CARBON DISCLOSURE PROJECT

Carbon Disclosure Project Report 2007 USA S&P500

On behalf of 315 investors with assets of $41 trillion

Report written by

RiskMetrics Group

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Carbon Disclosure Project 2007

This report is based on the submissions of S&P500 corporations in response to the fifth information request sent by the Carbon Disclosure Project (CDP5) on 1st February 2007. This summary report, the full report and all responses from corporations are available without charge from www.cdproject.net. The contents of this report may be used by anyone providing acknowledgment is given.

CDP Members 2007

In 2007, CDP launched a Membership option for signatories. CDP Membership allows signatories to have a leading role in the development of CDP and gives the ability to perform improved comparative analysis of company responses through the new online database. The following investors are CDP Members in 2007:

CARBON DISCLOSURE PROJECT

MEMBER 2007

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ABP Investments **Netherlands**

AIG Investments **U.S.**

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California Public Employees Retirement System **U.S.**

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Calvert Group **U.S.**

Canada Pension Plan Investment Board **Canada**

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Ethos Foundation **Switzerland**

Folksam **Sweden**

Generation Investment Management **UK**

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KLP Insurance **Norway**

London Pensions Fund Authority **UK**

Merrill Lynch **U.S.**

Morgan Stanley **U.S.**

Morley Fund Management **UK**

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Newton Investment Management Limited **UK**

Pictet Asset Management **Switzerland**

Rabobank **Netherlands**

Robeco **Netherlands**

SAM Group **Switzerland**

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Sompo Japan Insurance Inc. **Japan**

Swiss Reinsurance Company **Switzerland**

The Ethical Funds Company **Canada**

The RBS Group **UK**

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CDP Signatories 2007

315 investors were signatories to the CDP5 information request dated 1st February 2007 including:

Aachener Grundvermogen Kapitalanlagegesellschaft mbH **Germany**

Aberdeen Asset Managers **UK**

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ABP Investments **Netherlands**

ABRAPP – Associação Brasileira das Entidades Fechadas de Previdência Complementar **Brazil**

Acuity Investment Management Inc **Canada**

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Aeneas Capital Advisors **U.S.**

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Allianz Group **Germany**

AMP Capital Investors **Australia**

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ANBID – National Association of Brazilian Investment Banks **Brazil**

ASN Bank **Netherlands**

Astra Investimentos Ltda **Brazil**

Australia and New Zealand Banking Group Limited **Australia**

Australian Ethical Investment Limited **Australia**

Australian Reward Investment Alliance (ARIA) **Australia**

Aviva plc **UK**

AXA Group **France**

Baillie Gifford & Co. **UK**

Banco Bradesco S.A. **Brazil**

Banco do Brazil **Brazil**

Banco Fonder **Sweden**

Banco Pine S.A. **Brazil**

Bank Sarasin & Co, Ltd **Switzerland**

Barclays Group **UK**

BayernInvest Kapitalanlagegesellschaft mbH **Germany**

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BlackRock **U.S.**

BMO Financial Group **Canada**

BNP Paribas Asset Management (BNP PAM) **France**

Boston Common Asset Management, LLC **U.S.**

BP Investment Management Limited **UK**

Brasilprev Seguros e Previdência S.A. **Brazil**

British Coal Staff Superannuation Scheme **UK**

British Columbia Investment Management Corporation (bcIMC) **Canada**

BT Financial Group **Australia**

BVI Bundesverband Investment und Asset Management e.V. **Germany**

CAAT Pension Plan **Canada**

Caisse de Dépôts et Placements du Québec **Canada**

Caisse des Dépôts **France**

Caixa Econômica Federal **Brazil**

California Public Employees Retirement System **U.S.**

California State Teachers Retirement System **U.S.**

California State Treasurer **U.S.**

Calvert Group **U.S.**

Canada Pension Plan Investment Board **Canada**

Canadian Friends Service Committee **Canada**

Carlson Investment Management **Sweden**

Carmignac Gestion **France**

Catholic Super **Australia**

CCLA Investment Management Ltd **UK**

Central Finance Board of the Methodist Church **UK**

Ceres **U.S.**

CERES-Fundação de Seguridade Social **Brazil**

Cheyne Capital Management (UK) LLP **UK**

Christian Super **Australia**

CI Mutual Funds Signature Funds Group **Canada**

CIBC **Canada**

Citizens Advisers Inc **U.S.**

ClearBridge Advisers Social Awareness Investment **U.S.**

Close Brothers Group plc **UK**

Comité syndical national de retraite Bâtirente **Canada**

CommerzbankAG **Germany**

Connecticut Retirement Plans and Trust Funds **U.S.**

Co-operative Insurance Society **UK**

Credit Agricole Asset Management **France**

Credit Suisse **Switzerland**

Daegu Bank **South Korea**

Daiwa Securities Group Inc. **Japan**

Deka FundMaster Investmentgesellschaft mbH **Germany**

Deka Investment GmbH **Germany**

DekaBank Deutsche Girozentrale **Germany**

Delta Lloyd Investment Managers GmbH **Germany**

Deutsche Bank **Germany**

Deutsche Postbank Privat Investment Kapitalanlagegesellschaft mbH **Germany**

Development Bank of Japan **Japan**

Development Bank of the Philippines (DBP) **Philippines**

Dexia Asset Management **France**

DnB NOR **Norway**

Domini Social Investments LLC **U.S.**

DPG Deutsche Performancemessungs-Gesellschaft für Wertpapierportfolio mbH **Germany**

DWS Investment GmbH **Germany**

Environment Agency Active Pension Fund **UK**

Epworth Investment Management **UK**

Erste Bank der Oesterreichischen Sparkassen AG **Austria**

Ethos Foundation **Switzerland**

Eureko B.V. **Netherlands**

Eurizon Capital SGR **Italy**

Evli Asset Management **Finland**

F&C Asset Management **UK**

FAELCE – Fundação Coelce de Seguridade Social **Brazil**

FAPES – Fundação de Assistencia e Previdencia Social do BNDES **Brazil**

Fédéris Gestion d'Actifs **France**

FIPECq – Fundação de Previdência Complementar dos Empregados e Servidores **Brazil**

First Affirmative Financial Network, LLC **U.S.**

First Swedish National Pension Fund (AP1) **Sweden**

FirstRand Ltd. **South Africa**

Five Oceans Asset Management Pty Limited **Australia**

Folksam **Sweden**

Fondaction **Canada**

Fonds de Réserve pour les Retraites – FRR **France**

Fortis Investments **Belgium**

Fourth Swedish National Pension Fund, AP4 **Sweden**

Frankfurt Trust Investment-Gesellschaft mbH **Germany**

Frankfurter Service Kapitalanlage-Gesellschaft mbH **Germany**

Franklin Templeton Investment Services GmbH **Germany**

Frater Asset Management **South Africa**

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Fundação CESP **Brazil**

Fundação Codesc de Seguridade Social **Brazil**

Fundação Copel de Previdência e Assistência Social **Brazil**

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Fundação Real Grandeza **Brazil**

Fundação Rede Ferroviaria de Seguridade Social – Refer **Brazil**

Fundação São Francisco de Seguridade Social **Brazil**

Fundação Vale do Rio Doce de Seguridade Social – VALIA **Brazil**

Gartmore Investment Management plc **UK**

Generation Investment Management **UK**

Genus Capital Management **Canada**

Gjensidige Forsikring **Norway**

Goldman Sachs & Co. **U.S.**

Green Century Capital Management **U.S.**

Green Kay Asset Management **UK**

Groupe Investissement Responsable Inc. **Canada**

Guardians of New Zealand Superannuation **New Zealand**

Hastings Funds Management Limited **Australia**

Helaba Invest Kapitalanlageggesellschaft mbH **Germany**

Henderson Global Investors **UK**

Hermes Investment Management **UK**

HESTA Super **Australia**

Hospitals of Ontario Pension Plan (HOOPP) **Canada**

HSBC Holdings plc **UK**

I.DE.A.M – Integral Dévelopment Asset Management **France**

Ilmarinen Mutual Pension Insurance Company **Finland**

Indexchange Investment AG **Germany**

Industry Funds Management **Australia**

ING Investment Management Europe **Netherlands**

Inhance Investment Management Inc **Canada**

Insight Investment Management (Global) Ltd **UK**

Instituto Infraero de Seguridade Social – INFRAPREV **Brazil**

Instituto Sebrae De Seguridade Social – SEBRAEPREV **Brazil**

Interfaith Center on Corporate Responsibility **U.S.**

Internationale Kapitalanlagegesellschaft mbH **Germany**

Jarislowsky Fraser Limited **Canada**

Jupiter Asset Management **UK**

KBC Asset Management NV **Belgium**

KLP Insurance **Norway**

KPA AB **Sweden**

La Banque Postale AM **France**

LBBW – Landesbank Baden-Württemberg **Germany**

Legal & General Group plc **UK**

Libra Fund **U.S.**

Light Green Advisors, LLC **U.S.**

Local Authority Pension Fund Forum **UK**

Local Government Superannuation Scheme **Australia**

Lombard Odier Darier Hentsch & Cie **Switzerland**

London Pensions Fund Authority **UK**

Macif Gestion **France**

Maine State Treasurer **U.S.**

Man Group plc **UK**

Maryland State Treasurer **U.S.**

Meag Munich Ergo Kapitalanlagegesellschaft mbH **Germany**

Meeschaert Asset Management **France**

Meiji Yasuda Life Insurance Company **Japan**

Meritas Mutual Funds **Canada**

Merrill Lynch **U.S.**

Metzler Investment Gmbh **Germany**

Midas International Asset Management **South Korea**

Mitsubishi UFJ Financial Group (MUFG) **Japan**

Mitsui Sumitomo Insurance Co Ltd **Japan**

Mizuho Financial Group, Inc. **Japan**

Monte Paschi Asset Management S.G.R. – S.p.A **Italy**

Morgan Stanley Investment Management **U.S.**

Morley Fund Management **UK**

Münchner Kapitalanlage AG **Germany**

Munich Re Group **Germany**

National Australia Bank Limited **Australia**

National Bank of Kuwait **Kuwait**

National Pensions Reserve Fund of Ireland **Ireland**

Natixis **France**

Nedbank Group **South Africa**

Needmor Fund **U.S.**

Neuberger Berman **U.S.**

New York City Employees Retirement System **U.S.**

New York City Teachers Retirement System **U.S.**

New York State Common Retirement Fund **U.S.**

Newton Investment Management Limited **UK**

NFU Mutual Insurance Society **UK**

Nikko Asset Management Co., Ltd. **Japan**

Norinchukin Zenkyouren Asset Management Co., Ltd **Japan**

Northern Trust **U.S.**

Old Mutual plc **UK**

Ontario Municipal Employees Retirement System (OMERS) **Canada**

Ontario Teachers Pension Plan **Canada**

Opplysningsvesenets fond (The Norwegian Church Endowment) **Norway**

Oregon State Treasurer **U.S.**

Orion Energy Systems, Ltd **U.S.**

Pax World Funds **U.S.**

Pension Plan for Clergy and Lay Workers of the Evangelical Lutheran Church in Canada **Canada**

PETROS – The Fundação Petrobras de Seguridade Social **Brazil**

PGGM **Netherlands**

Phillips, Hager & North Investment Management Ltd. **Canada**

PhiTrust Active Investors **France**

Pictet Asset Management **Switzerland**

Pioneer Investments Kapitalanlagegesellschaft mbH **Germany**

Portfolio 21 and Progressive Investment Management **U.S.**

Portfolio Partners **Australia**

Prado Epargne **France**

PREVI Caixa de Previdência dos Funcionários do Banco do Brasil **Brazil**

Prudential Plc **UK**

PSP Investments **Canada**

Rabobank **Netherlands**

Railpen Investments **UK**

Rathbone Investment Management / Rathbone Greenbank Investments **UK**

Reynders McVeigh Capital Management **U.S.**

RLAM **UK**

Robeco **Netherlands**

Rock Crest Capital LLC **U.S.**

Royal Bank of Canada **Canada**

SAM Group **Switzerland**

Samsung Investment Trust Management Co., Ltd. **South Korea**

Sanlam Investment Management **South Africa**

Sauren Finanzdienstleistungen GmbH & Co. KG **Germany**

Savings & Loans Credit Union (S.A.) Limited. **Australia**

Schroders **UK**

Scotiabank **Canada**

Scottish Widows Investment Partnership **UK**

SEB Asset Management AG **Germany**

Second Swedish National Pension Fund (AP2) **Sweden**

Seligson & Co Fund Management Plc **Finland**

Service Employees International Union **U.S.**

Seventh Swedish National Pension Fund (AP7) **Sweden**

Shinhan Bank **South Korea**

Shinkin Asset Management Co., Ltd **Japan**

Shinsei Bank **Japan**

Siemens Kapitalanlagegesellschaft mbH **Germany**

Sierra Club Mutual Funds **U.S.**

Signal Iduna Gruppe **Germany**

Signet Capital Management Ltd **UK**

SNS Asset Management **Netherlands**

Société Générale **France**

Société Générale Asset Management UK **UK**

Sompo Japan Insurance Inc. **Japan**

Standard Chartered PLC **UK**

Standard Life Investments **UK**

State Street Corporation **U.S.**

State Treasurer of North Carolina **U.S.**

Storebrand Investments **Norway**

Stratus Banco de Negócios **Brazil**

Sumitomo Mitsui Financial Group **Japan**

Sumitomo Trust & Banking **Japan**

Superfund Asset Management GmbH **Germany**

Swedbank **Sweden**

Swiss Reinsurance Company **Switzerland**

Swisscanto **Switzerland**

TD Asset Management Inc. and TD Asset Management USA Inc. **Canada**

Teachers Insurance and Annuity Association – College Retirement Equities Fund (TIAA-CREF) **U.S.**

Terra Kapitalforvaltning ASA **Norway**

TfL Pension Fund **UK**

The Bullitt Foundation **U.S.**

The Central Church Fund of Finland **Finland**

The Collins Foundation **U.S.**

The Co-operative Bank **UK**

The Co-operators Group Ltd **Canada**

The Daly Foundation **Canada**

The Dreyfus Corporation **U.S.**

The Ethical Funds Company **Canada**

The Local Government Pensions Institution (LGPI)(keva) **Finland**

The RBS Group **UK**

The Russell Family Foundation **U.S.**

The Shiga Bank, Ltd (Japan) **Japan**

The Standard Bank Group Limited **South Africa**

The Travelers Companies, Inc. **U.S.**

The United Church of Canada – General Council **Canada**

The Wellcome Trust **UK**

Third Swedish National Pension Fund (AP3) **Sweden**

Threadneedle Asset Management **UK**

Tokio Marine & Nichido Fire Insurance Co., Ltd. **Japan**

Trillium Asset Management Corporation **U.S.**

Triodos Bank **Netherlands**

Tri-State Coalition for Responsible Investing **U.S.**

UBS AG **Switzerland**

Unibanco Asset Management **Brazil**

UniCredit Group **Italy**

Union Asset Management Holding **Germany**

Unitarian Universalist Association **U.S.**

United Methodist Church General Board of Pension and Health Benefits **U.S.**

Universal Investment Gesellschaft mbH **Germany**

Universities Superannuation Scheme (USS) **UK**

Vancity Group of Companies **Canada**

Vermont State Treasurer **U.S.**

VicSuper Proprietary Limited **Australia**

Vital Forsikring ASA **Norway**

Wachovia Corporation **U.S.**

Walden Asset Management, a division of Boston Trust and Investment Management Company **U.S.**

Warburg-Henderson Kapitalanlagegesellschaft mbH **Germany**

West Yorkshire Pension Fund **UK**

WestLB Mellon Asset Management (WMAM) **Germany**

Winslow Management Company **U.S.**

YES BANK Limited **India**

York University Pension Fund **Canada**

Zurich Cantonal Bank **Switzerland**

New York, August, 2007

Message from the President

Earlier this year, as a founding member of the Carbon Disclosure Project and a strong supporter of CDP's mission to create a rigorous global database of corporate carbon emissions, Merrill Lynch assisted the CDP in distributing a survey to more than 2,400 of the world's largest publicly traded companies, seeking detailed information on the business risks and opportunities presented by climate change and global greenhouse gas emissions.

Concurrently, Merrill Lynch sponsored an extension of the survey to cover all S&P500 companies, which are located mainly in the United States. A total of 56% responded, representing a significant increase over last year's response rate of 47%.

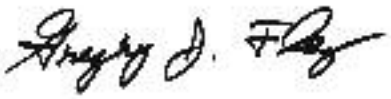
While I urge you to read the accompanying report for further details and results, among the most intriguing findings is the fact that a wide majority of responding companies from the S&P500 view climate change as posing a material commercial opportunity as well as a significant commercial risk.

In fact, while 81% of responding companies reported that they regard climate change as posing a commercial risk, 69% of those firms also consider it an important business opportunity.

Furthermore, half of the responding firms considered the issue significant enough to warrant attention from board members or upper management.

On behalf of Merrill and the CDP, I'd like to personally thank all of the companies that participated in the survey, and urge all respondents to continue to support an institution dedicated to providing an objective benchmark of carbon production and corporate contributions to its mitigation.

We're confident that as CDP5 deepens our collective understanding of the myriad risks and responsibilities associated with climate change, a majority of leading companies worldwide will join us in achieving our common objective of rigorously measuring and managing an issue described as the greatest long-term challenge facing the international community today.



Gregory J. Fleming
President, Merrill Lynch & Co., Inc.

Foreword

RiskMetrics Group is pleased to present the survey results of the second Carbon Disclosure Project (CDP5) questionnaire addressed to S&P500 Index companies. That more than half of the S&P500 — 56% — responded to this year's survey is a further sign that American industry is getting ready to address climate change in a meaningful way. Significantly, a vast majority of respondents see risks and opportunities presented by this issue. America's leading companies are pursuing energy efficiency programs and promoting renewable energy development. Yet hard work remains in setting and attaining goals to curb greenhouse gas emissions, which is at the root of this challenge.

This report describes recent activities of the Carbon Disclosure Project and of U.S. firms in tracking GHG emissions, providing disclosure to investors and embarking on GHG management programs. The report also contains eight guest commentaries that make the following points:

Science is certain (#1)
Dr. Michael MacCracken, Climate Institute
Rising CO_2 concentrations, global average temperature and sea level rise all point to rapid changes in our climate brought about by human activity.

More disclosure is needed (#2)
Jane Ambachtsheer and Craig Metrick, Mercer Investment Consulting
Disclosure on climate change remains in its infancy, but synergies between CDP and other initiatives, such as the U.N. Principles for Responsible Investment, will enhance corporate disclosure and make data more accessible to investors.

Physical risks affect the environment and economy (#3)
Dr. Paul Epstein, Harvard Medical School
Climate change is affecting human health, agriculture, forests, marine life and water resources. A life-cycle analysis can help avoid unintended consequences of some proposed solutions, such as clean-coal technology and nuclear power.

Sea level rise is putting coastal development at risk (#4)
Dr. Stephen Leatherman, International Hurricane Research Center
The rate of sea level rise has increased up to 50% in the last decade, adding to coastal erosion, inundation and salt-water intrusion. Better testing procedures are needed in order to upgrade safety standards and building codes.

Business is taking an active role in setting climate change policy (#5)
Hon. Eileen Claussen, Pew Center on Global Climate Change
This has been a milestone year when American business has stepped forward to help lead the drive toward federal GHG legislation. CDP can help by calling on companies to disclose their positions on climate change policy proposals.

Congress is likely to act soon (#6)
Jason Grumet, National Commission on Energy Policy
The broad elements of federal legislation are falling into place. A key issue is whether a 'safety valve' to limit prices on carbon emissions might eventually give way to a firm emissions cap to provide greater environmental certainty.

Renewable energy development is booming (#7)
Angus McCrone, New Energy Finance
U.S. investment in clean energy has quadrupled in three years and is quickly catching up to Europe, but most major U.S. corporations have not yet made major investments in renewables. This may be a case of 'watch this space.'

A massive transformation of our economy and energy sources is needed (#8)
Dr. William Moomaw, Fletcher School, Tufts University
Developed and developing countries must approach climate change as the central challenge to sustainable development, not as just another pollution problem. Long-term GHG reduction goals with intermediate benchmarks will be required to assure investors and companies that there is an enduring market for low-carbon energy supplies and energy-efficient equipment.

Lead authors of this report:

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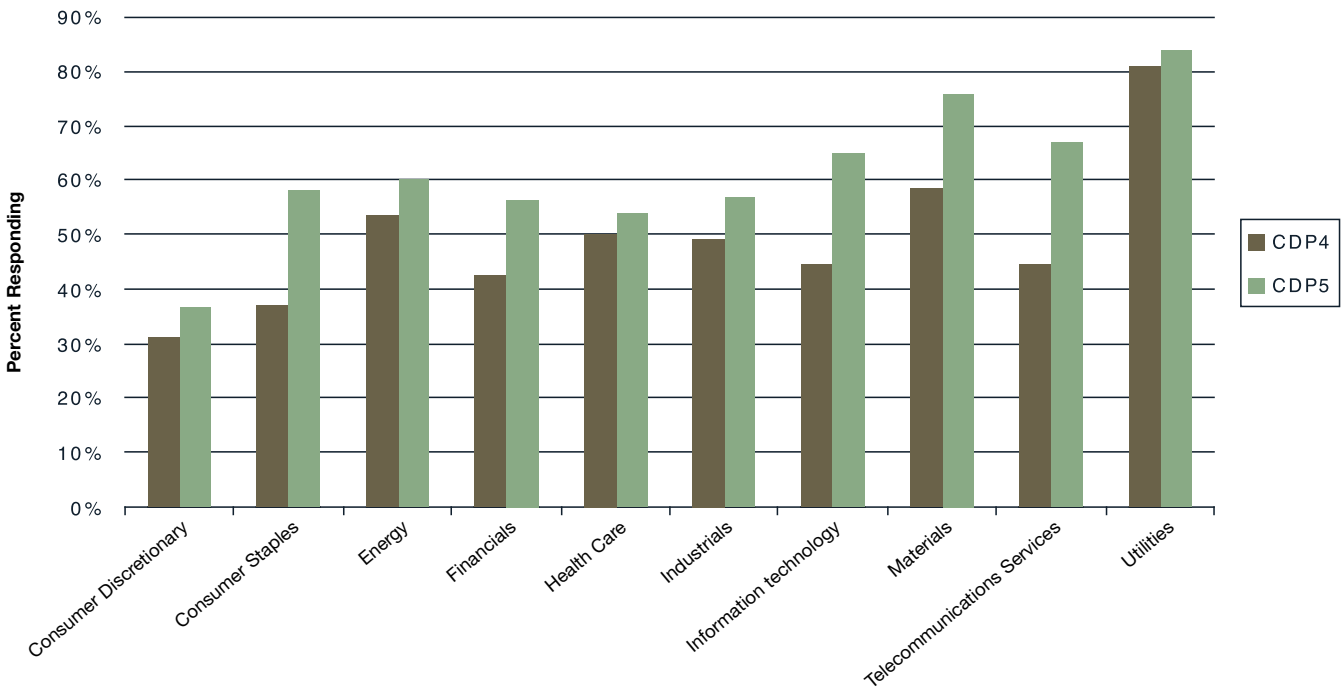
Written on behalf of 315 institutional investors, representing more than $41 trillion of assets under management, CDP5 provides investors with a unique analysis of how S&P500 Index companies are responding to climate change. The report summarizes key trends identified in companies' responses to the CDP5 questionnaire and highlights commercial risks and opportunities that climate change is presenting to these widely held, American-based companies. Through increased support and improved quality of responses, CDP5 shows that the private sector in the United States is increasingly engaged in addressing the global challenges presented by climate change. This Executive Summary provides a summary of key findings from the CDP5 S&P500 respondents.

