and trading regimes, in particular the European Union Emissions Trading Scheme?
   - If yes, specify the implications, detail the strategies adopted and actions taken to date.
   - If no, are you planning on doing so, and if so when?

3. Do you allocate responsibility for managing climate change related issues?
   - If yes, what is the title of the person with this responsibility?
   - If no, are you planning on doing so, and if so when?

Measurement:

Please specify the methodology you employ for measuring emissions, and explain if these data are audited and/or externally verified.

4. What is the quantity of annual emissions of the six main GHGs (CO2, CH4, N2O, HFCs, PFCs and SF6) produced by your operations in the following areas (Note 1)?
   - Globally
   - Annex B of the Kyoto Protocol
   - EU Emissions Trading Directive.

5. Products and services: Do you measure the emissions associated with both the use and disposal of your products and services (Note 2)?
   - If yes, please provide further information.
   - If no, are you planning on doing so, and if so when?

6. Supply chain: Do you measure the emissions generated by your supply chain?
   - If yes, please provide further information including details of the boundaries you apply.
   - If no, are you planning on doing so, and if so when?

Management:

7. Do you have emission reduction programmes in place?
    - If yes, please detail explicit targets relating to Qs.4/5/6 and progress made to date.
    - If no, are you planning on doing so, and if so when?

8. Please explain how you could reduce your GHG emissions to meet national, regional and international targets for reductions. What are your estimated costs or savings associated with achieving these targets?

9. Have you considered scenarios involving reductions in GHG emissions beyond existing national, regional and international targets? If yes please detail these scenarios, and your estimated costs or savings associated with each one. If no, are you planning on doing so, and if so when?

Note 1: If you do not use a methodology for measuring emissions we suggest you follow guidelines such as those produced by the World Business Council for Sustainable Development (www.ghgprotocol.org) as a basis for preparing your response.

Note 2: For example, if you are a financial services company, do you take into account the emissions related risks and/or opportunities of the companies you invest in, lend to, or insure.

APPENDIX F.
CDP Signatory Contacts

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Notes

Our sincere thanks are extended to the following:
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Brooklyn Bridge, www.tbli.org
The Institutional Investors Group on Climate Change, www.iigcc.org
The Investor Network on Climate Risk, www.incr.com
The Development Bank of Japan, www.dbj.go.jp
United Nations Environment Programme Finance Initiative, www.unepfi.net

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