Executive Summary

CDP Response Rate



Disclosure Trends

¥ **S&P500 response rate increases.** 56% (282) of S&P500 companies answered the CDP5 survey, compared with 47% for CDP4. (The CDP4 survey was the first addressed specifically to S&P500 companies.) The response rate increased across all industry sectors represented in the index.

¥ **S&P500 response rate still lags FT500.** 77% of the world's largest publicly traded companies, as represented in the FT500 index, responded to the CDP5 survey. However, the large percentage increase in this year's S&P500 response rate is in line with historical trends for the FT500 CDP survey (see table).

¥ **Electric utilities have the highest response rate.** Nearly 84% of S&P500 utilities (26 of 31) responded to CDP5. Materials companies also had a high response rate of 78% (22 of 29). These are the two most carbon-intensive industries represented in the S&P500 Index.

¥ **Most industry sectors have response rates exceeding 50%.** Nine of the 10 industry sectors represented in the S&P500 had a CDP5 response rate of greater than 50%. The Consumer Discretionary sector had a response rate of only 37% (32 of 87 companies).

¥ **More S&P500 companies see strategic risks than opportunities from climate change.** 81% of responding companies consider climate change to present commercial risks for their businesses, compared to only 69% that see climate change as presenting commercial opportunities. This is largely the reverse of the FT500 survey sample, where 82% see commercial opportunities, and 79% have identified commercial risks.

More than 50% of S&P500 companies responded to this year's CDP survey, providing more evidence that American industry is getting serious about global warming

CDP response rate	1st survey	2nd survey	3rd survey	4th survey	5th survey
FT500 index	47%	59%	71%	72%	77%
S&P500 index	47%	56%	(2008)	(2009)	(2010)

Few companies report on climate change in their securities filings, and fewer still factor carbon pricing in their capital investment decisions

Management Response

- **Climate issues are receiving more attention from management and directors.** Fully half of the S&P500 responding companies have assigned board and/or upper-level management responsibility for overseeing climate related issues. 65% of respondents have publicly disclosed greenhouse gas (GHG) emissions data.

- **Action to reduce emissions lags well behind climate awareness.** Only 29% of responding companies have implemented GHG reduction programs with specific targets and timelines. This includes companies that have set targets to reduce the intensity of their GHG emissions, without setting limits on their absolute emissions.

- **Energy efficiency and renewable energy are drivers of GHG emission reductions.** 78% of respondents are engaged in energy efficiency initiatives, and 37% are involved in renewable energy projects or have set targets for renewable energy purchases. In addition, 36% of respondents are considering or are actively engaged in carbon emissions trading.

Financial Implications

- **Material effects of climate change remain largely undetermined and undisclosed.** While most S&P500 respondents can identify regulatory and physical risks associated with climate change, few have attempted to quantify these risks in dollar terms or have discussed them in securities filings. Just nine respondents in the Utility sector disclosed the potential for a material business impact in their latest Form 10-K filings. Although risk assessments were more substantive in CDP5 responses, only two firms (an automobile manufacturer and a utility) indicated that climate change regulation poses a potential material risk to their businesses. A third firm (a beverage bottler) disclosed in its CDP response that physical risks of climate change could result in a material impact on its operations. Though respondents in all sectors acknowledged potential adverse impacts — even 'significant' impacts — no firm placed a dollar value estimate on that risk.

- **Carbon pricing is rarely factored into capital investment decisions.** While many capital investment decisions involve multi-year planning processes and have long payback periods, only 8% of survey respondents say they are factoring projected costs of carbon emissions into their decisions. Half (12 of 24) that are doing so are electric utilities. Only a few have set an explicit carbon price (or range of prices) as part of their decision-making process.

- **Energy cost disclosure is mixed.** Just over half of the companies that responded to CDP5's question on energy costs (55 of 107) provided figures. These S&P500 firms reported spending more than $87 billion on energy in 2006.

Emissions Trends

- **More S&P500 firms are disclosing their GHG emissions.** 65% of S&P500 respondents provided emissions data, compared with 54% of respondents in CDP4. By comparison, 79% of FT500 companies disclosed emissions data in their CDP5 responses. Total emissions reported by S&P500 respondents were 2,013,518,771 metric tonnes of carbon dioxide equivalent. This represents approximately 6% of global GHG emissions (CO_2e).

- **Most reported GHG emissions are Scope 1 (direct) emissions.** Scope 1 emissions accounted for two-thirds of the total emissions reported by S&P500 respondents. Scope 2 (purchased power) emissions accounted for 11%. Scope 3 (indirect) emissions accounted for 22%. Most of Scope 3 emissions disclosures were for business travel, although one petroleum company estimated emissions from customer end-use of its products.

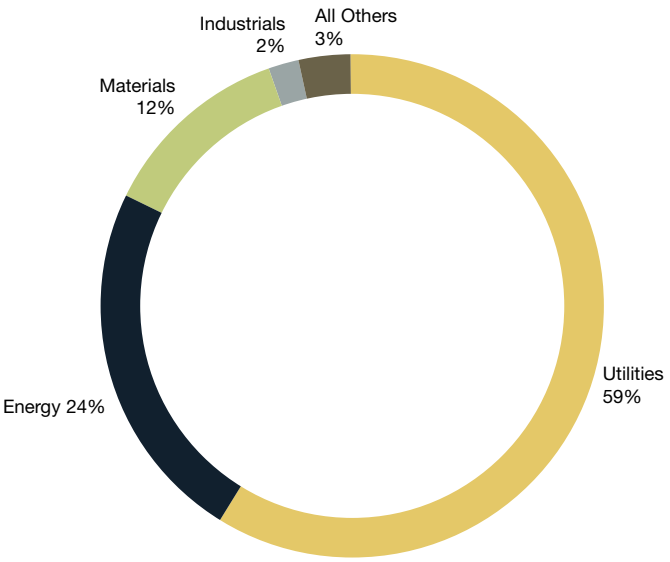
- **Three industry sectors account for 90% of reported Scope 1 and 2 emissions.** In the CDP5 survey of S&P500 companies, the Utility, Energy and Materials sectors reported combined Scope 1 and 2 emissions of 1,403,741,186 tonnes of CO_2e.

- **Four sectors account for 76% of Scope 2 emissions from purchased electricity.** Respondents in the Utilities sector accounted for 38% of the Scope 2 total; Energy companies 17%; Consumer Staples 12%; and Consumer Discretionary 9%.

- **Scope 3 reporting by S&P500 firms lags the FT500.** S&P500 respondents reported 429,311,922 tonnes of Scope 3 emissions, including emissions from business travel, upstream suppliers and product end-use. These Scope 3 emissions represented 22% of the total emissions reported by S&P500 respondents, compared to 50% for FT500 respondents in the CDP5 survey. Calculating the 'carbon footprint' of company operations remains one of the most elusive and vexing challenges of carbon emissions accounting.

Calculating the 'carbon footprint' remains one of the biggest obstacles to full accounting of the climate change effects of a company's operations

Reported Scope 1 Emissions by Sector



Reported Scope 2 Emissions by Sector

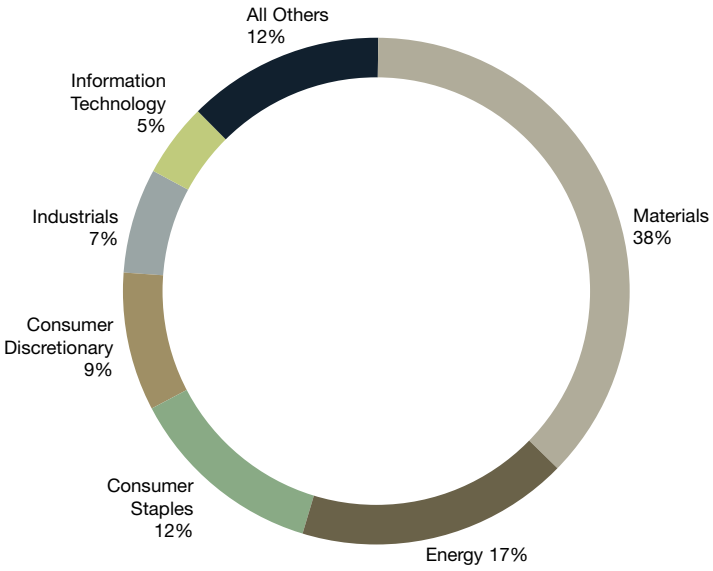


Table of Contents

Contents

1 CDP provides a coordinating secretariat and innovative forum for investor and corporate collaboration on climate change. Based on answers to its questionnaire, CDP provides the investment community with information about corporations' greenhouse gas emissions and climate change management strategies. Through CDP's database, this information is available in a comparable format that adds value for investors and a wide range of stakeholders.

CDP s mission is to facilitate a dialogue between investors and corporations, supported by high quality information from which a rational response to climate change will emerge.

The Carbon Disclosure Project (CDP)

In February 2007, CDP issued its fifth information request on behalf of 315 institutional investors with assets of USD 41 trillion under management. The request was sent to 2,400 of the largest quoted companies in the world by market capitalization for disclosure of investment-relevant information concerning the risks and opportunities facing these companies due to climate change. These companies included the largest listed companies in Asia, Australia, Brazil, Canada, France, Germany, India, Italy, Japan, New Zealand, Scandinavia, South Africa, Switzerland, UK, US, and the Electric Utilities and Transport sectors.

As in previous years the request focused upon the issues CDP has identified in conjunction with many signatory investors, corporations and other experts as being most pertinent to the effect of climate change on company value. Those issues include regulatory risk/opportunity (e.g. limits on emissions); physical risk/opportunity (e.g. changes in weather patterns impacting operations); consumer sentiment risk/opportunity (e.g. reputation); total company wide global greenhouse gas emissions and steps taken to manage and reduce emissions.

USD 41 trillion of assets under management represents more than one third of total global invested assets and is a marked increase from the USD 4.5 trillion that participated in the first CDP request in 2002.

77% of FT500 companies and a total of 1,300 corporations answered the fifth CDP request in 2007, evidencing a significant increase in support for CDP's work from the 45% of FT500 companies and 235 corporations that answered the first request in 2002.

Having launched at No.10 Downing Street in 2000, CDP has become the global standard mechanism by which companies report their greenhouse gas emissions to investors. Its process has been applauded by Al Gore (Former US Vice President), Sir John Bond (then Chairman HSBC), Jeff Immelt (CEO, General Electric), Angela Merkel (German Chancellor) and Tony Blair (former UK Prime Minister) among others. CDP is proud to have assisted the pioneering efforts of global investors in creating this comprehensive and international system of disclosure.

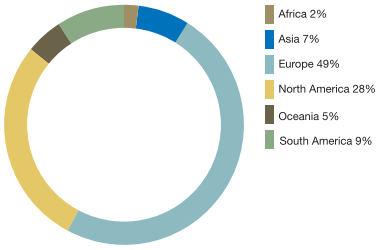
CDP data has also enabled stakeholders such as policymakers, service providers, and NGO's to accelerate their own initiatives. Last year CDP reports were produced in English, French, German, Japanese and Portuguese and launched at a series of high profile events in the main capital markets in the world. CDP now hosts the largest registry of corporate greenhouse gas data in the world, and this information along with reports analyzing it can be downloaded free of charge at www.cdproject.net.
The CDP Secretariat extends sincere thanks to the signatory investors, responding corporations and regional partners for their participation in CDP5.

New CDP Initiatives in 2007

In addition to the expansion of its existing activity in 2007, CDP is delighted to have evolved its service offering in a number of exciting directions:

Improved database. CDP is launching a user-friendly interface to its comprehensive database of responses. This will enable users to easily and quickly perform comparative analysis by sorting company information by sector, geography, emissions and the CDP questions.

CDP5 Signatories by Region



"The aim of CDP is to gradually improve information on CO_2 emissions and climate strategies as well as to initiate long-term plans for the future. I wish the Carbon Disclosure Project success with its further efforts both in Germany and worldwide."

Angela Merkel,
German Chancellor

"The first step towards managing carbon emissions is to measure them. Because in business what gets measured gets managed. The Carbon Disclosure Project has played a crucial role in encouraging companies to take the first steps in that measurement and management path. If more businesses progress further down that measurement and management path, within the context of public policy, which spurs on the business leaders and drags up the business laggards, then we will be able — and at surprisingly small economic cost — to offset the dangers which climate change poses to our world."

Lord Adair Turner,
Standard Chartered plc

CDP Membership. CDP is now providing a premium service for those signatory investors who have become CDP members. This service provides members with enhanced recognition and access to the entire functionality of the database.

Supply Chain Initiative. In 2007, CDP was delighted to enter into partnership with Wal-Mart Stores to send the CDP information request to a subset of their suppliers. This contract represents the start of an exciting development for CDP as it begins to mirror its activity with shareholders and corporations via corporations and suppliers. The Wal-Mart work is now being developed for broader reach and impact with the launch of the Supply Chain Leadership Collaboration project (SCLC project) aimed at working with key sector leaders including: Retail, Brands, Aviation, Automotive and Government among others. This work will help identify and reduce emissions within their supply chains. The CDP Secretariat expresses sincere thanks to Wal-Mart for their leadership in developing this new system for corporate disclosure of emissions from supply chains.

Climate Disclosure Standards Board (CDSB). CDP became a member of the CDSB consortium convened by the World Economic Forum in January 2007 and has been funded by the UK Department for Environment to provide the Secretariat to CDSB, supporting its activities focused upon climate change reporting standards.

Going Forward

CDP's primary goal is to continue to improve the quality and quantity of responses for its core disclosure activity and in doing so better inform the decision-making of investors and corporations regarding the implications of climate change.

CDP will also continue to respond to stakeholder requests to expand, and in addition to the new initiatives for 2007, is developing further projects including:

- Expansion of the CDP process into further geographies and sectors.
- Expansion of the CDP process into private equity and private companies.
- Workshops for corporations and investors.
- Further development of the CDP database.
- Assisting Pension Funds to develop mandates incorporating climate change criteria.

CDP would be delighted to hear from parties interested in participating or partnering with CDP and invites them to approach the Project through info@cdproject.net

"It's not surprising that investors are worried and that they are supporting the Carbon Disclosure Project. In BT we share their concern – and we have good business reasons for doing so. We have a huge investment in the UK telecommunications infrastructure and that will be increasingly at risk… the Carbon Disclosure Project does us all a great service in bringing these matters to the attention of the investment and business communities. It is an important catalyst for change — the change without which the world will be a very dangerous place."

Sir Christopher Bland,
Chairman BT Group

"…the members of the Carbon Disclosure Project have recognised that the cost benefit analysis points to it being in the interest of business to take action. The growth of the Carbon Disclosure Project itself shows that investors are increasingly aware of the impact climate change will have on shareholder value... this is a project that has considerable momentum and that in itself is significant."

Rt Hon Margaret Beckett MP,
then Secretary of State for Environment, Food & Rural Affairs UK Government

"CDP works to improve the information flow, seeks to improve City engagement, to improve understanding and ultimately to improve economic performance… and it tackles it at the highest level with a cross border span, with force and with directness… CDP represents a very positive aspect of shareholder engagement and if there are more shareholders ready to sign up that can only be, from my perspective, a very good thing."

Derek Higgs,
author Higgs Report on Corporate Governance

"Initiatives such as the Carbon Disclosure Project (CDP) can play a meaningful role in our shared endeavours to reduce greenhouse gas emissions. The project shows that both companies and investors have key roles to play. It is very positive and inspiring that the capital markets are considering climate related aspects more and more in their investment decisions. It proves that the climate challenge is not only a matter of technology it is also an important economic issue. As Deputy Prime Minister and Minister of Enterprise and Energy it is especially encouraging to see that companies go ahead without state intervention."

Maud Olofsson,
Deputy Prime Minister Sweden

"It has been a really interesting experience to watch the development of the Carbon Disclosure Project and I congratulate those who have worked so hard. It's extremely significant because there is a major shift in awareness of the climate crisis and the need to integrate the behavior of companies public and private towards the climate crisis, both its risks and its opportunities in the investment market place and in the business market place generally."

Al Gore,
speaking at the CDP2006 launch in New York

"CDP's reporting mechanism offers a trusted solution for consistent and transparent reporting of our energy and carbon numbers, as well as a way to share our reduction strategies with our shareholders and other companies. News Corp. is still at the very beginning of our energy and climate change work and we're delighted to have access to the wealth of information that CDP provides for us to learn from."

News Corporation

2

Following successful expansion in CDP4, the CDP5 universe was expanded even further in 2007 to include over 2,400 companies. This was made possible by sixteen geographical and two sector expansions. This section provides details of these partnerships, the overall response rates, and some headline analysis of the key trends.

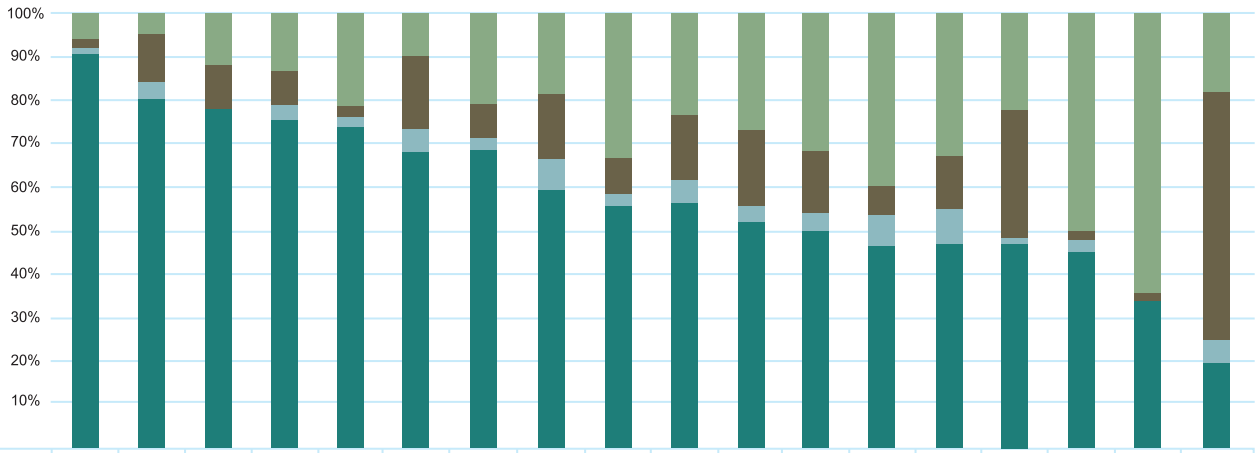
Global Key Trends

from CDP Geographic and Sector Expansions

Please visit the CDP website www.cdproject.net in order to view and download the analytical reports based on the responses from the specific geographical locations. Reports will be available for the Asia, Australia & New Zealand, Brazil, Canada, France, Germany, India, Japan, Scandinavia, South Africa, Switzerland, UK and USA samples.

The key trends from CDP expansions highlighted in the table overleaf produce a number of interesting findings, including the fact that the majority of responding companies around the world see climate change as posing commercial risks. With the lowest rate of companies recognizing potential impacts showing 72%, it is telling that the majority of businesses are identifying climate change as an

CDP5 Response by Region / Sector

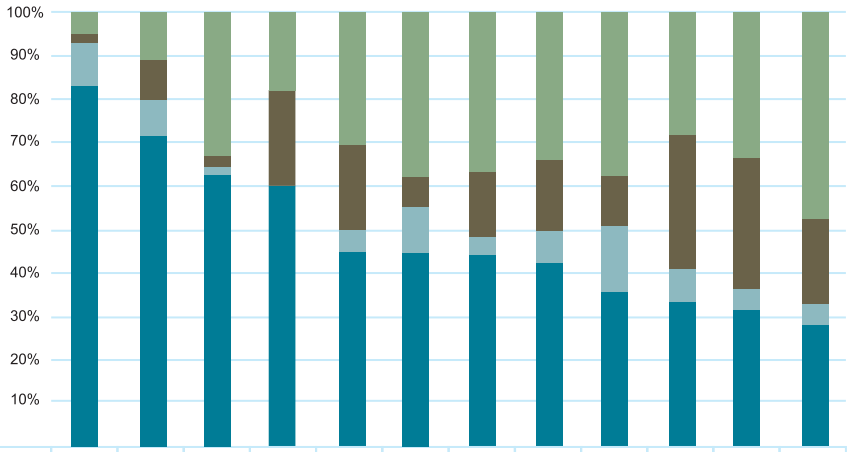


Sample (number of companies)	FTSE 100 (100)	Brazil 60 (57)	Switzer-land 50 (50)	Global FT500 (500)	Japan 150 (151)	Nordic 125 (125)	South Africa 40 (38)	UK FTSE 250 (250)	France 120 (120)	USA S&P 500 (500)	Germany 200 (200)	Aust/NZ 150 (141)	Electric Utility 240	Transport 100 (100)	Canada 200 (194)	Italy 40 40	India 110 (110)	Asia 80 (77)
No Response	6	3	6	62	32	12	8	47	40	117	54	45	95	33	43	20	70	14
Declined to Participate	2	6	5	39	4	21	3	37	10	76	35	20	16	12	58	1	2	44
Provided Information	1	2	0	16	3	6	1	18	3	25	7	6	16	8	2	1	0	4
Answered Questionnaire	91	46	39	383	112	84	26	148	67	282	104	70	113	47	91	18	38	15
% Answered Questionnaire	91	81	78	77	74	68	68	59	56	56	52	50	47	47	47	45	35	19

Unlike other analysis, the graph above reflects all responses received up to August 2007.

The graph below shows the response rates from the various regions last year in CDP4.

CDP4 Response by Region / Sector



Sample (number of companies)	FTSE 100 (100)	FT 500 (500)	Japan (152)	Brazil (50)	Aust/NZ (134)	S&P 500 (500)	France (120)	Electric Utilities (265)	FTSE 250 (250)	Asia (39)	Germany (200)	Canada (280)
No Response	5	52	50	9	41	189	43	90	94	11	67	133
Declined to Participate	2	46	4	11	26	35	18	43	29	12	60	55
Provided Information	10	42	3	0	7	52	5	20	38	3	10	14
Answered Questionnaire	83	360	95	30	60	224	54	112	89	13	63	78
% Answered Questionnaire	83	72	62	60	45	45	45	42	35	33	31	28

	Key Trends						
	Responding companies that said they consider climate change to represent commercial risks	Responding companies that said they consider climate change to represent commercial opportunities	Responding companies that disclosed their GHG data	Responding companies that allocated board-level or upper management responsibility for climate change-related issues *	Responding companies that considered emissions trading opportunities *	Responding companies that implemented emission reduction programs with targets *	**Number of Responses Analysed****
Asia 80	77%	79%	49%	38%	47%	38%	**15**
Aust/NZ 150	97%	89%	60%	93%	77%	36%	**68**
Brazil 60	100%	100%	59%	59%	61%	52%	**46**
Canada 200	85%	86%	66%	53%	27%	24%	**86**
Electric Utility 250	90%	95%	79%	70%	54%	44%	**113**
France 120	88%	84%	72%	34%	31%	43%	**67**
FT500	80%	82%	79%	64%	46%	77%	**378**
FTSE100	98%	82%	83%	53%	38%	41%	**91**
FTSE250	83%	80%	69%	24%	2%	37%	**151**
Germany 200	77%	80%	67%	38%	20%	35%	**104**
India 110	79%	84%	39%	39%	47%	34%	**38**
Italy 40	89%	83%	89%	33%	33%	22%	**18**
Japan 150	78%	82%	95%	93%	69%	81%	**112**
Nordic 125	81%	80%	76%	41%	37%	23%	**77**
S&P500	81%	69%	65%	50%	36%	29%	**269**
South Africa 40	80%	92%	56%	60%	44%	44%	**25**
Switzerland 50	72%	77%	72%	36%	15%	44%	**39**
Transport 100	83%	85%	77%	79%	42%	46%	**48**

* Section B responders only
** some responses will have been received after this analysis was carried out, the analysis was carried out by different report writers.

imminent threat. With the Brazilian rate at 100% of responding companies recognizing hazards, the FTSE 100 at 98%, and the Australia 150 at 97%, these samples are showing that corporate awareness of risks is high. If business wants to be a significant force in addressing climate change, it is equally important that corporations recognize the opportunity and potential to adjust to shifting markets, resource availability, government regulation and consumer demand. The recognition of business opportunities corresponds accordingly to the trends concerning risks, showing that the potential for development is already being integrated into corporate planning. In ten of the samples, the recognition of opportunities was actually higher than the recognition of risk, showing market foresight alongside possible product development.

It should be noted that the questions regarding management strategies and trading opportunities were only answered by corporations who completed the entire questionnaire (Section B). As it was not mandatory, this can account for the lower percentages witnessed in the table outlining key trends above. Additionally, the question regarding emissions trading schemes is expected to be lower, with many companies falling outside the scope of such schemes. Interestingly, the number of companies in developing countries such as Brazil, India and South Africa who see emissions trading opportunities is higher than companies based in Europe showing high interest in the CDM market.

Country/Expansion	Partner	Web Address
Asia	Association for Sustainable and Responsible Investment in Asia (ASrIA)	www.asria.org
Australia & New Zealand	Investor Group on Climate Change (IGCC)	www.igcc.org
Brazil	Banco ABN Amro Real	www.abnamro.com
Brazil	ABRAPP	www.abbrapp.org.br
Brazil	Fabrica Ethica	www.fabricaethica.com.br
Canada	Conference Board of Canada	www.conferenceboard.ca
Electric Utilities	CDP Secretariat	www.cdproject.net
France	AXA	www.axa.com
France	Agence de L'Environnement et de la Maitrise de l'Energie (ADEME)	www.ademe.fr
France	BNP Paribas	www.bnpparibas.com
Germany	BVI Bundesverband Investment und Asset Management e.V	www.bvi.de
Germany	WWF Germany	www.wwf.de
India	Confederation of Indian Industry	www.ciionline.org
India	WWF India	www.wwfindia.org
Italy	CDP Secretariat Europe	www.cdproject.net
Japan	CDP Secretariat Japan	www.cdproject.net
Nordic Region	CDP Nordic Secretariat	www.cdproject.net
Nordic Region	KLP	www.klp.no
Nordic Region	Folksam	www.folksam.se
Nordic Region	Nutek (Swedish Agency for Economic & Regional Growth)	www.nutek.se
South Africa	Incite	www.incite.co.za
South Africa	National Business Initiative (NBI)	www.nbi.org.za
Switzerland	Ethos	www.ethosfund.ch
Switzerland	Pictet Asset Management	www.pictet.com
Transport	CDP Secretariat	www.cdproject.net
UK	Department for Environment, Food and Rural Affairs (DEFRA)	www.defra.gov.uk
UK – Adaptation	UK Climate Impacts Programme	www.ukcip.org.uk
U.S.	Merrill Lynch	www.ml.com
U.S.	CDP Secretariat	www.cdproject.net

Emission Target Trends

While the emissions target question is located within Section B, there is an opportunity for companies to disclose target information at the end of Section A, Question 1(d), so all responses should have been included in the analysis. All companies were asked if they have an emissions reduction target. Many companies do have reduction programmes in place, however the question specifically asks for targets and unless those were disclosed, the response was not counted in the analysis. As such, the average number of companies with a specific reduction target stands close to 50%, showing robust leadership in setting reduction targets. The FT500 and Japanese 150 companies stand out as the two samples working most stringently to limit their emissions. Whilst we have seen a great increase in the number of companies setting emission reduction targets, this remains an area for global improvement.

3 In embracing greenhouse gas controls, American industry will have greater certainty in investment planning decisions and new business opportunities to exploit.

America Faces Up to Climate Change

America has reached a turning point in the fight against global warming. The science has grown stronger, and the need for action more compelling. Industry opposition to greenhouse gas (GHG) controls is melting away. Now the federal government is poised to adopt GHG control measures, ending a decade-long impasse that has put the United States out of step with its major trading partners.

Just how America will address climate change through legislation remains to be seen. But for the next U.S. president taking office in 2009, the issue will be a top priority. Not only are there international calls to re-engage in the Kyoto Protocol, the international control agreement adopted by Europe, Canada and Japan; the U.S. Supreme Court also ruled this spring that the federal government has a duty to act under the Clean Air Act when pollutants — including greenhouse gases — threaten human health and safety.

Meanwhile, American sentiment in addressing global warming has reached an all-time high:

- More than three-quarters of the American public say they are ready to take action on climate change, according to recent polls conducted by Gallup, Opinion Research and others.
- Mayors of more than 600 cities, representing some 70 million people in all 50 states, have signed onto the U.S. Mayors Climate Protection Agreement, an initiative to advance the goals of the Kyoto Protocol within their communities.
- More than a dozen states have adopted GHG control regulations. California leads these efforts, and ranks as the world's twelfth largest carbon emitter.
- Fully half of U.S. states have adopted Renewable Portfolio Standards to shift their electricity supplies away from reliance on carbon-based fuels.

More major U.S. corporations and influential trade organizations are also now embracing the need for mandatory GHG controls. On the one hand, they want greater certainty in their investment planning decisions. On the other, they want to exploit new business and investment opportunities in a carbon-constrained world.

Yet time is running out on the Kyoto Protocol — the control agreement the U.S. opted out of in 2001, citing economic concerns and lack of binding controls on developing nations. With the Kyoto framework due to expire in 2012, the European Union is pressing the United

For the next U.S. president taking office in 2009, climate change will be a top priority

Recent U.S. industry statements on climate change

U.S. Climate Action Partnership: "We are committed to a path that will slow, stop and reverse U.S. emissions while expanding the U.S. economy…. In our view, the climate change challenge will create more economic opportunities than risks for the U.S. economy…. Policies are needed to realize the full potential of energy efficiency as a high-priority energy resource and a cost-effective means of reducing GHG emissions." — ***A Call to Action, January 2007***

More than 25 major U.S. firms or operating subsidiaries as well as six leading environmental groups have joined USCAP. They support a goal to achieve a 60-80% reduction in U.S. CO_2 emissions by 2050.

Business Roundtable: "[W]e support collective actions that will lead to the reduction of GHG emissions on a global basis with the goal of slowing increases in GHG concentrations in the atmosphere and ultimately stabilizing them at levels that will address the risks of climate change…. [T]here is a range of views and preferences among our members about the policy tools that will best achieve that objective. Some companies support mandatory approaches; others do not."
— ***Climate Change Statement, July 2007***

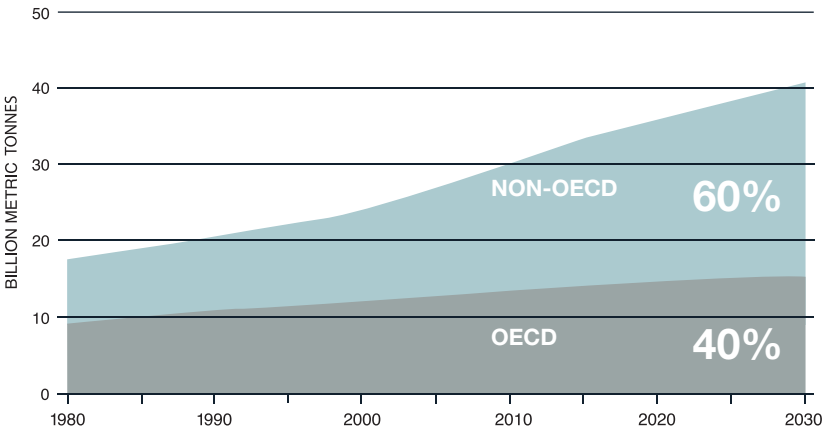
Business Roundtable is an association of CEOs of 160 major firms, with more than $4.5 trillion in combined annual revenues. This policy statement "marks the first time that a broad cross-section of business leaders from every sector of the U.S. economy have reached consensus on the risks posed by climate change and the need for action," according to Business Roundtable President John Castellani.

National Petroleum Council: "The world is not running out of energy resources, but there are accumulating risks to continuing expansion of oil and natural gas production from the conventional sources relied upon historically. These risks create significant challenges to meeting projected energy demand…. Policies aimed at curbing CO_2 emissions will alter the energy mix, increase energy-related costs, and require reductions in demand growth." — ***Facing the Hard Truths About Energy, July 2007***

The National Petroleum Council is an advisory body of oil and gas firms to the U.S. Secretary of Energy. The chairman for this report was former ***ExxonMobil*** *CEO Lee Raymond.*

Baseline forecasts call for a 50% increase in energy demand over the next quarter-century, with most CO_2 emissions growth occurring in developing countries

Projected Growth in Global CO_2 Emissions



Data Source IEA 2006 Reference Case

States for a deal that will bring it back into the agreement. The U.S., in turn, wants China, India and the other fastest-growing developing nations to join. Since it takes time for all the member countries to ratify a new agreement, the hard bargaining is about to begin.

Hard Math

The current Kyoto agreement calls on the nation's major industrial nations to reduce their GHG emissions by an average of 5.2% by 2012, relative to 1990 emission levels. Despite this modest objective, progress to date has been spotty at best.

- The European Union has faced a steep learning curve in implementing a first-of-its-kind, regional GHG emissions trading scheme. Because the E.U. was too generous in allocating emission credits to industrial firms in the first round of trading, it now faces a tougher task of reaching its compliance goals for 2012.
- In North America, Kyoto's targets for 2012 are well out of reach. Both Canada, which has ratified the agreement, and the United States, which has not, are expected to have GHG emissions 20% above their 1990 levels by 2012 — a far cry from Kyoto's goals.
- China, meanwhile, has just surpassed the United States as the world's largest carbon emitter. Under business-as-usual forecasts, global energy use and carbon emissions are expected to increase by more than a third through 2030. Fossil fuels — oil, coal and natural gas — are projected to provide as much of the world's energy supply then as now, some 80% of the total, absent major shifts in energy policy.

Yet, by 2050, scientists advising the world's governments believe a 60 to 80% *reduction* in GHG emissions may be necessary to keep Earth's climate from spinning dangerously out of control. This puts business-as-usual forecasts of energy use and economic growth on a collision course with global warming inertia. Like a speeding train spotting trouble down the tracks, the emission brakes must be applied forcefully and soon to prevent a collision — unless there is another track the train can switch onto.

Stabilization Wedges

Fortunately, there are other options. But they won't come easily. To head off CO_2 levels in the atmosphere that are twice pre-industrial levels, or 550 parts per million, there must be tens of trillions of dollars of investment in low- and no-carbon technologies that is sustained over the next several decades.

To put this investment challenge in perspective, two Princeton University professors have identified strategies that could return CO_2 emissions to today's levels by shortly after 2050 — even as world energy use is projected to double. This would hold the future atmospheric level of CO_2 to under 550 ppm. To achieve this, the professors have identified about 20 options, or 'stabilization wedges,' each of which would be capable of offsetting about 1 billion metric tonnes of annual CO_2 emissions from fossil fuels.

Seven of these wedges would have to be put in place over the next 50 years in order to offset 7 billion tonnes of carbon coming from projected annual growth in fossil fuel use over the period. The global

investment implications of employing these wedges to back out of fossil fuels are enormous. They include:

- A 30-fold increase in wind power by building the equivalent of nearly one million 2-megawatt wind turbines.
- A 700-fold increase in solar photovoltaics, covering a land area the size of New Jersey.
- Using natural gas in place of coal at 1,400 new 1,000 megawatt generating plants.
- Capturing and storing CO_2 emitted at 800 (1,000 MW) coal plants or 1,600 gas-fired generating plants.
- Tripling the world's nuclear power capacity by building 700 new (1,000 MW) reactors.
- Producing 34 million barrels of bio-fuels daily, utilizing around 250 million hectares of arable land (around one-sixth of the world's available agricultural resources).
- Increasing fuel economy in cars so that 2 billion vehicles in 2050 run at an average of 60 miles per gallon rather than at the current average of 30 mpg for 1 billion vehicles.
- Replacing every incandescent light bulb in the world with a compact fluorescent bulb and changing building codes, especially in the developing world, so that energy use and CO_2 emissions from buildings are cut by at least 25%.

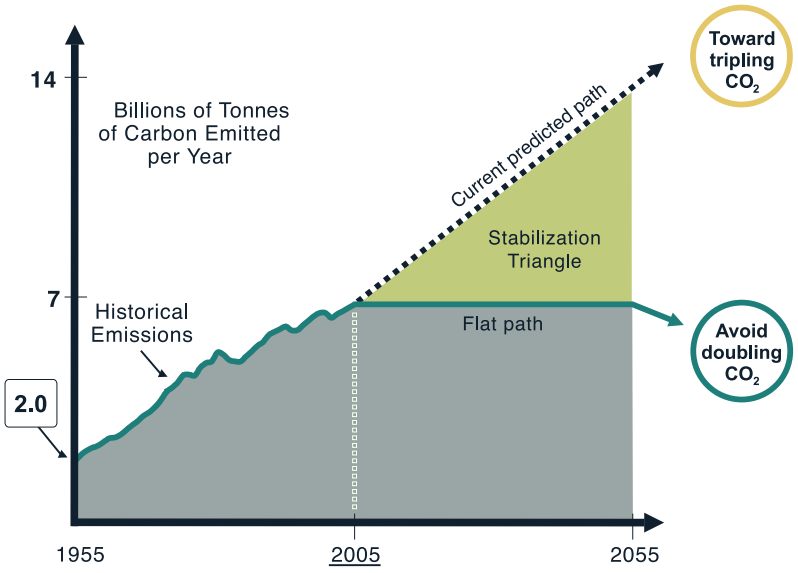
Investor Call to Action

Given the pivotal role that investment capital will play in the success or failure of this Herculean effort, it's little wonder that institutional backing of the Carbon Disclosure Project has grown nearly 10-fold over the last five years. The investment community's burgeoning interest in climate change has also spurred investment banks, brokerage firms and insurance companies to channel their expertise into identifying climate risks and opportunities, with new analytical tools emerging in the field of carbon finance. Such positive interplay between asset owners and asset managers will hasten the pace and scale at which the low-carbon energy revolution unfolds in the 21st century.

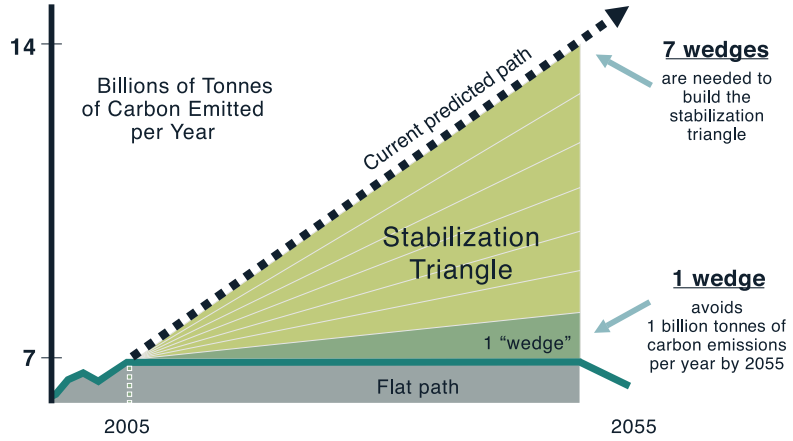
Here in the United States, the Investor Network on Climate Risk (INCR), a group of more than 50 institutional investors with $4 trillion in assets under management, is helping to spearhead these efforts. As part of a 10-point 'Call for Action,' INCR members have asked money managers to demonstrate their capabilities and strategies to assess the

Seven wedges are needed to build the stabilization triangle. Each wedge avoids 1 billion tonnes of carbon emissions per year by 2054

Predicted Path of CO_2 Emissions



Stabilization Triangle to Flatten CO_2 Emissions



Efficiency & Conservation
- Increased transport efficiency
- Reducing miles traveled
- Increased heating efficiency
- Increased efficiency of electricity production

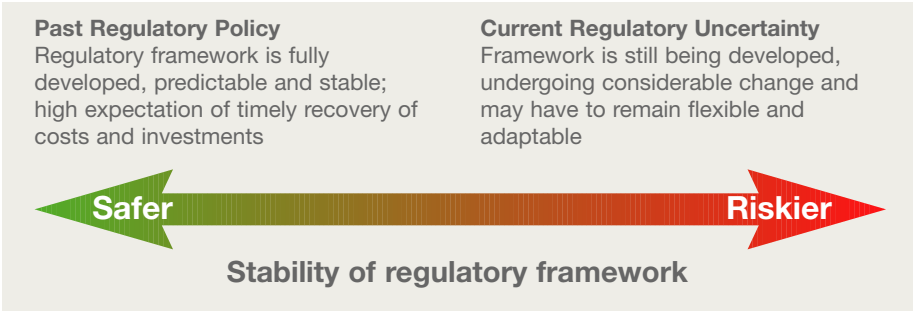
Fossil-Fuel-Based Strategies
- Fuel switching (coal to gas)
- Fossil-based electricity with carbon capture & storage (CCS)
- Coal synfuels with CCS
- Fossil-based hydrogen fuel with CCS

Nuclear Energy
- Nuclear electricity

Renewables and Biostorage
- Wind-generated electricity
- Solar electricity
- Wind-generated hydrogen fuel
- Biofuels
- Forest storage
- Soil storage

Source: R. Socolow and S. Pacala, Princeton University

Investor support is growing for a shareholder proxy campaign that seeks to standardize corporate disclosure on climate change



financial risks and opportunities posed by climate change. In addition, INCR members have pledged to invest $1 billion of their own capital in companies with carbon-reducing technologies — a goal they surpassed in late 2006.

The INCR has for many years worked in partnership with CDP, and is forging alliances with like-minded groups such as the Global Reporting Initiative. Recognizing that "what gets measured gets managed," these groups recently joined a consortium convened by the World Economic Forum to support activities around the globe on the reporting of GHG emissions and the creation of consistent corporate reporting standards on climate change.

This new Climate Disclosure Standards Board (CDSB) has selected CDP to serve as its Secretariat. Its objective is to make it common practice for corporations to include four climate change-reporting elements in their annual shareholder reports — and for investment banks and credit ratings agencies to do the same in their assessments of companies.

Shareholder Campaign

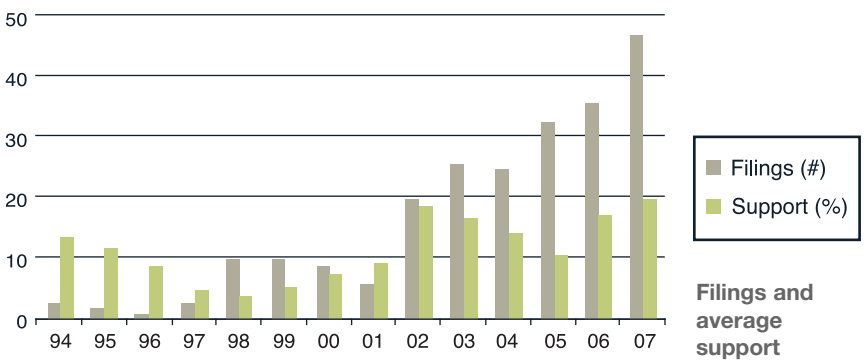
Forward-looking shareholders have long recognized the profound effects that climate change will have on changing the regulatory landscape. Rules of commerce that were well established and allowed for predictable rates of investment return are entering a state of flux. A new regulatory framework is being created that will factor in a price for carbon dioxide emissions — until now a market externality.

Investors in U.S. securities have been fortunate in that they have been able to pose questions directly to corporate boards and managers about their plans to respond to this changing regulatory environment. As part of the annual meeting process, shareholders started with filing one proxy proposal at **Exxon Corp.** in 1990. The campaign has been growing ever since, with the number of resolutions, filers and industries targeted all increasing substantially in recent years. More than 150 climate change resolutions have been filed in the last five years alone, including a record 47 proposals filed in 2007. Most of these resolutions share the common objective of a new set of reporting criteria, like those espoused by the Climate Disclosure Standards Board.

Results of this shareholder campaign reveal a strong upsurge in investor support for increased corporate disclosure on climate change. Average support levels for these proxy proposals have nearly doubled in the last three years. Just as important, about half of the companies receiving such proposals now typically negotiate withdrawals, based on their willingness to stay engaged with concerned shareholders and provide added disclosure on climate change.

The longer-term objective of investors leading this campaign is to create an accounting regime for climate reporting that becomes part of the generally accepted standards used in financial reporting. Only then — when the private sector, professional bodies and governments embrace such disclosure on a routine basis — can markets expect to deploy capital efficiently and effectively in a carbon-constrained world.

Global Warming Shareholder Proposals



Filings and average support reached record levels in 2007*

*Average support level excludes filings by climate change skeptics

Creating a Generally Accepted Climate Reporting Framework

Climate Disclosure Standards Board

CDP has been appointed Secretariat to a consortium of seven business and environmental organizations called the Climate Disclosure Standards Board (CDSB or 'the Board'). CDSB's mission is to build upon the work of their members to create and advocate a generally accepted framework for reporting by corporations with respect to climate risks and opportunities, carbon footprints, and carbon reduction strategies and their implications for shareholder value. By aligning basic requests for information, the Board's aim is to make carbon-related reporting by companies in their Annual Reports and related analysis by the investment research community common, and not just best, practice.

Background

In recent years, important progress has been made in raising awareness of the importance of climate-related disclosure among corporations and their boards and shareholders as evidenced by the response to CDP. Disclosure frameworks and tools have seen considerable elaboration and refinement, helping companies to understand better how they should disclose footprints, reduction strategies and the related implications for shareholder value. Disclosure has increased substantially and more firms have begun to manage their emissions, whether because of the scrutiny that greater transparency brings, the prospect of government regulation or other considerations.

It is widely recognized that although they are evolving fast and becoming ever more sophisticated, current climate reporting initiatives are at a relatively early stage of development. Opinions, suggestions and conclusions are emerging from interested parties at different rates and times. All of these help to enhance consensus but can appear fragmented when originating from multiple sources. In response, CDSB aims to identify where there are consistencies and opportunities for harmonizing regimes and where there are recurring themes on best practices and to build upon these to create a single unified Framework for climate reporting.

Objectives

- Disclosure of actual and projected GHG emissions, using a reporting standard consistent with the Greenhouse Gas Protocol developed by the World Business Council for Sustainable Development and the World Resources Institute
- Assessment of the physical impacts that climate change could have on the company's business and operations
- Assessment of the material legal and finance effects that climate-related regulation may have on the company's business and operations
- Management's discussion and analysis of the actions it is taking to address identified climate risks and opportunities.

Facilitation of Dialogue on Accounting Standards

The accounting community and regulators remain at an early stage of dialogue on the establishment of carbon-related financial accounting standards. In the interest of assisting this process, CDSB member organizations will offer a common venue for such discussions among the industrial, financial, accounting, governmental and other relevant communities.

Advisory Committee

CDSB is supported by an Advisory Committee to guide its work, comprised of leading industrial, financial services and accounting firms, as well as distinguished governmental and non-governmental specialists. The Board and the Advisory Committee were first convened at the World Economic Forum's 2007 Annual Meeting with representatives of Alcan, American International Group, Capital Group, Duke Energy Corporation, Ernst and Young, Royal Dutch/Shell, JP Morgan Chase, PricewaterhouseCoopers, SUN Group of Companies, Swiss Re and Tokyo Electric Power as well as UK Foreign Minister David Milliband, State of California Assembly Speaker Fabian Núñez, and UNEP Director General, Achim Steiner.

Founding CDSB members:
California Climate Action Registry; Carbon Disclosure Project; Ceres; The Climate Group; International Emissions Trading Association; World Economic Forum Global Greenhouse Gas Register and World Resources Institute

GUEST COMMENTARY

Climate Past, Climate Future: Key Findings from the IPCC

by Dr. Michael MacCracken

In 1965, the President's Science Advisory Committee warned President Johnson that continuing reliance on combustion of coal, oil and natural gas would cause further increases in the atmospheric carbon dioxide (CO_2) concentration and lead to global warming. In 1985, scientists and government representatives brought together by the World Meteorological Organization warned that nations should no longer rely on past climatic conditions as a basis for future planning. In 1990, 1995, 2001 and again in 2007, the international scientific community — through the Intergovernmental Panel on Climate Change (IPCC) — has prepared scientific assessments regarding human-induced climate change that have gained *unanimous* acceptance and approval by the world's nations.

The IPCC's Fourth Assessment Report (www.ipcc.ch), even in the very measured tone of scientific discourse, makes clear that there is 'unequivocal' evidence that the climate is changing due to human activities. Near surface air temperatures at stations around the globe average almost 1.5ºF higher in the early 21st century as compared to the late 19th century; changes have been larger in higher latitudes, over land, and in winter, and smaller in low latitudes, over the ocean, and in summer. The effects of these changes include shortening the cold season and lengthening the warm season, leading to fewer frost days and longer growing seasons; loss of snow and sea ice cover; intensified evaporation and dry periods that increase the likelihood of wildfires; and shrinking habitats for cold-favoring species.

While the Earth's climate has always varied to some extent, human activities have become the dominant influence, overwhelming the influences of variations in the Sun's output and major volcanic eruptions. Considering all of the possible natural and human-induced factors that could be affecting the climate, the IPCC assessment makes clear that only human influences could be causing the temporal and spatial pattern of changes that are now occurring.

> "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level…. Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations." — **IPCC, 2007**

While data provide a solid basis for understanding past conditions, looking ahead 100 years is a major challenge. The world is so complex that constructing a laboratory model to conduct more than rudimentary experiments is not possible. Understanding how Earth's atmosphere, oceans, land surface and land cover interact and have changed in the past does provide a good indication, although great care must be taken with analogs because of the much more rapid pace of human-induced change. Theoretical analyses provide many insights and constraints — among them that we cannot expect to forecast the weather on particular days in the future. All we can expect is to generate a sense about potential changes in the likely statistical distributions of future conditions (e.g., likely decadal averages of typical summer conditions). As a result, projections of future change have had to rely on numerical models. These models subdivide the globe into many small 'tiles' (or boxes) and then couple them together based on the universally applicable laws of conservation of mass, momentum, energy and species (like water vapor and ozone). IPCC's 2007 assessment report described substantial progress in quality checking the model simulations, finding that, for example, they quite reasonably represent the latitudinal and longitudinal distribution of climate change over the 20th century.

To project conditions through the 21st century, economists and energy experts have prepared a range of scenarios of how the global population, economy, productivity and energy system are likely to evolve. Assuming ongoing efficiency improvements and that no additional actions are taken to curb emissions of greenhouse gas (GHG) concentrations, plausible scenarios suggest that emissions of CO_2 and other GHGs in 2100 are likely to be one to four times greater than at present, reflecting a likely increase in population to 8-10 billion and a significant increase in the standard of living (and so in energy use). Even the lowest-emission scenario takes the atmospheric CO_2 concentration to roughly double its pre-industrial level, while the highest ones cause the concentration to reach at least three times the pre-industrial level — and keep rising.

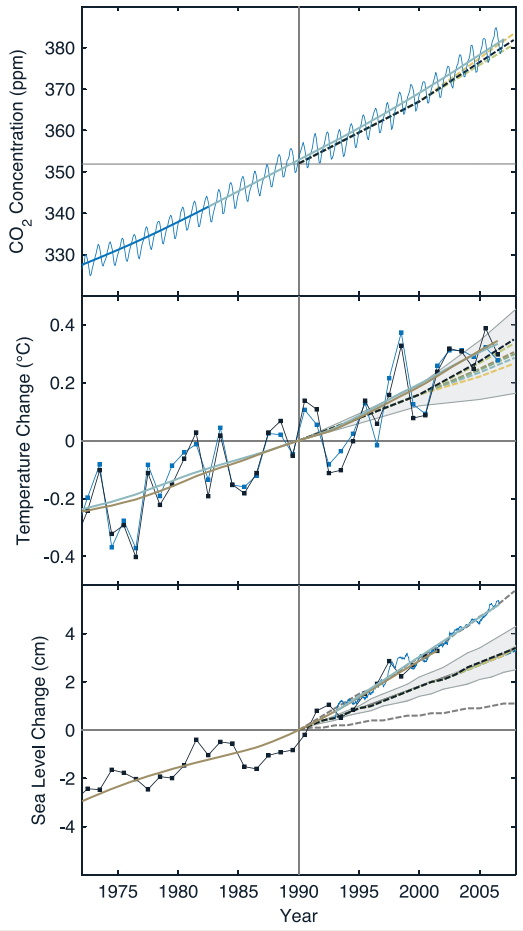
Imposing the scenario-based projections of changes in GHG concentrations, climate model simulations project that annual-average surface air temperatures around

Dr. Michael MacCracken

the world in 2100 will be roughly 4 to 8ºF above their pre-industrial levels (about 3 to 7ºF above present). The changes will be larger in high latitudes (due to reductions in snow cover and sea ice allowing greater absorption of solar radiation) and less in low latitudes (due to the limiting influence of evaporation of water), larger over land areas than over the ocean, and larger at night and during winter than during the day and the summer. Rapid reductions in emissions and stabilization of atmospheric composition over the next several decades have the potential to limit the warming to roughly 4 to 5ºF above their pre-industrial level — still quite a large change relative to changes during Earth's history, but hopefully low enough to avoid the most detrimental environmental and societal impacts.

The temperature increase is only the most general indication of the changes in climate — and indeed in the weather — that are likely. Faster evaporation will dry out soils and lead to more rapid onset of drought. More evaporation will also lead to more intense precipitation events and more powerful, rain-dumping hurricanes. Warmer conditions will lead to higher snowlines and less springtime snowpack, reducing water available for irrigation and communities during hotter summers. And warming oceans and melting glaciers, which have already caused sea level to rise about 8 inches in the 20th century, are projected to lead to a further increase of perhaps 20 inches by 2100 — and quite likely even more as the warming starts to cause deterioration of the Greenland and West Antarctic ice sheets. Evidence of the potential for much larger increases in sea level comes from study of the last interglacial (about 125,000 years ago), when global average temperatures were perhaps 1-2ºF higher than at present — and sea level was roughly 13-20 *feet* higher.

As was made clear in the special international panel report done for the U.N. Commission on Sustainable Development in February 2007 (see www.confrontingclimatechange.org), there is no more time to wait — modest changes are already occurring, and what was once just a risk of significant climate change is becoming a likelihood and soon will be a reality. Although there is still much to be learned to be able to assist society in adapting to the inevitable further changes that will result from past and future emissions, failing to act aggressively now will leave a legacy to future generations that will require them to devote increasing resources to making up for coastal inundation and damage from extreme weather — resources those generations (our children and grandchildren) will have to divert from sustaining and enhancing their standard of living.



While IPCC projections reflect consensus positions in the world's scientific community, recent observations indicate that CO_2 concentration, global average temperature and sea level are rising at higher rates than IPCC assessments have been projecting. This suggests that the magnitude and pace of human-induced global warming may be underestimated.

(Rahmstorf et al., 2007: Recent Climate Projections Compared to Observations, Sciencexpress, www.sciencexpress.org, 1 February 2007, 10.1126/scienc.1136843).

*— Michael C. MacCracken is Chief Scientist for Climate Change Programs with the **Climate Institute** in Washington, DC. Previously, he was a climate modeler and led atmospheric studies at the Lawrence Livermore National Laboratory. He then served as executive director of the Office of the U.S. Global Change Research Program and its National Assessment Coordination Office.*

4 This Climate Governance Index provides an evaluation of S&P500 companies responding to the Carbon Disclosure Project 2007 survey (CDP5).

Ranking S&P500 Company Responses to Climate Change

Climate Governance Index

Today's business and political leaders must recognize that Earth's climate is no longer a static boundary condition for conducting their affairs. Strategic investment decisions now have a direct bearing on the climate and the natural environment that supports economic growth. New governance principles must emerge that account for the effect of human decisions on the globe, and innovative strategies must be developed to sustain economic growth while reducing the drivers of climate change, especially dependence on fossil fuels.

This will be an intergenerational challenge that causes the planning horizon for key investment decisions to expand beyond the time that a CEO or government leader typically stays in office. While investment returns typically are pegged to periods of five years or less, they often create assets — automobiles, appliances, housing stock, factories and power plants — with life spans from a decade to 50 years or more. Even after these assets are retired, the greenhouse gases associated with them may linger in the atmosphere for 100 years or more.

This creates a 'governance gap' in decision making whereby investments made in real time by industry and government leaders have century-long implications. To bridge this gap, conventional thinking must be turned on its head: those pursuing fundamental changes in production methods and energy use may realize the greatest investment opportunities. Those intending to carry on with business as usual may bear the greatest investment risks and liabilities resulting from climate change.

Since 2003, the Investor Network on Climate Risk, comprised of more than 50 U.S. institutional investors with $4 trillion in assets, has supported research on the relationship between corporate governance and climate change. In 2004, INCR published an *Investor Guide to Climate Risk* to serve as an action plan and resource guide for asset owners, money managers and corporations. This report is available at www.incr.com.

In addition, through Ceres, an investor and environmental coalition that serves as the secretariat for INCR, two editions of *Corporate Governance and Climate Change: Making the Connection* have been published, in 2003 and 2006. CDP is pleased to have worked with Ceres and INCR during this formative time.

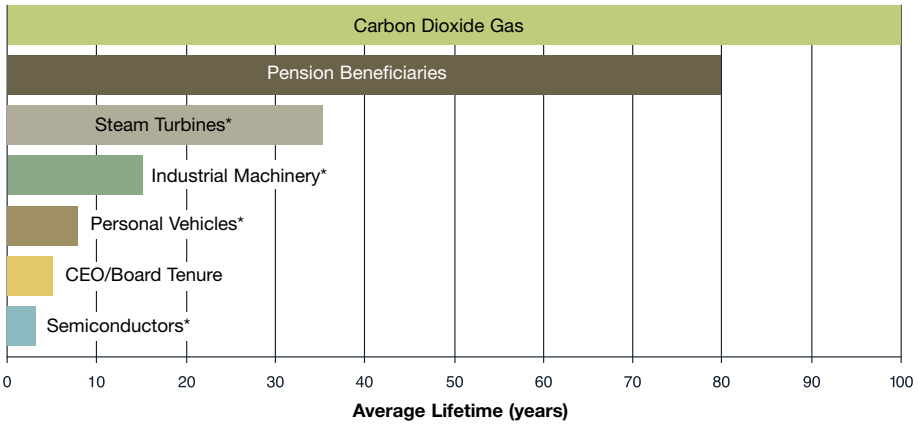
For these earlier reports, Institutional Shareholder Services (now a division of RiskMetrics Group) created a 14-point **Climate Governance Index** to evaluate corporate climate change activities in five main governance areas:

- **Board oversight**
- **Management execution**
- **Public disclosure**
- **Emissions accounting**
- **Emissions reductions and strategic opportunities**

This Climate Governance Index has been adapted to provide an evaluation of S&P500 companies responding to the CDP5 survey.

While investment returns are usually based on periods of five years or less, they often create assets designed to last 10 to 50 years — and greenhouse gases that stay in the atmosphere for a century or more

Capital Life Cycles vs. Natural Life Cycles



**Source for capital cycles: U.S. Department of Commerce, Bureau of Economic Analysis*

See Appendix 1 of this report for a complete list of Climate Governance Index scores, calculated as a percentage grade, for S&P500 respondents to the CDP5 questionnaire

RiskMetrics Climate Governance Index Adapted to CDP5 Report Analysis

The tables below explain the scoring system used to evaluate the responses of S&P500 Index companies to the CDP5 questionnaire; it has been adapted from the RiskMetrics Climate Governance Index. The points awarded are based on disclosure from CDP5 responses (25 points maximum) and from the respondents' climate change disclosure in their most recent Form 10-K filings with the Securities and Exchange Commission (three points maximum).

Board oversight and management execution scores (four points maximum) are included only for industry sectors where a majority of S&P500 respondents completed Section B of the CDP5 questionnaire. To make scores comparable, RiskMetrics calculated a percentage grade for each company based on the amount of points it achieved out of the total points available for its sector, up to a maximum of 100%.

Emissions intensity targets are normalized reductions relative to units of production or revenue. (Such targets may allow a firm's absolute emissions to grow.) *Absolute emissions targets* are set to achieve total emission reductions below a specified baseline.

Targets must be company-wide in order to receive scores for emission reductions. Targets do not have to include Scope 3 (indirect) emissions from upstream suppliers or downstream product end-use. In some industry sectors, Scope 3 emissions are much greater than Scope 1 (direct) emissions or Scope 2 (purchased power) emissions.

See Appendix 1 of this report for a complete list of Climate Governance Index scores, calculated as a percentage grade, for S&P500 respondents to the CDP5 questionnaire.

Section B Company Responses	
Board Oversight	Management Execution
2	2

Section A & B Companies — Disclosure and Opportunities								
Risk Disclosure (6 pts. max.)				**Emissions Disclosure** (4 pts. max.)				**Commercial Opportunities**
Regulatory		Physical		Scope of Emissions Accounting				(# opportunities listed:
CDP	10-K	CDP	10-K	1*	2*	3*	Global only	1 if 1, 2 if 2, 3 if >=3)
2	2	1	1	2	1	1	2	1–3

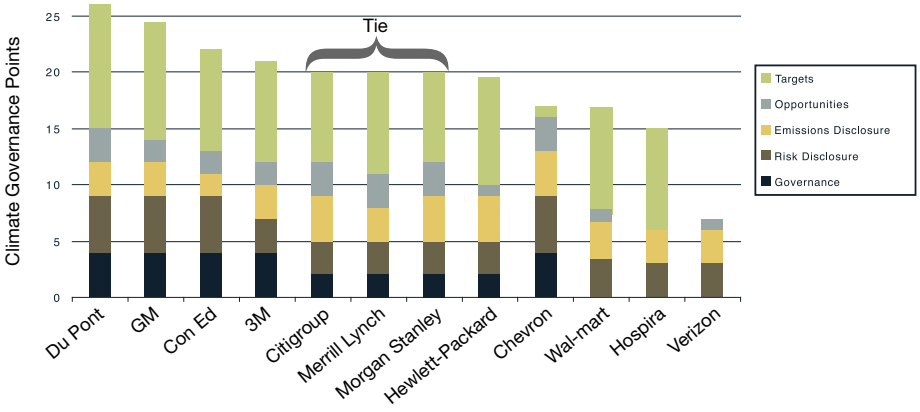
Section A & B Companies — Efficiency and Renewables					
Efficiency/Renewables Targets					
Energy Efficiency (pick one, two pts. max)			Renewables (pick one, two pts. max)		
Facility	Region	Company	Facility	Region	Company
1	1.5	2	1	1.5	2

Section A & B Companies — Emission Targets			
Emissions Reductions** (7 pts. max.)			
Target Type	<1%/yr	1–2%/yr	>2%/yr
Intensity	1	2	3
Absolute	5	6	7

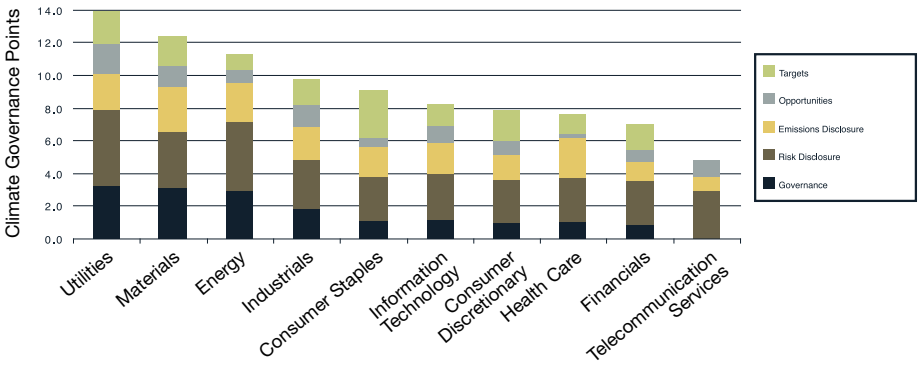
*Scope 1 = direct emissions; Scope 2 = purchased power emissions; Scope 3 = indirect emissions

**Annualized emission reduction figures are calculated as follows: Total target percentage reduction / Total reduction program years (target year - baseline year = reduction program years). To account for companies with second-generation targets, emissions reductions achieved in earlier periods (often with a 1990 baseline) are summed with second-generation emission targets to determine a projected combined percentage reduction in emissions from the original baseline.

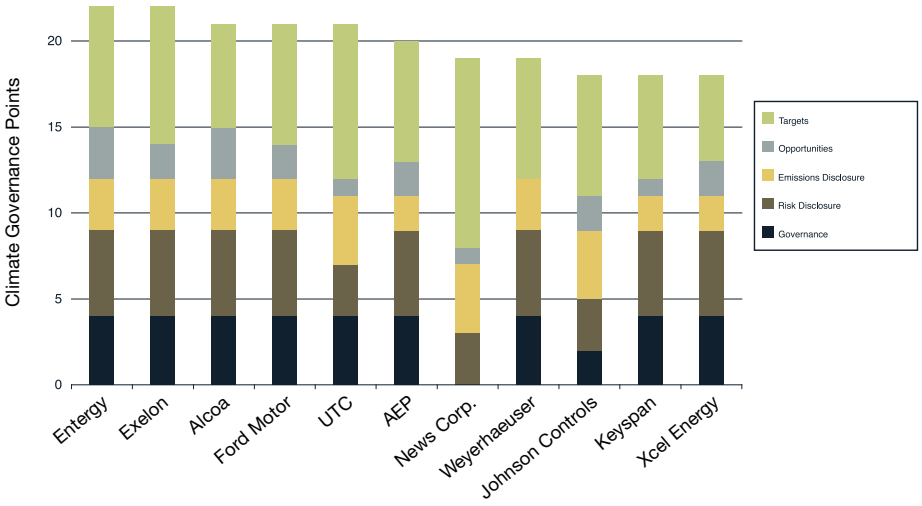
Climate Governance Index Top Company Scores by Sector



Climate Governance Index Average Sector Scores by Component



Additional Top Scoring Companies



"It can take over **two decades** for newly commercialized vehicle technology to be incorporated into the vehicle fleet actually on the road. Improvements in building efficiency are made slowly — because buildings can stand for **many decades**, and retrofitting efficiency steps such as increased insulation and better windows can be difficult and costly. Power plants and industrial facilities often last **50 years** or more, limiting the rate of capital turnover in these sectors. Achieving any significant increase in efficiency, shift in fuels used, and capture of CO_2 emissions for storage will require major changes over decades to vehicles, buildings, industrial plants, electric generation facilities, and infrastructure."

— "Hard Facts about Energy," National Petroleum Council, July 2007

GUEST COMMENTARY

Factoring ESG in Investment Analysis: Carbon Disclosure Project Helps Set the Standard

by Jane Ambachtsheer and Craig Metrick

The success of the Carbon Disclosure Project (CDP) speaks to the increasing attention paid to climate change by the world's largest corporations. But equally important and impressive is the commitment by many of the world's largest investors to address the impact of climate change on their portfolios. Integrating environmental, social and governance (ESG) issues into corporate engagement and stock selection is now a trend that the CDP has helped to create.

Increasingly, the institutionalization of ESG factors by institutional investors and asset managers occurs because issues such as climate change pose real risks and business opportunities, not just moral and ethical concerns. As evidence of climate change and models of its impact are further established, it becomes clearer that climate change will have real long-term impacts on the physical and financial future of investment beneficiaries. In this light, the moral perspective coincides with the financial one — reinforcing the fiduciary argument for considering ESG factors within the investment and ownership processes.

In April 2006, a set of global Principles for Responsible Investment (PRI) was launched by the United Nations Secretary General at the New York Stock Exchange after a year-long process led by the UN Environment Programme Finance Initiative and the UN Global Compact. The PRI provide a valuable framework for ESG integration and include six broad principles and suggested actions,[1] all of which are designed to encourage and promote the integration of ESG factors into investment processes. At the time of launch, owners with more than $10 trillion of assets under management had signed up to the principles, with more than 220 signatories (40% asset owners, 40% asset managers and 20% professional service partners).

Synergies between CDP and the UN Principles for Responsible Investment will enhance corporate disclosure on climate change and make data more accessible

The PRI has also formalized a detailed assessment review that seeks to demonstrate progress and change in mainstream practices — both key factors for maintaining the credibility and legitimacy of the initiative over time.

As part of the first PRI assessment review process, some exciting trends and innovations were identified that highlight the various ways environmental factors are being integrated into how institutional investors and their agents oversee the management of their portfolios.

Mercer sees important and encouraging synergies between the CDP and the PRI. The first two principles under the PRI commit signatories to consider ESG issues in their investment and ownership decisions. There are many ways this can be done. Signatories have an opportunity to formalize their own ESG considerations and/or encourage their managers to do the same. The thorough and compatible nature of responses makes CDP an ideal tool for complying with these principles. Moreover, the development of a user-friendly database housing responses by the CDP secretariat will make more accessible the current and historical responses to the CDP questionnaire.

Through Mercer's work with PRI signatories and our investment manager research, we know that investment analysts are increasingly building sustainability criteria into valuation models and investment standards to support their search for alpha. Sell-side firms and an increasing number of mainstream investment managers are also finding it useful to reconcile climate change indicators with financial criteria in their research processes. Previously, this was the domain of managers specializing in socially responsible mandates. Now the PRI, CDP and others are encouraging increased uptake of climate-specific and ESG data by the broader investment community through education, research, provision of information and collaboration.

Jane Ambachtsheer and Craig Metrick

Another PRI principle (# 3) requires investor signatories to encourage portfolio companies to further disclose information on ESG matters. Again, CDP offers a way to fulfill this requirement. Signing on to the CDP grows the assets represented by the initiative and applies more pressure to companies to respond, while sending market signals that investors want companies to consider climate change in their strategic policies, planning and disclosures. The results and responses of CDP demonstrate the growing success of this approach.

The risks and opportunities related to climate change have now been documented, and investment managers and asset owners around the world increasingly have internalized the 'investment case' for proactive responses to the issue. As a result there are now hundreds of sustainability 'branded' funds available in the market globally, launched and managed by a combination of mainstream and specialist investment firms whose products are available to both retail and institutional investors.

There are various investment strategies that sustainability funds might adopt, such as negative screens to eliminate exposure to high-polluting sectors and companies within those sectors. Other strategies include a best-in-class approach that is underpinned by a sustainability 'rating' of companies. These funds overweight highly rated sustainability companies and underweight those with poor ratings. Another quickly growing category of emerging investment products involves clean technologies. These funds often include both listed and private equities (and sometimes real estate and other asset classes), and focus on generating alpha by investing in the companies that will be winners in the global shift towards a lower-carbon economy.

Despite the flurry and seeming appeal of sustainability funds, there are still relatively few examples of mainstream investment managers who have formally integrated ESG criteria into the core stock selection and value enhancement of their traditional fund offerings. Fortunately, the outlook is improving. According to a recent PRI assessment, more than half of asset owners adhering to the principles in some way, now assess the capacity of managers to integrate ESG considerations.[2] Request for proposals and investment management agreements are additional indicators of how and to what extent the investment community views ESG issues as important.

More than half of asset owners supporting the PRI now assess the capacity of investment managers to integrate ESG considerations into their research

Expect to see more progress and examples of investors and investment managers integrating ESG factors into valuations and the identification of future investment opportunities. Initiatives such as CDP and the PRI will continue to bolster this trend, while encouraging collaboration, fiduciary responsibility and flexibility in approaches.

*— Jane Ambachtsheer and Craig Metrick are with **Mercer Investment Consulting's** global Responsible Investment business.*

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Investment Consulting

[1] *See www.unpri.org.*

[2] *See wwww.unpri.org/report07/*

5 Disclosure of GHG emissions by CDP5 respondents in the S&P500 jumped from 54% to 65%, but the completeness of reporting still varies widely by sector.

Disclosure of Greenhouse Gas Emissions

Corporate tracking and disclosure of greenhouse gas emissions is one of the most basic elements of climate change reporting — and one of the most difficult. As companies enter this process, they must decide which GHG emissions to track and the scope and rotation of emission inventories. Baselines must be set to track emissions trends over time, and accounting procedures must be put in place to adjust for acquisitions, divestitures and joint ventures that affect aggregate emissions totals. To ensure accuracy and consistency of reporting, companies need to carefully document their accounting assumptions and data collection methods, which may evolve as reporting standards are refined.

Fortunately, companies do not have to figure this out all on their own. Since 1999, the World Resources Institute and the World Business Council for Sustainable Development have convened an open, international, multi-stakeholder effort to design and promote an international protocol for reporting GHG emissions. Respondents to the CDP questionnaire are urged to use the 'Greenhouse Gas Protocol' that this group has developed.

Among this year's S&P500 respondents:

- 65% (175 out of 269 responses analyzed) reported their GHG emissions, a sizeable jump from 54% of CDP4 respondents. Of the companies that reported, 146 agreed to make their emissions figures public.
- The largest proportion (150 respondents) reported Scope 1 (direct) emissions; a somewhat smaller proportion (133) reported Scope 2 (purchased power) emissions; and a much smaller number (43) reported Scope 3 (indirect emissions)

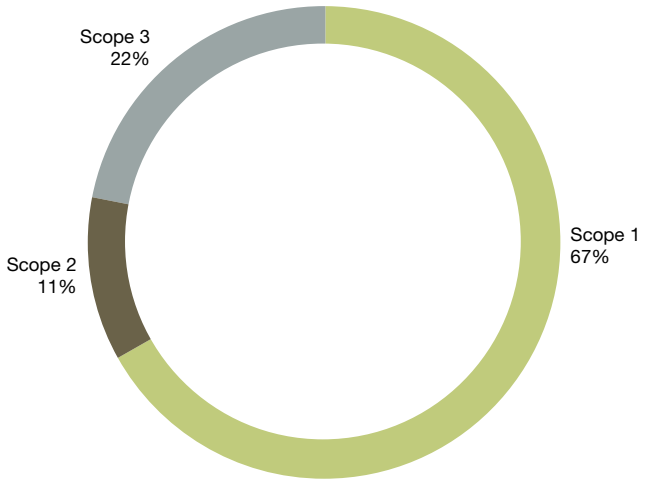
Calculating the 'carbon footprint' of a company's operations — all the way from upstream suppliers and energy providers through downstream customer end-use of products — remains one of the most vexing challenges of carbon emissions accounting. Until there is greater consistency in disclosure in each industry sector, with clear boundaries set on declaring direct and indirect emissions, comparing company disclosures will remain largely an 'apples-and-oranges' exercise.

Emissions Reporting by Scope

S&P500 companies reported 2,013 million tonnes of CO_2e emissions, although they did not break down 70 million tonnes of this amount by scope. Of the amount broken down, two thirds — or 1,304 million tonnes — were in the GHG Protocol Scope 1 category of direct emissions. Another 11% — 211 million tonnes — were Scope 2 purchased power emissions. The final 22% — 429 million tonnes — were Scope 3 indirect emissions.

In all, S&P500 respondents to the CDP5 survey reported an aggregate total of 2,013 million tonnes of carbon dioxide equivalent ($C0_2e$) emissions, equivalent to about 6% of global annual GHG emissions

Emissions Reporting by Scope



Emissions totals would change dramatically if more oil, auto and durable goods companies included Scope 3 indirect emissions in their carbon footprints

Companies sometimes reported only a global emissions total, with no further detail. Most often, they did not include Scope 3 amounts in their reported global total, while some reported only partial totals, excluding some regions or countries.

- **Scope 1:** Among S&P500 respondents, electric utilities dominated Scope 1 (direct) emissions; these firms accounted for nearly three-fifths of the total. Energy companies accounted for another quarter of these emissions, while the Materials sector contributed 12% of the total.
- **Scope 2:** Reporting of emissions from purchased power was more evenly distributed among the industry sectors. Materials companies accounted for more than one-third of these emissions, followed by Energy (17%) and Consumer Staples (12%).
- **Scope 3:** Only a small proportion of respondents reported on their indirect emissions. Of these, emissions from business travel were most commonly reported (31 respondents). Just five firms reported on emissions from their products. Two were of particular note: **Chevron**, with 395 million tonnes from customer end-use of its products; and **Citigroup**, with 21.3 million tonnes reported from new capacity at fossil-fired power plants it has financed. Four respondents reported on supply chain emissions, and three on emissions from logistics and distribution.

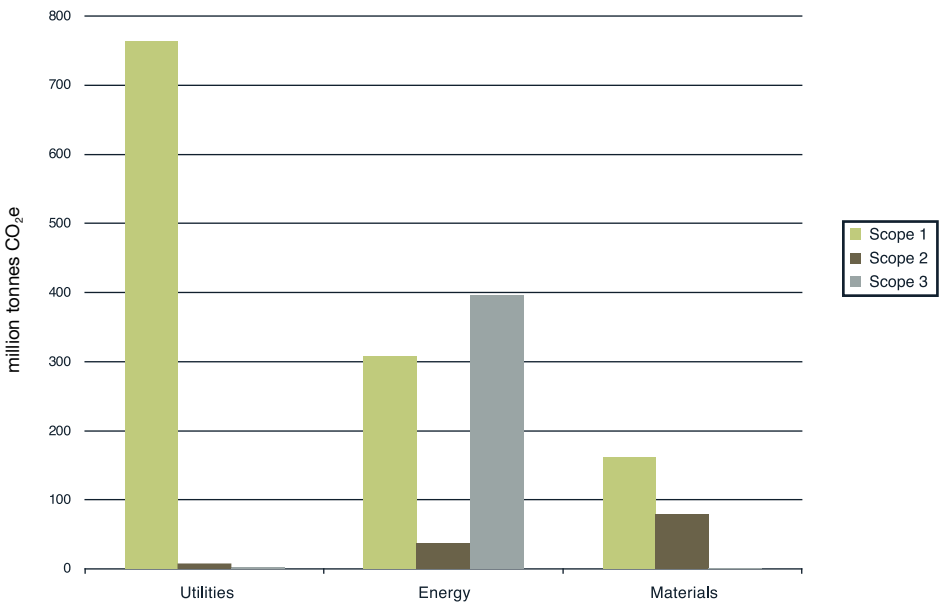
Emissions totals would change dramatically if more oil, auto and durable goods companies included Scope 3 indirect emissions in their carbon footprints. However, this would also lead to a problem of double counting of emissions, since, for example, oil and auto companies might both account for the fuel used in vehicles.

Emissions Reporting by Sector

Emissions disclosed by S&P500 respondents varied significantly by sector.

- **Utilities** reported 821 million tonnes of CO_2e emissions, about 40% of the total reported by all sectors. Of this amount, 764 million tonnes, or 93%, were reported as Scope 1(direct) emissions. These Scope 1 emissions from utilities represent 59% of all such emissions reported by S&P500 respondents.
- **Energy** companies had the second highest amount of aggregate reported emissions for any sector, with 739 million tonnes. The overall figure is heavily skewed by Chevron's response, however, whose Scope 3 (indirect) emissions accounted for 53% of the emissions reported by all Energy sector respondents. Had the other respondents in this sector made similar disclosures of their estimated Scope 3 emissions, they would have far outranked Utilities in terms of aggregate emissions totals.

Top Emitting Sectors by Scope



¥ **Materials** came in a clear but distant third in terms of aggregate emissions, with 241 million tonnes reported. Both it and Industrials — the next highest emitting sector with 65 million tonnes aggregated emissions — had Scope 1 emissions roughly twice their Scope 2 amounts.

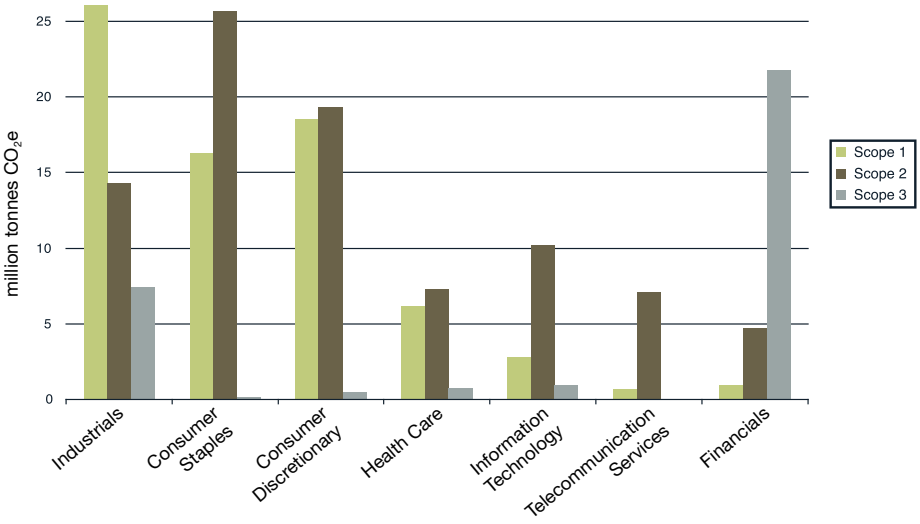
Among the six remaining lower emitting sectors, Consumer Staples, Information Technology and Telecommunications companies stood out for having Scope 2 emissions significantly higher than Scope 1 emissions, while Consumer Discretionary and Health Care firms reported largely equivalent amounts of Scope 1 and 2 emissions. For all these firms, energy efficiency programs are most likely to improve their emissions profiles, with a positive impact on their bottom lines, given rising energy costs.

Emissions Intensity by Sector

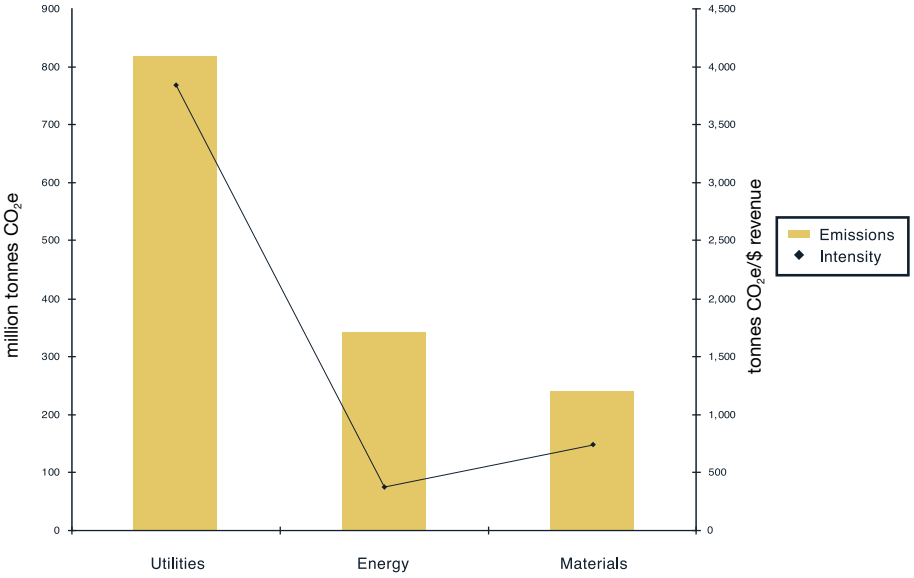
Another useful gauge of respondents' GHG emissions is to measure their Scope 1 and Scope 2 emissions against the firms' annual revenues; this provides a measure of their emissions intensity of production. For the most part, industries with higher absolute emissions also have higher emissions intensity rates.

Not surprisingly, the Utility sector ranks far above all others in emissions intensity, because its revenues derive largely from combustion of fossil fuels to generate electricity. Respondents in the Materials and Energy sectors have emissions intensity ratings that are only about one-fifth and one-tenth that of the Utility sector, respectively. However, the Energy sector's intensity rating would exceed that of the Utility sector if Scope 3 emissions from customer end-use were taken into account. Except for Industrials, all other sector respondents in the CDP5 survey have average emissions intensity ratings of less than 100 tonnes of CO_2e per dollar of revenue generated.

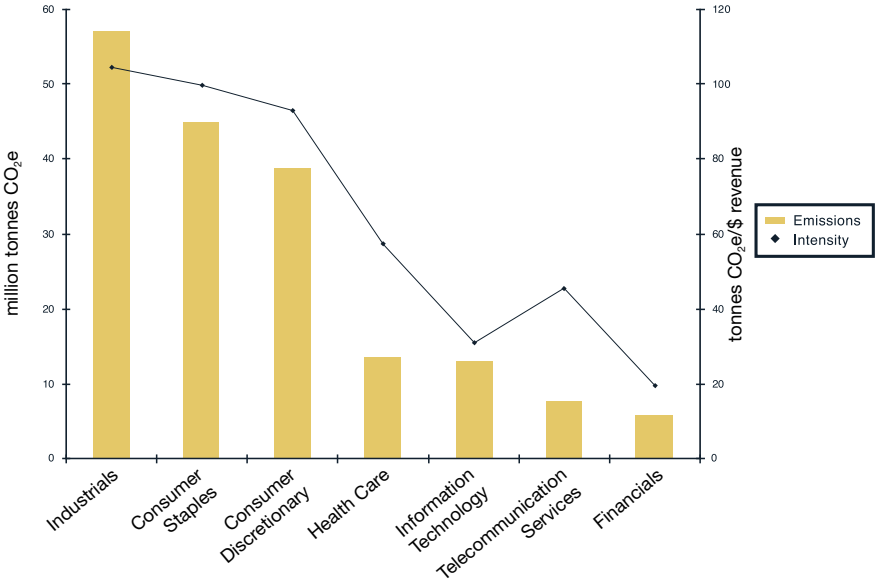
Lower Emitting Sectors by Scope



Top Carbon Intensity Sectors



Lowest Carbon Intensity Sectors



Carbon Intensity by Sector

Sector	S&P500 Respondents		Total Emissions[1]	Emissions Intensity[2]
Utilities	Sector Response		819,838,866	3,842
	Highest	American Electric Power	145,400,000	11,520
	Lowest	FPL Group	4,914,112	313
Materials	Sector Response		240,598,247	738
	Highest	United States Steel	48,500,456	3,086
	Lowest	Ecolab	294,872	60
Energy	Sector Response		343,304,073	377
	Highest	Occidental Petroleum	16,220,000	474
	Lowest	Halliburton	3,150,000	140
Industrials	Sector Response		57,118,829	104
	Highest	3M	6,540,000	285
	Lowest	Rockwell Automation	169,163	30
Consumer Staples	Sector Response		44,984,009	100
	Highest	Kimberly-Clark	6,849,439	409
	Lowest	Altria Group	513,453	7
Consumer Discretionary	Sector Response		38,736,726	93
	Highest	Carnival	9,005,483	761
	Lowest	Nike	77,684	5
Health Care	Sector Response		13,510,191	57
	Highest	Eli Lily	2,296,224	146
	Lowest	McKesson	42,248	0
Information Technology	Sector Response		13,044,249	31
	Highest	Corning	1,002,457	194
	Lowest	Microsoft	152,600	3
Telecommunications	Highest/Lowest	Verizon	7,171,103	81
Financials	Sector Response		5,880,104	19
	Highest	Simon Property Group	574,976	167
	Lowest	Freddie Mac	41,000	1

[1] *Scopes 1 & 2 or total global emissions where companies reported only a total figure; tonnes CO_2e.*

[2] *Emissions total noted above divided by annual revenue.*

Top Emitting Companies by Sector

Sector	S&P500 Respondents	Scope 1&2 Emissions[1]	Emissions Intensity[2]	Disclosure					
				Scope 1	Scope 2	Scope 3			
						Products	Supply Chain	Logisitcs/ Distribution	Business Travel
Energy	Exxon Mobil	158,800,000	474	✓	✓				
	Chevron	65,850,331	321	✓	✓	✓			
	ConocoPhillips	62,289,206	372	✓	✓				
	Marathon Oil	19,590,000	327	✓	✓				
	Occidental Petroleum	16,220,000	918	✓	✓				
Utilities	American Electric Power	145,400,000	11,520	✓					
	Southern	145,000,000	10,100	✓					
	Duke Energy	98,400,000	6,481	✓					
	Xcel Energy[3]	62,208,515	6,322	✓					
	Progress Energy	53,580,026	5,599	✓					
Materials	Alcoa	60,100,000	1,978	✓	✓				
	United States Steel	48,500,456	3,086	✓	✓				
	Dow Chemical	37,700,000	767	✓	✓				
	Air Products & Chemicals	18,000,000	2,034	✓	✓				
	International Paper	14,766,407	671	✓	✓				
Consumer Staples	Wal-Mart Stores	20,388,574	59	✓	✓				
	Kimberly-Clark	6,849,439	409	✓	✓				
	Coca Cola	4,867,779	202	✓	✓				✓
	Anheuser-Busch	3,032,000	193	✓	✓				
	Procter & Gamble	2,889,000	42	(combined)					
Consumer Discretionary	General Motors	11,021,420	53	✓	✓				
	Carnival	9,005,483	761	✓					
	Ford Motor	6,800,000	42	✓	✓				
	Target	2,634,300	44	✓	✓				
	Johnson Controls	2,497,804	77	✓	✓	✓			✓
Industrials	General Electric	10,835,295	67	✓	✓				
	United Parcel Services	7,373,000	155	✓	✓		✓		
	3M[4]	6,540,000	285	✓	✓				
	United Technologies	2,345,176	49	✓	✓				✓
	Caterpillar	2,343,115	56	✓	✓				
Telecoms	Verizon Communications	7,171,103	81	✓	✓				
Information Technology	Intel	3,870,000	109	✓	✓				
	Int'l Business Machines	2,824,361	31	✓	✓				
	Hewlett-Packard	1,598,500	17	✓	✓				✓
	Corning[3]	1,002,457	194	✓	✓				
	Xerox[4]	447,991	28	✓					
Health Care	Pfizer	2,408,317	50	✓	✓				✓
	Eli Lilly	2,296,224	146	✓	✓				
	Merck[3]	1,146,000	51	✓	✓			✓	
	Wyeth	1,106,626	54	✓	✓				
	Bristol Myers Squibb	997,776	56	✓	✓				✓
Financials	Citigroup	1,387,412	9	✓	✓	✓			✓
	Bank of America	1,380,000	12	✓	✓				
	Fifth Third BanCorp[3]	778,068	96		✓				
	Simon Property Group	574,976	167	✓	✓				
	Wells Fargo[4]	551,437	11	✓					

[1] *Emissions are for period ending in 2006 unless otherwise footnoted.*

[2] *Emissions total (Scopes 1 & 2 or total global emissions where companies reported only a total figure) divided by annual revenue.*

[3] *Emissions reporting year ending in first half of 2007*

[4] *Emissions reporting year 2005*

GUEST COMMENTARY

Changing Climate: Effects on Health, Environment & Economy

by Dr. Paul R. Epstein

Earth's climate is changing. Human activities are contributing, biological systems are responding, and weather is growing more extreme. These were the main conclusions of the Intergovernmental Panel on Climate Change (IPCC) Report in 2001.

Since then we've learned a great deal more: polar ice melt is accelerating, ocean warming is spawning more intense storms, and — most ominously — global wind patterns have shifted. These changes indicate growing instability in Earth's climate regime.

Over the last half century, Earth's vast oceans have absorbed 22 times more heat than the atmosphere. Coral bleaching from higher sea surface temperatures and increased acidification from CO_2 absorption threaten ocean organisms and ancient coastal habitat.

Over land, global warming is increasing evaporation from plants and soils, intensifying droughts, while greater evaporation from warmed seas creates conditions for heavier downpours. When droughts yield to heavy rains, destructive flash flooding can occur.

By the end of this century, Earth could be warmer than at any time in human history, and since the age of the dinosaurs 60 million years ago.

Rising CO_2 levels

The IPCC's first assessment in 1990 calculated that a 60-80% reduction in carbon dioxide (CO_2) emissions would stabilize atmospheric concentrations. Nearly two decades later, CO_2 emissions and concentrations are still rising. Atmospheric levels of CO_2 now exceed 380 parts per million (ppm), well outside the 180-280 ppm envelope in which they remained for more than 700,000 years.

- At 180 ppm, large ice caps extended well into the United States, and the average global temperature was 10˚C (50˚F).
- At 280 ppm, ice caps receded and the global average temperature was 15˚C (59˚F);
- At 380 ppm, we are headed for small ice caps and rising sea levels — or a 'cold reversal' from melting glaciers and release of Greenland and West Antarctic ice.

Models based on CO_2 alone underestimate the full effect of warming on our planet. As calculated in the IPCC 2007 Report, the combined global warming potential of all heat-trapping gases minus toxic coolants is approaching 460 ppm of 'CO_2-equivalent' concentrations.

Reviewing our options

The impacts of climate change are broad and will be long-lasting. The financial services sector — the central nervous system of the global economy — senses the possibilities, both good and bad. Substantially reducing GHG emissions will require a concerted effort, comprehensive plans and a well-coordinated suite of financial and policy instruments.

Oil — the current lifeblood of our economy — demands utmost scrutiny. Using a health and environmental lens, oil — throughout its life cycle — exacts an enormous toll on human health, the environment and social systems. Coal, tar sands and shale oil contain heavy metals and carcinogens that present their own health and ecological hazards.

Carbon capture and storage (CCS) — pumping CO_2 underground or into ocean beds — may be a way of ameliorating the carbon problem. But more study is needed. A special report of the IPCC lists the concerns: possible leaching of lead and arsenic, altered microbial communities, limestone fractures and, with increased pressure, leaks and releases of CO_2 that are toxic to mammals and forests.

Meanwhile, nuclear power is seeking a revival. But replacing carbon pollution with radioactive pollution carries its own risks. While nuclear plant safety may be 'containable,' security and safe storage — against earthquakes (like that in Kashiwazaki, Japan, in July 2007) — may prove intractable. Moreover, burying high-level waste from an expanded nuclear program would soon fill the proposed Yucca Mountain site in Nevada (which faces its own seismological questions), and an additional site every five to 10 years until 2050.

Some renewable energy sources also deserve scrutiny. Biofuels, for example, are a promising fuel for

Dr. Paul R. Epstein

transportation. But an estimated one-sixth of the world's cropland would need to be devoted to ethanol to offset a billion tons of carbon emissions annually. Corn-based ethanol has already contributed to food price increases. In Southeast Asia, land-clearing fires for palm oil plantations to produce biodiesel harm habitat and primates, and release a huge carbon pulse. Non-edible cellulose fibers offer more long-term promise, but burning anything generates pollution.

Some proposed solutions — such as corn-based ethanol, clean-coal technology and nuclear power — still face considerable obstacles. A life-cycle analysis can help avoid unintended consequences.

Life cycle analysis

A life-cycle analysis (LCA) of practices and technologies can help separate solutions for near-term adoption from those warranting further study. Those meeting multiple goals of adaptation and mitigation — and having health, environmental and economic co-benefits — rise to the top of the list.

Conservation and efficiency can halve energy demand. Decreased vehicular miles traveled, improved public transport and plug-in hybrids with better batteries can help meet transportation goals. For the built environment, 'green buildings,' rooftop gardens, biking paths, and 'smart urban growth' will create healthier cities and boost enterprises focused on innovative technologies.

Natural lighting and insulating windows, computer-optimized switches and meters, and technologies for distributed power generation, including cogeneration and fuel cells, can constitute a resilient, 'smart, self-healing' grid — improving adaptation and mitigation. To power the utility grid, solar thermal arrays in the South-west, wind farms in the Plains states and geothermal in the West could replace fossil generating stations.

All of this will take time and money. But aligning investments, loans and underwriting with regulations and rewards — and removing financial and bureaucratic 'disincentives' — can create the foundation for a healthy, environmentally-sound, low carbon economy.

— Paul R. Epstein, M.D., M.P.H., is Associate Director of the Center for Health and the Global Environment at ***Harvard Medical School****.*

Climate Impacts: Health, Environmental and Economic

Human health: Prolonged heat waves and smog-related air quality alerts; expanded range of infectious diseases (malaria, dengue fever, Lyme disease); clusters of water-, mosquito- and rodent-borne diseases following floods; increased asthma-producing ragweed pollen and strengthened poison ivy from higher CO_2 levels.

Agriculture: Crop damage from drought, flooding and hail; more pests, pathogens and weeds.

Forests: Spread of pests such as pine bark beetles and ash borers with warmer winters; increased wildfires from reduced winter snowpack, hot dry summers, and pest damage.

Wildlife and livestock: Spread of diseases; herd losses from heat waves, drought and winter ice storms.

Marine life: Widespread coral bleaching and disease, harmful algal blooms and 'dead zones'.

Drinking water: Reduced water quality from droughts and floods; water scarcity that generates refugees.

Sea level rise: Coastal infrastructure undermined; island nations produce refugees.

Security and conflict: Regional conflicts spawned by food, water and resource shortages; military protection of natural resources.

Energy sector: Blackouts from heat waves and storms; thermal plant shutdowns from too warm/too little cooling water; subsidence of pipelines, ice roads and drilling platforms on Arctic permafrost; increased hurricane damage to offshore rigs and coastal refineries.

Finance: Volatility and losses affecting underwriting, investments, equity and fixed income markets.

6 The rate and quality of climate disclosure among S&P500 Index CDP5 respondents varies across and within industry sectors.

Climate Disclosure Practices

Perhaps surprisingly, the most sophisticated climate risk analyses are not limited to the heavy GHG emitting sectors for which regulation is widely anticipated. Companies in the Consumer Discretionary, Consumer Staples and Financial Services sectors provided high quality CDP5 responses that often discussed indirect regulatory risks and direct or indirect physical risks. The Utilities sector is a leader in terms of the quality of regulatory risk disclosure. By contrast, companies in the Energy, Industrials and Materials sectors — all of which are likely to be exposed to future climate change regulations — provided comparatively limited and variable risk disclosure in their CDP5 responses.

To further analyze respondents' climate change disclosure practices, a review of Form 10-K securities filings also was conducted. In these filings, companies are required to disclose competitive, regulatory, legal and environmental risks that may have a material impact on their operations and/or financial condition. Form 10-K disclosure on climate change was rare across all sectors, and predominately limited to regulatory risk.

While S&P500 respondents were more forthcoming with information about regulatory and physical risks in their CDP5 responses, discussions of 'material impacts' were also rare. As expected, Utilities are most likely to state that climate-related regulation could potentially have a material effect on their business; yet only one utility and two other firms actually used the word 'materiality' in addressing climate change risks in their CDP5 responses. Nevertheless, 219 firms across all sectors acknowledged the possibility for some climate-related risk, and many stated or implied that such risks have the potential to be "substantial" or "significant."

CONSUMER DISCRETIONARY

The Consumer Discretionary sector responses indicate that physical risks are a greater commercial risk than regulation, except for the automobile manufacturers. The automakers are the only firms in this sector to discuss climate change impacts in their Form 10-K filings.

CDP5 Disclosure

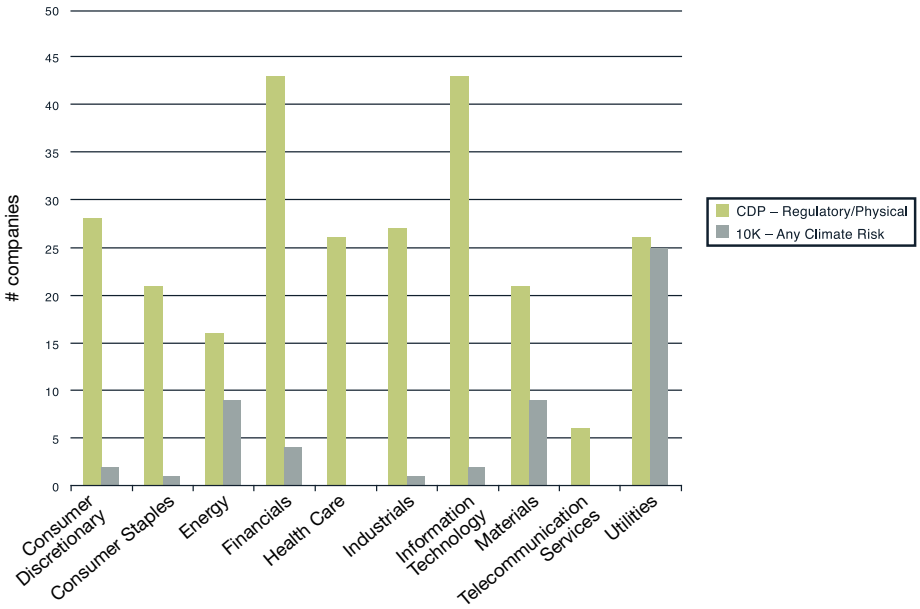
Regulatory risk

Few companies in the Consumer Discretionary sector expressed concern about climate-related regulation. By way of explanation many noted that regulation does not currently target their business line, that they are not direct emitters of greenhouse gases, or that their energy consumption and/or GHG emissions are relatively low.

Bed Bath & Beyond acknowledged that all of the non-climate risk factors mentioned in its Form 10-K "can conceivably be impacted directly or

Companies in the Consumer Discretionary, Consumer Staples and Financial Services sectors provided high quality CDP5 responses that often discussed indirect regulatory risks and direct or indirect physical risks

Risk Disclosure by Sector



To view individual company responses to CDP5, please visit www.cdproject.net

indirectly by climate change," however, the potential risks are not unique to its company operations, it said. **Carnival** is one of the few firms with operations that do result in unique risk exposure, because it is subject to changing regulations based on the jurisdiction of ports of call.

Despite the sentiment that regulation will have little direct effect on the Consumer Discretionary sector, nine firms explicitly stated that regulation could result in increased energy costs; others mentioned increased operating costs more generally. Several companies expect that regulation or increased energy costs could affect their supply chain, cost of raw materials or cost of transport.

Johnson Controls was the sole company in this sector to find the impacts of climate-related legislation to be overwhelmingly positive for its energy-efficiency products and services. Nonetheless, the company stated that a patchwork of state and local regulation was a burden on its operations. **Nike** reported that it addresses the problem of varying regulations by applying the most stringent regional standard to its global operations.

Physical Risk

Most firms expressed more concern that the physical ramifications of climate change could pose a business risk, but also felt this risk is not sector-specific. At least six firms noted that their emergency preparedness plans mitigated their risk exposure. In addition, **Bed Bath & Beyond**, **Nike** and a third unnamed firm felt that their store locations in diverse geographical areas buffered their risk exposure. Companies including **Nike** and **Black & Decker** mentioned that supply chain redundancy insulated them from risk.

A few companies faced unique risks from the physical impacts of climate change. **Starbucks** was concerned about the physical impacts on its coffee growers. A cable programming company said it could foresee programming interruption from severe weather events that affect satellite providers, which would result in lost advertising revenue. Tourism-related enterprises also cited some vulnerabilities. Although **The Walt Disney Company** stated that it had not identified any material physical risks, it did acknowledge that extreme weather could affect tourism at its theme parks and perhaps cause damage to its extensive outdoor physical infrastructure. **Carnival** and **Starwood Hotels & Resorts Worldwide** both noted that extreme weather could destroy ports or other local infrastructure, transform the outdoor environment and keep tourists away from certain destinations that are dependent on outdoor activities.

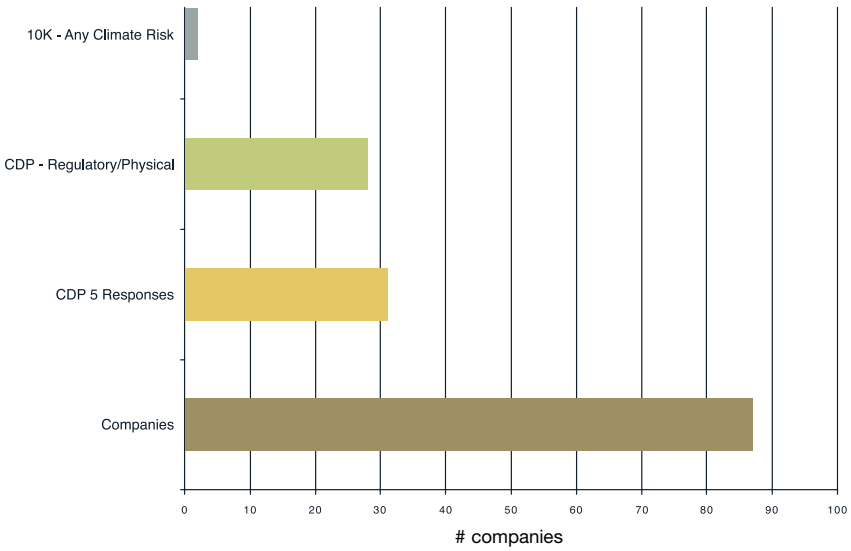
Timeframe

Office Depot was one of the few companies that provided a timeframe for the physical risk impacts. The company stated that it is already affected by hurricanes but that the time frame for sea level rise is hard to predict.

Materiality

Only **General Motors** indicated in its CDP5 response that climate change regulation is a potential material risk to the company. Nine other firms in this sector stated specifically that regulation was *not* a material risk to their operations. No firm stated that physical impacts of climate change posed a material business risk, and six firms explicitly stated that the risk was not material.

Consumer Discretionary Sector Climate Risk Disclosure



Form 10-K Disclosure

With the exception of automobile manufacturers, none of the CDP5 respondents in the Consumer Discretionary sector included a climate change discussion in their 2006 Form 10-K filings.

The two automobile manufacturers, however, **Ford** and **General Motors**, report at length about current and

pending climate-related regulation and litigation. **Ford** provides a comprehensive litany of regulatory and legal activity, and notes that its ability to comply may be constrained by changes in consumer demand. **Ford** recounts vehicle specific regulation including California Assembly Bill 1493 that tasks the California Air Resources Board with tightening greenhouse gas emissions standards for light-duty vehicles starting with 2009 models, the Bush administration's request for the U.S. Congress to provide the needed authority to reform the current Corporate Average Fuel Economy (CAFE) standards, and the UK's vehicle excise duty and company car tax implemented in 2001, which other EU member countries plan to adopt. **Ford** says it also faces risk from litigation, including petitions in the United States for judicial review of the light truck CAFE standards, and a public nuisance lawsuit by the State of California, alleging that the state has sustained global warming damages from automobile manufacturing.

General Motors is similarly concerned with government regulations, noting that it may have to severely restrict its product offering to comply, or failing that, it may face large civil penalties. Either scenario may result in "substantial adverse impacts on GM operations, including plant closings, reduced employment, and loss of sales revenue," GM says in its Form 10-K.

CONSUMER STAPLES

As noted in their CDP responses, four companies face current climate change-related regulation in the European Union, and 13 face physical risks from possible climate impacts on agricultural commodities. However, none identified these as material risks in their Form 10-K disclosures. A small number of firms in this sector state in their CDP response that sales could fall if consumers purchase fewer discretionary items.

CDP5 Disclosure

Regulatory Risk

Two firms, **Altria Group** and **Molson Coors Brewing,** will begin participating in the European Union Emissions Trading Scheme (EU ETS) starting in 2008. **Kellogg** and **William Wrigley Jr.** both pay the UK Climate Change Levy. No other company in this sector is directly regulated, but **Coca Cola**, **General Mills, H.J. Heinz, Reynolds American**, **Sara Lee** and **Wal-Mart Stores** all expect to be indirectly affected by future regulation through increased energy costs.

Physical Risk

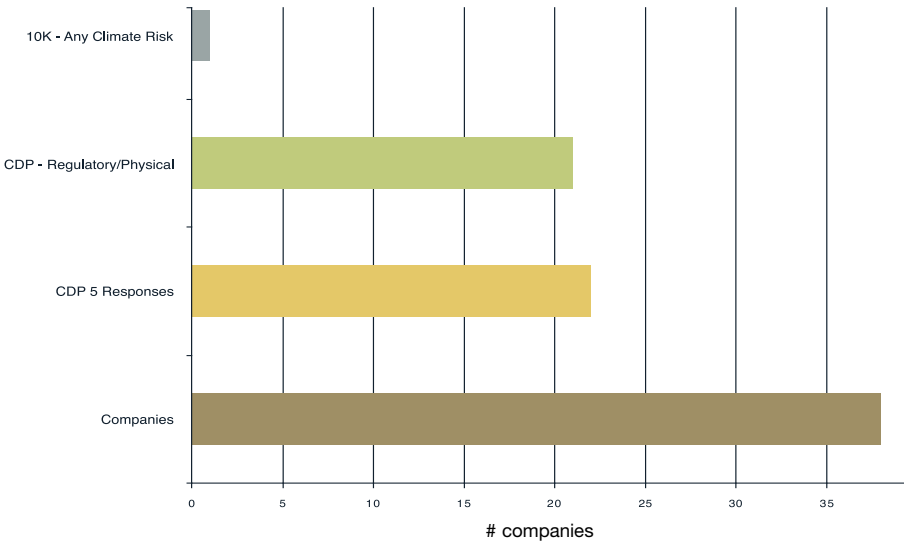
With regard to impacts and mitigation strategies for physical risks, the Consumer Staples sector and the Consumer Discretionary sector look very similar. Five companies referenced their standard emergency planning procedures, and two others noted that their facilities were not located in low-lying or coastal areas.

Several companies in this sector are dependent on water and/or agricultural commodities, and they are cognizant of the risks climate change poses to their supply chain and business model. **Altria Group, Anheuser-Busch, Coca Cola, Colgate-Palmolive, General Mills, H.J. Heinz, Kimberly-Clark, Molson Coors Brewing, PepsiCo, Sara Lee** and **William Wrigley Jr.** and two others that declined to make their response public all noted the existence of climate change-related physical risks. **Sara Lee** also noted the potential for reduced availability of petroleum-based plastics for packaging materials.

A small number of companies provided a high level of detail in their risk evaluation, including **Molson Coors Brewing,** which discussed the major physical risk each of

Several companies in the Consumer Staples sector are dependent on water and/or agricultural commodities, and they are cognizant of the risks climate change poses to their supply chain and business model

Consumer Staples Sector Climate Risk Disclosure



For the Energy sector, CDP disclosure is much more substantive than Form 10-K disclosure

its facilities faces, and **William Wrigley Jr.,** which evaluated the impact of low-, mid- and high-range climate change scenarios on its operations. The company predicts that mid-range changes would primarily have a "minor impact" on energy supplies and costs. It does not think that very dramatic, high-range weather shifts are very likely; however, this scenario could reduce its supply of raw ingredients as well as sales if consumers reduce consumer discretionary purchases.

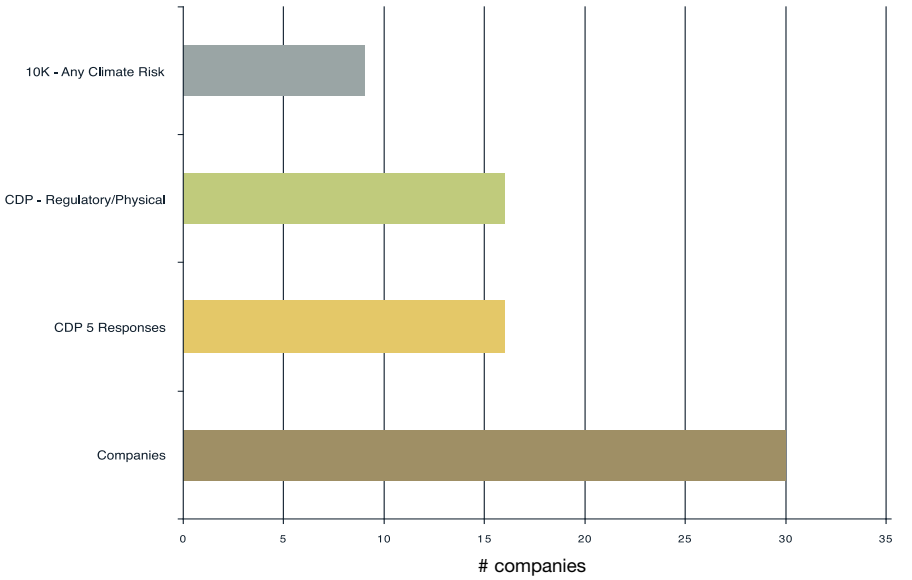
Timeframe
Firms in this sector generally do not attempt to determine a timeframe for climate change risk. **PepsiCo** states that it considers both near and long term risks, but it does not elaborate further.

Materiality
While many companies indicated the potential for significant business impacts from extreme weather or other related events, which would reasonably be viewed as material, only **Coca Cola Enterprises** actually stated that "Global or regional catastrophic events… could have a material impact on our sales volume, cost of raw materials, earnings and financial condition."

Form 10-K Disclosure

The Consumer Staples sector was quiet with regard to climate change risk in its Form 10-K disclosures. Only **Kellogg** referred to its climate related emissions — not in its Form 10-K, but in the company Annual Report. Kellogg simply stated that it is a member of the U.S. Environmental Protection Agency's Climate Leaders program, and that it is committed to reducing its GHG emissions.

Energy Sector Climate Risk Disclosure



ENERGY

For the Energy sector, CDP disclosure is much more substantive than Form 10-K disclosure, which focuses exclusively on regulatory risk. Only one gas and oil services company mentioned climate change in its latest 10-K filing.

CDP5 Disclosure

Regulatory Risk
The Energy sector consists of oil and gas exploration, production, refining and transport firms as well as oil rig operators and other product and service providers to the oil and gas industry; most face current or near-term risk from GHG regulation. All firms in this sector mention some type of regulatory risk in their CDP response. The oil and gas producers generally provided more sophisticated risk analysis than did the oil and gas service providers. Three of the services firms explicitly state that regulatory risk is not expected to be material. The oil and gas producers are more likely to anticipate a potential adverse impact, but many state that the extent of the impact cannot be reliably estimated.

ExxonMobil notes that regulation has always been a risk factor for the oil and gas industry and states that policy developments could affect the viability of its long-term infrastructure investments. **Devon Energy** and **El Paso** noted that regulation or changes in consumer behavior could reduce demand for fossil fuels.

At least one firm views natural gas as a hedge against the impact of future carbon regulation. **Anadarko Petroleum** states that its portfolio is "relatively balanced" between oil and natural gas, which would spread out the risk. **El Paso**, which owns the largest natural gas pipeline in North America, notes that regulation may cause "changes in demand" for natural gas and oil.

Most of the Energy sector respondents report that they participate in the policy

development process. **ExxonMobil** elaborated at length on its view as to what factors should be part of any climate change regulation. The Energy sector also reported on participation in voluntary programs to reduce GHG emissions as part of their risk management strategy. **Anadarko Petroleum** cited the U.S. Environmental Protection Agency's Natural Gas STAR program and the American Petroleum Institute's Climate Action Challenge. **Occidental Petroleum Corporation** mentioned the California Climate Action Registry and the U.S. Climate VISION program.

Some of the services firms, including **Halliburton**, expect that regulation will improve the chances for carbon capture and storage as a commercial opportunity.

Physical Risk

Fourteen Energy sector companies discuss physical risks from climate change. Nine respondents said climate-related physical risk could manifest in general business disruption. Six firms cited the risk of extreme weather events in general, and 12 cited hurricane activity as an explicit risk factor. Others named freezing pipelines and thawing permafrost as potential physical risks. Some firms differentiated between onshore and offshore operations in discussing physical risks. **Devon Energy** mentioned that past physical damage from hurricanes has prompted insurance premium increases for its offshore drilling platforms. No other firm cites increased insurance costs as a risk, although **The Williams Companies** mentions insurance as a risk mitigation factor.

At least two firms that declined to make their response public anticipate little physical risk from climate change, describing the risk as "miniscule" and "insignificant."

Form 10-K Disclosure

While every firm in the sector identified some type of potential climate-related risk in their CDP5 response, six of these 16 firms — mostly the oil and gas services firms — fail to disclose climate change related risks in their Form 10-K. **XTO Energy** and **Halliburton** are among those that make no mention of climate change in their Form 10-Ks.

Of the 10 companies with some Form 10-K disclosure, all but one imply that climate change regulation poses some type of commercial risk to their business; only four indicate that it could be significant. None explicitly state that the costs could be material. No company mentions physical risk in its latest 10-K filing.

FINANCIALS

The Financial Services sector had fairly substantive CDP responses, especially considering that its GHG emissions come mainly through indirect sources. Form 10-K risk disclosure was scant, however. The sector faces high indirect regulatory risk through its client base and high indirect physical risk exposure through investment portfolios and managed assets.

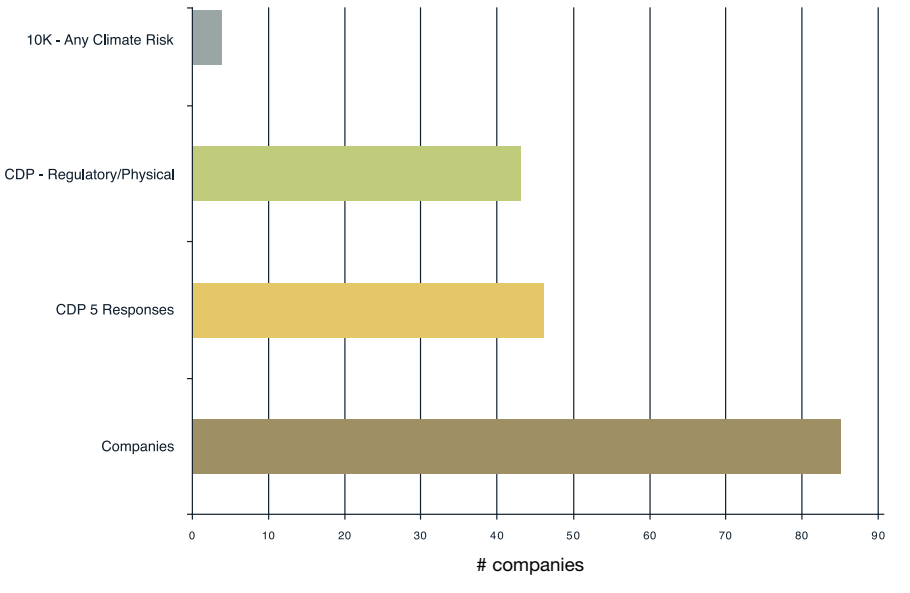
CDP5 Disclosure

Regulatory Risk

The Financials sector, which includes banks, insurers and real estate service firms, generally had comprehensive CDP responses. Many firms explained that as indirect GHG emitters, the risk from regulation was remote. However, some companies said that the situation could change in the future. **Citigroup** acknowledged the potential for second or third generation GHG legislation that could target energy consumers. **Morgan Stanley** made similar comments, as did **JP Morgan Chase,** which referenced New York City's PlanNYC to mandate improved building energy efficiency standards.

To view individual company responses to CDP5, please visit www.cdproject.net

Financials Sector Climate Risk Disclosure



Fifteen financial services firms observed that climate regulation might directly affect clients and in turn present a new risk to their firms

Despite the low probability of direct regulation, several firms provided a more sophisticated assessment of indirect regulatory risk beyond the much-cited prospect of increased energy costs. **ACE Limited**, a provider of insurance and reinsurance, noted that the U.S. state-based regulatory environment for insurance hampers efforts to price hurricane risk appropriately. **Safeco** also noted that state insurance commissioners could change the rules for property and casualty insurers.

At least 15 firms observed that climate regulation might directly affect clients, and in turn present a new risk to their firms. On the other hand, some also saw an opportunity for client advisory services or the increased provision of capital to help clients meet such regulatory mandates. Banker **BB&T Corp.** recognized that some of its direct emitting clients may not be prepared for an increased regulatory burden, which could in turn affect BB&T. **Citigroup** noted that insufficiently prepared clients pose a credit risk that is more significant than direct risks to the company, such as rising energy costs. **Synovus Financial Corp.** was the only firm to acknowledge the reputational risk that could result from lending to, or otherwise supporting, environmentally negligent clients.

Physical Risks:
Physical risks identified by the Financials sector include damage to property and assets, higher insurance premiums, power outages, severe weather that prevents employees from getting to work, and adverse regional or macroeconomic impacts. Insurers such as **The Hartford Financial Services Group** view physical impacts as the greatest risk from climate change. **Citigroup** is concerned that droughts, biodiversity loss and other environmental problems exacerbated by climate change would negatively influence its growth prospects in developing countries.

A majority of firms in this sector also mentioned general business interruption from severe weather events, but most also indicated that they had an emergency preparedness or business continuity plan in place. At least two firms said they have a source of backup power as a risk mitigation tool. One unnamed firm explicitly stated that its lack of geographical diversity increased its exposure to physical risks.

Timeframe
Financial firms generally did not provide a timeframe to estimate climate risks. **American International Group** views extreme weather events as a near-term physical risk of climate change, while stating that longer-term structural climate shifts will take several decades or more to materialize. **Citigroup** has conducted a five-to-10 year, and a 20-year physical risk analysis based on the Intergovernmental Panel on Climate Change's (IPCC) latest analysis.

Materiality
While the sector as a whole cited potentially significant or even "dramatic" risks to their operations, no company went so far as to predict a material impact on its operations or financial condition.

Form 10-K Disclosure

The Financials sector has virtually ignored climate change in its Form 10-K reporting. Out of 46 firms, only **Morgan Stanley**, **Simon Property Group**, **The Travelers Companies** and a fourth firm that declined to make its CDP response public made any mention of climate change in their 2006 Form 10-K filings. Only Travelers and the unnamed firm identified climate change as a potential commercial risk. Travelers stated: "Catastrophe losses could materially reduce our profitability and adversely impact our ratings, our ability to raise capital and the availability and cost of reinsurance." The company goes on to note that changing climate conditions have increased the unpredictability and the frequency of severe weather events.

GUEST COMMENTARY

Coastal Collision Course: Sea Level, Hurricanes and Development

by Dr. Stephen P. Leatherman

In the face of rising sea levels, shoreline recession and heightened storm activity, a growing coastal population and attendant development in low-lying areas have put much of our nation's coasts on a collision course with climate change.

More than half of the U.S. population now lives within 50 miles of the coast; it seems that everyone wants ready access to the beach or a waterfront view. Beachfront property has become some of the most coveted and expensive real estate in the country, with some high-rise, waterfront condominium complexes approaching eye-popping $500 million valuations. The "gold coast" of Florida from Palm Beach to Miami has an appraised value exceeding $1.3 trillion.

At the same time, sea level rise is eroding many beaches and hurricanes are becoming a more regular occurrence along the U.S. East and Gulf Coasts. The heightened hurricane activity in recent years has been attributed to both the Atlantic Multidecadal Oscillation (AMO) and to global warming. Increased activity since 1995 appears to be linked to the AMO. In any case, global warming certainly has the potential to make hurricanes more powerful by raising sea surface temperatures that fuel these storms. This increased activity and the tremendous amount of coastal construction have resulted in greatly increased storm damage per annum in recent years:

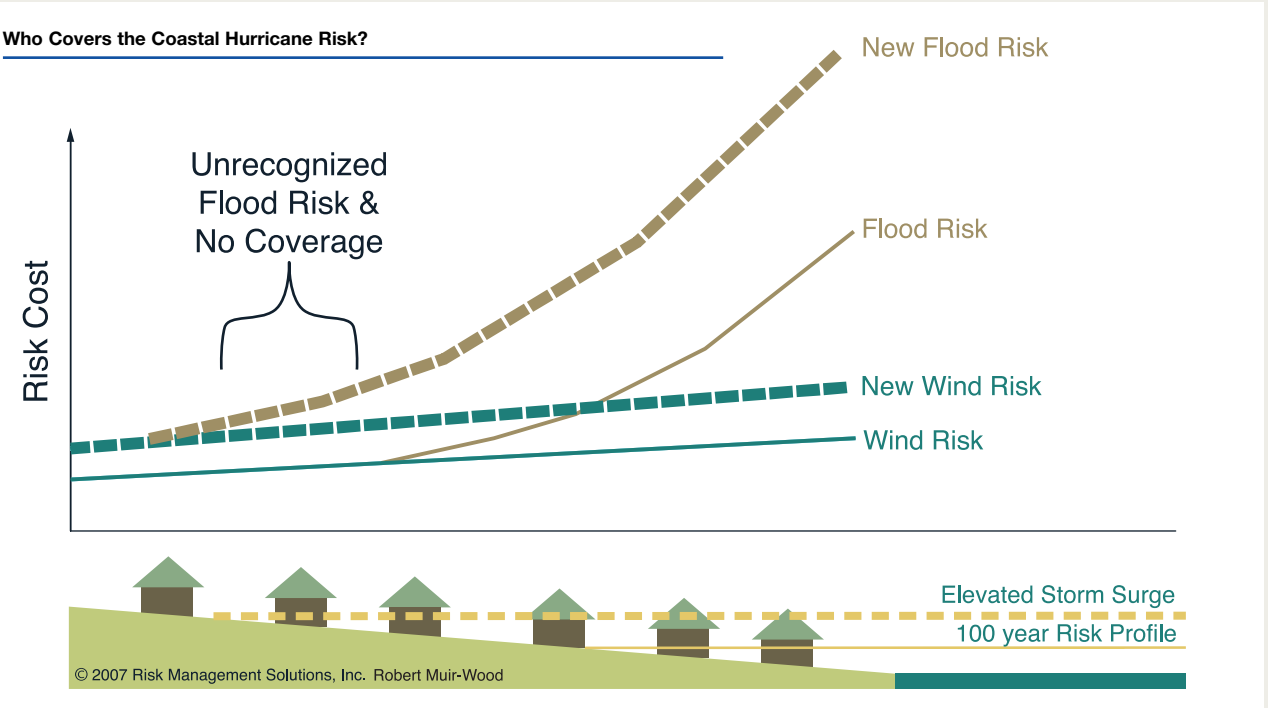
Satellite data indicate that the rate of sea level rise has increased 50% in the last decade, adding to coastal erosion, inundation and salt-water intrusion.

- $1.3 billion from 1949-1989
- $10.1 billion from 1990-1995, and
- $35.8 billion during the past five years.

The four hurricanes that struck Florida in 2004 caused $42 billion in damage, only half of which was insured. The 2005 hurricane season was exceptionally destructive with Katrina pushing annual damages over $100 billion.

Climate change is adding to coastal stresses through erosion, inundation and salt-water intrusion. Sea level rise is a significant driver of beach erosion. The rate of erosion is two orders of magnitude greater than the rate of sea level rise, so that even small changes in sea level result in significant beach loss. While the rate of sea level rise during the 20th century was fairly low, estimated at 0.2 centimeters per year, satellite altimeter data show that the rate has increased 50% during the last decade.

continued



Dr. Stephen P. Leatherman

Coastal Collision Course *continued*

The rate of sea level rise is expected to increase in coming decades as a result of thermal expansion of the oceans and melting glaciers. Ice sheets slipping off Greenland and West Antarctica may accelerate the rate of erosion, threatening more and more incredibly valued beachfront properties, while making it far more expensive and difficult to arrest this process.

Coastal inundation and salt-water intrusion are the primary problems for low-lying mainland areas. A one-meter rise in sea level — which could happen during this century — would result in coastal inundation many miles inland, as the ratio of the amount of sea level rise to the horizontal extent of inundation can be up to four orders of magnitude. Coastal storms often hasten this action by tipping the ocean onto the land. Storm surges have already caused abandonment of small islands in the Chesapeake Bay and elsewhere.

Better testing procedures are needed in order to upgrade safety standards and building codes.

Coastal wetlands are being drowned where these ecosystems cannot keep pace with the rapid rate of sea level rise. A preview of wetland disintegration can be seen in coastal Louisiana where the delta is rapidly subsiding due to soil compaction and lack of soil replenishment, as well as the withdrawal of oil, gas and water so that relative sea level rise approaches 1 cm/yr. The resulting loss of wetlands is about 25 square miles annually, which is increasing the vulnerability of developed areas to storms. Wetland remediation has been largely unsuccessful in Louisiana and other large wetland systems, such as Blackwater Wildlife Refuge in Cambridge, Maryland.

Reducing coastal risk and increasing resiliency is a difficult proposition. Beach nourishment is often seen as a panacea, but it is expensive, has to be repeated fairly often in most areas, and does not work everywhere (e.g., the sediment often washes away within a year or two). Armoring the coastline with seawalls can stabilize the shore, but at the cost of the beach, which is the draw for tourists and hence the economic engine for many coastal communities.

The National Flood Insurance Program of FEMA has provided a measure of coastal protection by providing incentives for new homes to be elevated above storm surge levels and to strengthen buildings against windstorm damage. Unfortunately, there has been no provision to deal with the degree of shoreline recession that is presently occurring, or to accommodate the accelerating pace of sea level rise, beach erosion and the likelihood of more intense hurricanes.

The storm resilience of coastal structures is an essential element of planning and sustainability of the economy, which depends in turn upon available and affordable windstorm insurance. Away from the immediate coastline, most hurricane damage is caused by wind, but our housing stock is not performing well. Witness that barely category 2 Wilma in 2005 resulted in $16 billion in damages in South Florida, which has the best building codes in the country.

Roof design, materials and construction methods need to be tested in a repeatable and scientific manner in order to upgrade standards and building codes. Essential to this effort is the full-scale, destructive testing of houses, which is analogous to the automobile crash testing undertaken by the insurance industry that has made automobiles much safer in recent years.

While wind tunnels have been useful in understanding loading on structures, such miniature testing cannot provide full understanding of wind dynamics and failure modes. The International Hurricane Research Center (IHRC) is developing an apparatus for first-of-its-kind testing of houses and low-rise commercial structures. Such full-scale, destructive testing of buildings can open the public's eyes to the need for safety improvements and lead to the development of a 'culture of mitigation' that helps take coastal properties off their collision course.

*— Dr. Stephen P. Leatherman is the We Will Rebuild Chair Professor and Director of the **International Hurricane Research Center** in Miami. The IHRC is developing a Wall of Wind 24-fan prototype that can simulate the effects of categories 1 to 5 hurricanes, wind, rain and debris against a two-story house, with support from the State of Florida and private contributors. Leatherm@fiu.edu; www.ihrc.fiu.edu*

To view a video demonstrating 'Wall of Wind' hurricane testing on a full-scale house, visit this website: **www.nbc6.net/newsnet/10062514/detail.html**

HEALTH CARE

Although several firms in this sector are subject to climate regulation under the EU ETS, none considered it sufficiently material to disclose in securities filings. Physical risk exposure was similarly disclosed only in CDP responses and viewed as generally minimal.

CDP5 Disclosure

Regulatory Risk

The Health Care sector includes hospital operators, medical benefit providers and health care products and research firms. Their CDP5 responses were generally brief. Most firms noted that as indirect emitters, they are not affected by current climate-related regulation. Those that are affected by current regulation have European operations covered by the European Union Emissions Trading Scheme (EU ETS). These include **Eli Lilly**, **Wyeth, Schering Plough**, **Bristol Myers Squibb**, **Baxter International** and **Pfizer**. None of these six companies indicated that the regulatory burden has had, or is expected to have, an adverse financial impact.

While most Health Care firms determined that the risk from either current or future regulation is minimal, three companies, **Baxter International**, **Becton Dickinson** and **Humana** acknowledged the potential for a broader regulatory focus that might one day include their operations.

A small number of companies believe that they could face unique business risks from GHG regulation. **Bristol Myers Squibb** noted that direct and indirect impacts could make producing medicines more expensive. **PerkinElmer** acknowledged the competitive risk that could arise, should regulation mandate energy efficiency standards on the equipment it produces. **Schering Plough** noted that its asthma treatment products use Kyoto-regulated greenhouse gases (that are also ozone-depleting substances) as propellants and that while research into replacements is ongoing, acceptable alternatives have yet to be found.

Nine firms mentioned that regulations currently have or will have an indirect impact through higher energy costs. This was the most frequently cited regulatory-related impact, but no firm stated that the risk was expected to be significant.

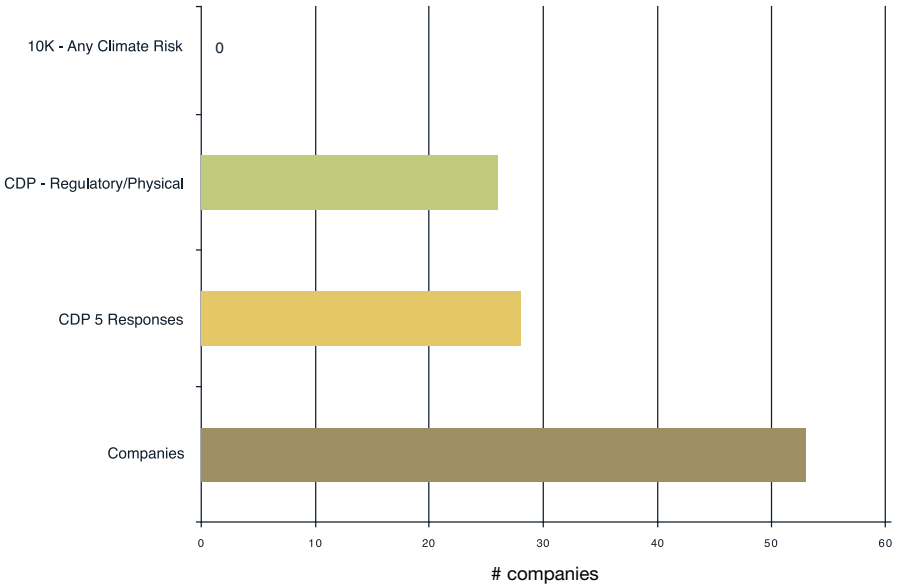
Physical Risk

Physical risk disclosure by this sector was similarly constrained. The risks disclosed in CDP responses mirrored those of other sectors; no industry-specific risk was identified. Two firms did mention a unique opportunity and responsibility. **Becton Dickinson** and **Medco Health Solutions** noted that extreme climate events and associated human health impacts are expected to increase the need for medical and pharmaceutical products.

Many companies view climate-related physical events as similar to other emergencies or natural disasters, and they say they plan accordingly. Eleven firms stated that they had company-wide business continuity plans and a few others, such as **Zimmer** said that facilities located in at-risk areas engage in contingency planning. Two unnamed firms have operational or supply chain redundancies to help manage extreme weather or other risk.

Two health care firms noted that extreme climate events and associated human health impacts are expected to increase the need for medical and pharmaceutical products

Health Care Sector Climate Risk Disclosure



To view individual company responses to CDP5, please visit www.cdproject.net

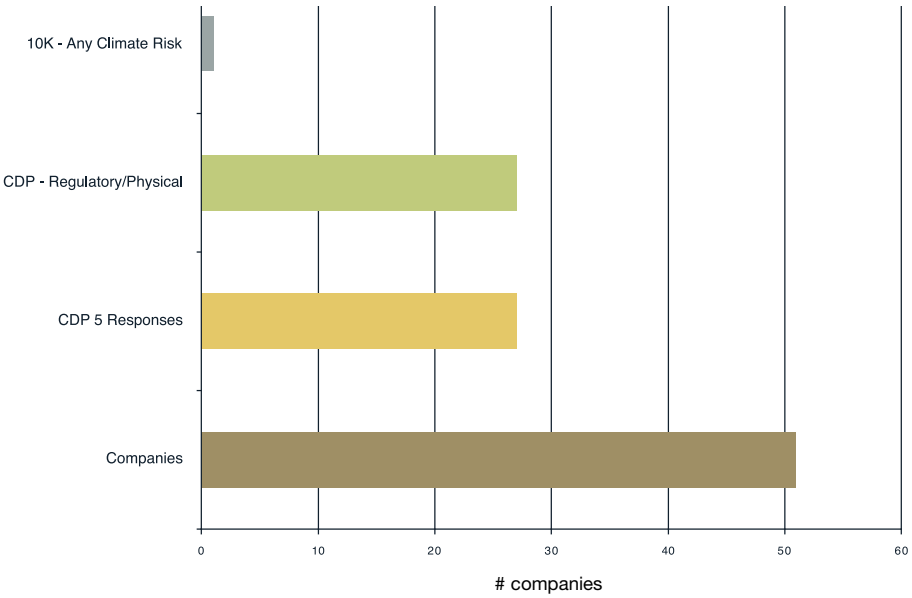
Timeframe
Few companies attach a time frame to their expectation of physical or regulatory risk impacts. Some firms simply indicated that they did not anticipate risks "in the near term." Only **Baxter International** was more precise, defining "near-term" as 2007-2010; it does not elaborate on longer-term physical risk. **Aetna** expects that climate change will be a major campaign issue in the 2008 U.S. presidential elections, but it did not venture a guess as to when climate legislation might be enacted.

Materiality
No company indicated in its CDP response that it anticipates material commercial impacts from climate change risks.

Form 10-K Disclosure

No companies in the Health Care sector identified climate change risks in their Form 10-K securities filings. Even the six firms that indicated in their CDP response that they had facilities subject to the EU ETS did not address this regulation in their Form 10-K filings, apparently because they did not consider the risk to be material.

Industrials Sector Climate Risk Disclosure



INDUSTRIALS

Most firms in this sector are not currently subject to climate related regulation and therefore 10-K disclosure is virtually non-existent. CDP responses indicate that, while potentially significant, firms do not expect regulatory and physical risks to be material.

CDP5 Disclosure

Regulatory Risk
The Industrials sector includes firms in such diverse businesses as package delivery, military contracting and consumer and industrial product manufacturers. Although many firms are relatively large direct or indirect GHG emitters, only **3M** discloses that it currently faces regulation in the European Union. The company notes "… existing GHG regulations have not had a significant financial or regulatory impact on 3M."

Many firms indicate that they expect future regulation and are closely following the policy process, but most refer to generic regulation only. **Caterpillar** states, "As a global company, the potential for adoption of country-specific or other regional approaches to climate change policy creates uncertainty for Caterpillar." **Cummins**, notably, evaluates an array of policy options "from an economy-wide cap-and-trade program to fuel economy standards" to determine potential impacts on the company.

Seven firms specified the type of policy that posed the most risk, namely product energy efficiency standards, policies that target aviation and policies that target waste management. **Eaton**, **Ingersoll-Rand**, **Tyco International** and a fourth unnamed firm all say they are at risk from product standards regulation. **Ingersoll-Rand** notes that product standards, especially for engines, could lead to the need for product design adjustments and increased product development time. **United Parcel Services** anticipates European aviation regulation.

Eight firms indicate that regulation will indirectly increase energy costs.

Physical Risk
The physical risks that were identified are not unique to the Industrials sector. Firms acknowledged the chance of supply chain

or general business interruptions due to severe weather events. Companies explained that their business continuity planning helped insulate them from physical risks from climate change. Nine firms mentioned company wide contingency planning, and a tenth, **Northrop Grumman**, indicated it was incorporating lessons learned from Hurricane Katrina. One firm, **Cummins**, has a Chief Risk Officer. **Rockwell Collins** had the most comprehensive physical risk analysis, discussing the impact of wind, drought, heavy rain, extreme heat and sea level rise on its supply chain and operations.

Six firms failed to answer the question or stated that they were not subject to physical risks from climate change.

Timeframe

Few firms indicate the timeframe used in their risk analysis. **General Electric** expects that many jurisdictions will move forward with climate change legislation "in the near term" and **Northrop Grumman** anticipates federal regulation "in the next few years." **Tyco International** anticipates energy cost increases in the next five to ten years.

Materiality

It is not uncommon for companies in this sector to cite apparently significant impacts from regulation and severe weather events that could lead to higher compliance costs, loss of inventory or temporary shutdowns, but no firm explicitly states that the risk is material. One unnamed firm estimates that costs of carbon dioxide emissions could reach $15 per ton.

Form 10-K Disclosure

Only one firm in this sector, which declined to make its CDP response public, had a reference to greenhouse gas emissions in its Form 10-K. The firm highlighted vehicle, aircraft and facility improvements that have resulted in a reduced GHG emissions footprint, but it did not address climate change related commercial risks.

INFORMATION TECHNOLOGY

Information Technology firms identified business-specific regulatory risks such as perfluorocarbon (PFC) rules and energy efficiency product standards and general physical risks in their CDP5 responses; 10-K responses were few and lacked climate-related risk assessments.

CDP5 Disclosure

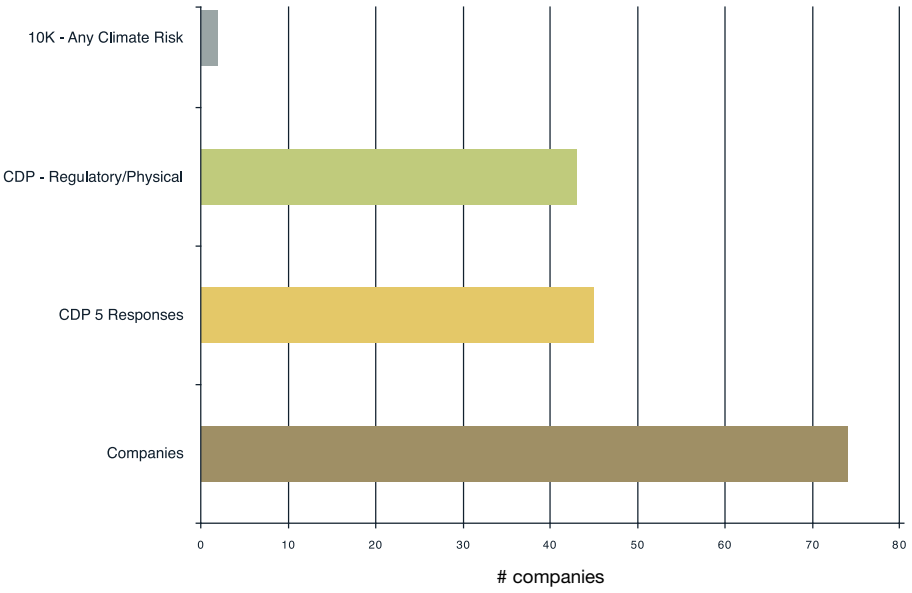
Regulatory Risk

The Information Technology sector is not directly targeted by current climate-related regulation, except for companies in the semiconductor business potentially subject to perfluorocarbon use and emissions regulations; PFCs are one of the six classes of greenhouse gases regulated under the Kyoto Protocol. Six Information Technology firms mentioned PFC regulation: **Advanced Micro Devices, Intel, IBM, National Semiconductor** and two others that declined to make their response public. Advanced Micro Devices distinguished between PFC emissions caps, which it determines is not a risk, and a PFC substance ban, to which it would be vulnerable. Intel also notes that the risk is a substance ban. One of the unnamed firms recently sold its semiconductor products business and thereby nearly eliminated its risk from putative PFC regulation.

CDP responses indicate that the sector expects that other direct regulatory risk may come from energy efficiency product and equipment standards. Twelve firms anticipate such standards, although not all of the firms presented it as a risk factor. Several, like **Microsoft** and **Motorola** simply make a statement about their efforts to improve product efficiency. Other firms are more forthcoming. **Cisco Systems** states, "Emerging product energy

CDP responses indicate that the Information Technology sector expects that direct regulatory risk may come from energy efficiency product and equipment standards

Information Technology Sector Climate Risk Disclosure



The majority of CDP respondents in the Materials sector state that increased energy prices pose the greatest commercial risk to their business

efficiency regulations impacting Cisco products may increase compliance costs."

Indirect regulatory impacts, primarily increased energy costs, were mentioned by 13 companies, and for many of these firms, it was the only regulatory risk mentioned.

Physical Risk
Extreme weather events that cause infrastructure or facility damage or power outages were the most frequently cited physical risks. Most companies mentioned these risks briefly, or immediately noted that they have business continuity plans that mitigate the risk. Three firms were less dismissive and used language suggesting that the risk is real. **Sun Microsystems** noted that it had facilities that could be harmed by sea level rise, as did **Juniper Networks.** They were among the few firms to provide facility-specific risk assessments.

At least two firms stated that they had not specifically evaluated the impact of physical risks from climate change on their businesses. Approximately 11 firms do not perceive risks from physical climate change impacts and others noted that the risk was not unique to their business.

Timeframe
NVIDIA expects energy costs will increase over the next five to 10 years. No other firm provides a specific timeframe for anticipated regulatory or physical risks. **Juniper Networks** states that emissions caps may be implemented "in the near term."

Materiality
While some companies acknowledged that significant harm could result from climate change regulation or physical events, no company used the term "material" to describe these risks. Twenty-three firms either stated or implied that physical risk was not material. Similarly, 24 firms dismissed the possibility of a material impact from regulatory risk.

Form 10-K Disclosure

Intel and **Sun Microsystems w**ere the two firms that referred to climate change in their Form 10-K filings. Intel mentioned climate change as part of a broader discussion of environmental initiatives. Sun Microsystems' discussion focused on energy efficient computing technology and was slightly more climate specific. The company noted that its technology would encourage climate friendly industry shifts. Neither firm named climate change as a commercial risk.

MATERIALS

The energy intensive Materials sector faces some risk from future direct regulation, and companies highlighted upward pressure on energy prices as their major concern. Few firms considered either risk of sufficient magnitude to disclose in 10-K filings, which typically contained minimal or no climate risk evaluations despite the high disclosure rate.

CDP5 Disclosure

Regulatory Risk
The Materials sector, which includes forest products, chemicals, metals and other diversified product manufacturers, is largely unregulated by existing climate policies despite being a significant energy consumer. The majority of its CDP respondents state that increased energy prices pose the greatest commercial risk to their business. Higher energy prices as a result of the EU ETS have had negative repercussions for **Alcoa,** which closed one of its European smelters in response.

DuPont, **International Paper** and **PPG Industries** are all regulated under the EU ETS, but none mentioned a negative impact. Both **International Paper** and **PPG Industries** have sold excess allowances. **DuPont** anticipates that additional facilities will fall under the next phase of the EU ETS, resulting in higher administrative and compliance expenses.

International Paper and other forest products firms are uniquely exposed to risk — and opportunity — of policies that promote wood fiber as a source of fuel or as an alternative to more carbon-intensive building materials. International Paper is concerned that distortions in the wood market could appear if utility Renewable Portfolio Standards do not adequately address possible supply constraints. **MeadWestVaco** already sees additional fiber demand in Europe due to biomass energy policy incentives.

At least four firms anticipate potential for direct regulation including **Ashland, DuPont, Newmont Mining** and a fourth firm that declined to publicly disclose its response.

Physical Risk
Only mining companies and firms with a business line dependent on agriculture or timber commodities say they face unique, business-specific risks from physical effects of climate change. **Phelps Dodge** (now part of Freeport McMoRan Copper & Gold) noted that high water flows could damage equipment and result in mine shutdowns, while conversely drought conditions might require increased use of water for mineral processing and dust suppression. Phelps Dodge's new parent, **Freeport McMoRan,** is concerned that climate change, which is predicted to disproportionately hurt developing countries like Indonesia where it has operations, could destabilize these governments and social structures. **Newmont Mining** was much less specific in its risk evaluation.

DuPont, International Paper, MeadWestVaco, Monsanto and **Weyerhaeuser** noted potential risks due to climate changes that affect agriculture and standing timber, but their disclosure was generally brief and none of these firms attempted to quantify the risk.

Other firms in this sector face the same risks that other sectors have cited such as property damage and extreme weather related business interruptions. Many of these companies, including **Bemis**, **DuPont** and **Eastman Chemical**, noted that they had emergency preparedness plans to handle potential risks.

Timeframe
Materials firms generally did not attempt to determine a timeframe for potential risks. **Air Products & Chemicals** stated, "the magnitude and timing of potential regulatory risks posed by climate change is difficult to quantify." **Ecolab** believes it is prepared for medium-term physical risks since "climate change is predicted to occur gradually." **International Paper** stated that physical impacts to standing forests are a long-term prospect. **Newmont Mining** is the most specific. It expects to see both Australian and U.S. regulation enacted in 2009-2010 with an initial compliance period starting in 2012-2015.

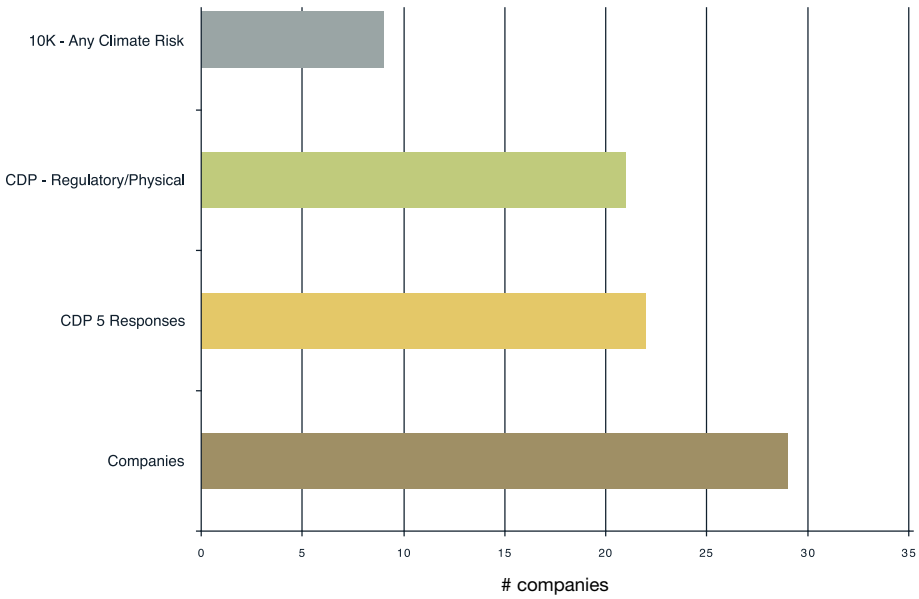
Materiality
Firms in the Materials sector avoided speculating on the magnitude of prospective regulatory or physical climate change risks. Only one unnamed firm noted that the price of raw materials "could be materially increased due to climate regulation."

Form 10-K Disclosure

The Materials sector has one of the highest rates of Form 10-K disclosure among CDP5 respondents, with nine of 22 firms providing some mention of climate change. However the quality of the risk disclosure was fairly low, with few providing an actual risk assessment. **Alcoa**, **Dow Chemical** and **Weyerhaeuser** did not discuss climate change in terms of physical or regulatory risk. Other firms elaborated more. **DuPont** mentions its emissions reductions initiatives, but goes on to say that "the company faces the possibility of country-specific restrictions [on CO_2, HFCs and PFCs] in several countries where major reductions have not yet been achieved." **Phelps Dodge** stated that it is evaluating potential climate change impacts and even considered the possibility that federal legislation could be enacted in the United States in 2007, leading to higher energy costs. One unnamed chemical company noted that it is regulated under the Kyoto Protocol and that future U.S. legislation could affect the growth of its business. **United States Steel** also acknowledged the possibility of U.S. climate legislation but declined to estimate the impact.

The Materials sector has one of the highest rates of Form 10-K disclosure among CDP5 respondents, with nine of 22 firms providing some mention of climate change

Materials Sector Climate Risk Disclosure



Most firms in the Utilities sector believe that GHG regulation is imminent, but most decline to predict the regulatory impact, saying it will depend heavily on the structure of regulation

TELECOMMUNICATION SERVICES

The Telecommunication Services sector provided no 10-K climate disclosure. Brief CDP responses mostly highlight physical risks to infrastructure that are not expected to be material.

CDP5 Disclosure

Regulatory Risk
The Telecommunication Services sector is not directly regulated by current climate policies. **Citizens Communications** and **Verizon Communications** do not expect to face future regulation, either, although they did not altogether exclude the possibility of generic future regulations. Two more companies, **Qwest Communications** and an unnamed firm, specified that regulatory risk exists from GHG emissions inventory requirements or renewable energy directives that may require equipment updates or replacement.

Physical Risk
All but one firm acknowledged the risk of physical impacts to operations or communications infrastructure, but most indicated that emergency preparedness plans are already in place. **Citizens Communications** also noted that it could reroute service through unaffected parts of its network. **Verizon Communications** provided the most detailed response, explaining that its use of copper is especially vulnerable to the elements. The company also noted that central office equipment operates most efficiently within a certain temperature range, which may become more difficult to maintain due to rising temperatures.

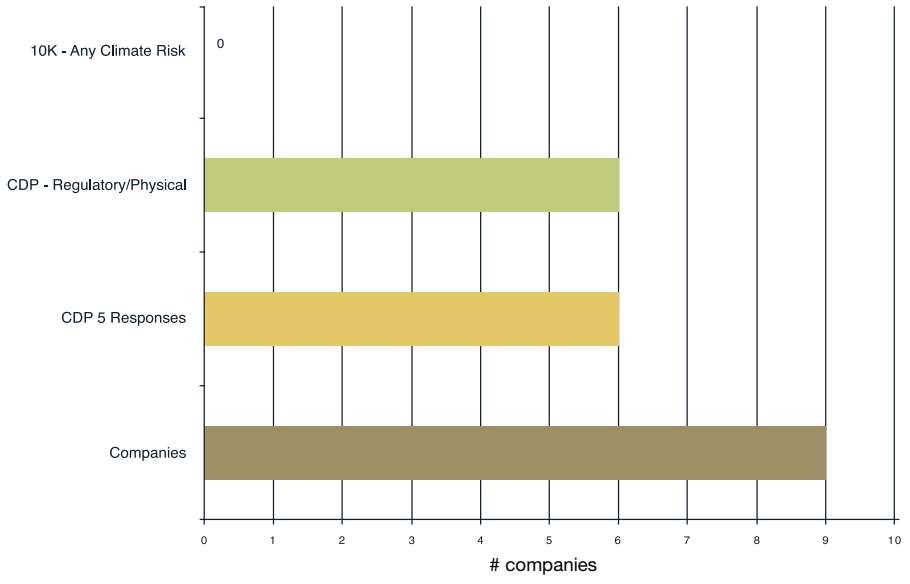
Timeframe
No company provided a timeframe for possible impacts from regulatory or physical risks.

Materiality
No company indicated that either regulatory or physical risk is expected to be material. With regard to physical risk, **Citizens Communications** states, "The types of resources and materials we use in our operations are unlikely to be materially affected by climate changes."

Form 10-K Disclosure

The six firms in this sector are not subject to current climate change regulation and generally do not expect to be in the future. Telecommunication services firms also do not consider physical risk from climate change to be material. None of the respondents included a discussion of climate change in their Form 10-K filings.

Telecommunication Services Sector Climate Risk Disclosure



UTILITIES

The utility sector had the highest climate change disclosure rate in Form 10-K filings. Electric utilities generally provide more detailed information than natural gas utilities. For all utilities, regulatory risk is seen as the more pertinent risk. While nine utilities disclosed in their Form 10-K filings that the risk could be material, only one of these firms made a similar statement in its CDP response.

CDP5 Disclosure

Regulatory Risk
Most utilities are not yet regulated by climate change policies, although some have facilities that shortly will be subject to regional greenhouse gas controls, such as the Regional Greenhouse Gas Initiative (RGGI) in the Northeast. Most firms in this sector believe that GHG regulation is imminent, but most firms decline to predict the regulatory impact, saying it will depend heavily on the structure of regulation, on their ability to get cost recovery on emissions reduction investments, on the availability of emissions abatement or carbon sequestration technology, and on many other factors.

Two utilities said they are heavy GHG emitters relative to their peers, with a fuel

mix that is weighted towards coal. **Duke Energy** says it is one of the nation's largest GHG emitters; **Xcel Energy** says it is the sector's fifth largest emitter.

Conversely, eight utilities said their regulatory risk exposure is low relative to their industry peers, typically because of large shares of nuclear, natural gas, or hydroelectric generation, or because of emissions reduction actions they have already taken. **Exelon, FirstEnergy, FPL Group, Keyspan** (now part of **National Grid**), **Nisource, PG&E, PPL** and **Public Service Enterprise Group** all believe they are well positioned to comply with future climate regulations.

FPL Group states that a carbon risk assessment has partly driven its growth strategy toward efficient and low carbon-emitting technologies. **Southern** and **Xcel Energy** incorporate carbon pricing into their planning processes.

Six utilities will be regulated under the Regional Greenhouse Gas Initiative (RGGI) starting in 2009. **Consolidated Edison** said that the impact of RGGI would vary by state but that it anticipates a 1 – 2.5% electricity price increase. The other firms did not predict the impact of carbon caps under RGGI.

Physical Risk

Many firms note that severe storms and extreme temperatures can damage or stress transmission and distribution infrastructure, but did not estimate the financial implications of these supply disruptions.

Ten utilities acknowledge that temperature fluctuations would likely alter electricity demand and consumption patterns. **American Electric Power, DTE Energy, Exelon, Nicor, Nisource, Progress Energy, Public Service Enterprise Group, Questar,** and **Xcel Energy** all express this concern. Xcel Energy says "the odds favor increased [electricity] use." Xcel further noted that it might be able to sell electricity to other providers in the event of abnormal weather outside of its service territory.

At least five companies with coastal facilities, **Centerpoint Energy, Entergy, Exelon, FPL Group,** and **Keyspan** (now part of **National Grid**) raise the specter of more hurricane activity and sea level rise in their CDP5 disclosures. Utilities operating in dry climates, including **PG&E, Pinnacle West Capital** and **Sempra Energy,** say they are more threatened by drought and lack of cooling water for thermal power plants. Utilities with hydroelectric generation like **Xcel Energy** also could suffer in the event of prolonged drought. Similarly, companies that rely on barge delivery of coal like **CMS Energy** and **DTE Energy** say they could be vulnerable to drought or floods that affect river traffic.

A small number of firms do not expect commercial risks to materialize from the physical effects of climate change. **Southern s** disclosure expressed some skepticism about the link between climate change and extreme weather, stating among other things, "It is interesting to note that not a single hurricane struck the United States or the Gulf Coast region during the 2006 season."

Timeframe

Utilities were hesitant to include a timeframe in their risk analysis. One unnamed firm indicated that the timeframe for regulatory risk impacts depends in part on the availability of emissions reducing or carbon capturing technology. **Constellation Energy Group** expects minimal near-term physical risks, but has not made a prediction on longer-term physical risks.

Materiality

Only **Pinnacle West Capital** says in its CDP response that regulation could have a material impact on its operations. Most other firms refer to adverse or significant impacts, without stating that the the result could be material. With respect to physical risks, **Progress Energy** says there could be a material impact if costs related to severe weather events are not sufficiently recovered.

Exelon states in its Form 10-K and CDP response that the cost of *voluntary* GHG emission reduction efforts "will not have a material affect on its future results of operations, financial condition or cash flows." **FirstEnergy** states that over the next half decade it plans to spend US$50 million on GHG emissions reduction initiatives and invest an additional US$50 million in nuclear power. **PG&E** plans to spend US$1 billion on energy efficiency initiatives during 2006-2008.

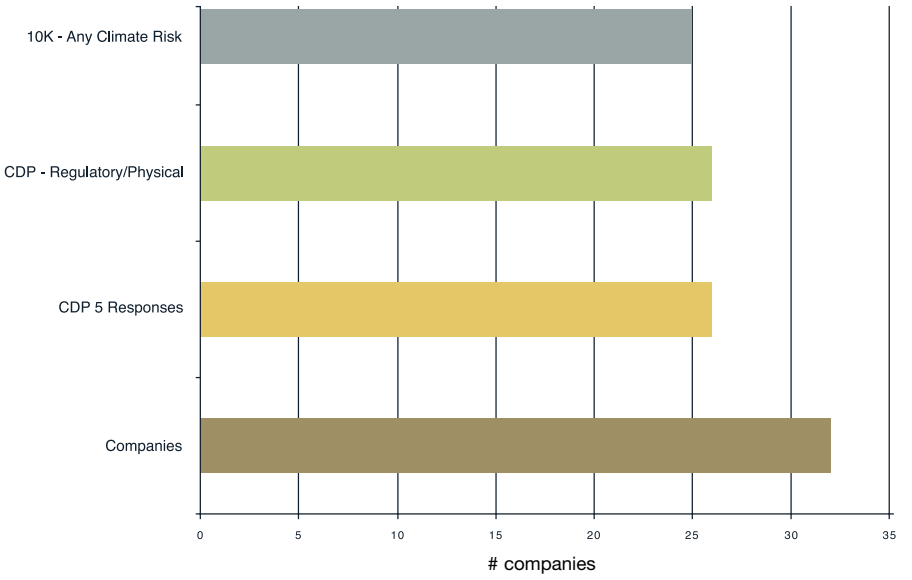
Form 10-K Disclosure

More than any other sector, utilities have acknowledged a potential material risk from climate change regulation in their Form 10-K filings. Nine firms made such disclosures in their latest filings: **AES, American Electric Power, Consolidated Edison, Constellation Energy, Edison International, FPL Group, PG&E, Pinnacle West Capital** and **Public Service Enterprise Group.**

Legal Action

Three firms, **Edison International, Xcel Energy** and a third unnamed utility note that climate-related lawsuits pending in U.S. courts pose an unspecified commercial risk. One such lawsuit draws a connection between GHG emissions, climate change and Hurricane Katrina, and seeks damages from large carbon-emitting electric utilities. Another suit does not seek damages, but alleges that GHG emissions constitute a public nuisance and asks the courts to mandate emissions caps.

Utilities Sector Climate Risk Disclosure



GUEST COMMENTARY

Business in the Driver s Seat: A New Standard for Corporate Engagement in Climate Policy

by Hon. Eileen Claussen

The evolution of climate change policy in the United States has followed a long and sometimes bumpy road. Along this road, we've made significant progress after persevering through rough patches, uphill stretches, and time-wasting detours. So are we there yet? No, but we're a lot closer, largely because the business world is now in the driver's seat leading us toward legislation that places mandatory constraints on greenhouse gas (GHG) emissions.

2007 is a milestone year when the business world has stepped forward to help lead the drive toward national GHG legislation

The signal event of the year was the formation of the U.S. Climate Action Partnership (USCAP), a coalition of now 25 major corporations and six leading nongovernmental organizations (NGOs), including the Pew Center, that has called on Congress for rapid enactment of legislation to establish binding, national limits on greenhouse gases to slow, stop and reverse the growth of emissions. Through lengthy negotiations, USCAP has been able to achieve an unprecedented level of detail on consensus policy recommendations that represent a workable compromise between diverse business interests and NGOs.

USCAP believes that Congress should pass legislation that sets firm short and medium-term binding emissions targets in the U.S., on a trajectory to reduce emissions by 60-80% by 2050, with the aim of stabilizing global GHG levels over the long-term at a CO_2 equivalent of between 450 – 550 parts per million. A cap-and-trade system should be the cornerstone of U.S. climate policy, with additional policies necessary for those sectors, including coal-based energy, buildings and efficiency, and transportation, in which the initial price signal from cap-and-trade will not sufficiently reduce emissions and advance new technologies. USCAP also calls for the development of a robust federal technology program with stable, long-term financing for low-GHG technologies. And given the need for a global solution involving all major emitting nations, the coalition calls for renewed U.S. leadership in international negotiations.

As of August 2007, there were over 110 climate-related hearings and 150 climate-related bills introduced, setting a record for Congressional activity

The emergence of USCAP has had a discernible effect on Congressional efforts to pass mandatory climate legislation. Beginning with Feb. 13, 2007, testimony before both the Senate Environment and Public Works Committee and House Energy and Commerce Committee, CEOs from the coalition have addressed a range of influential committees in both houses of Congress. USCAP members have briefed dozens of Congressional offices and committee staff, including several actively drafting climate policy.

As of August 2007, there have been over 110 climate-related hearings, and 150 climate-related bills introduced, eclipsing the previous record of 105 introduced during the two-year span of the previous Congress. Ten of these bills would establish GHG gas cap-and-trade programs, either for the economy as a whole or for the utility sector.

Importantly, key moderates are getting involved in the debate. This summer, for example, two groups of Senate moderates — most of whom have never before voted for a cap-and-trade measure — offered language to address a key concern: cost containment. One group's proposal would allow the GHG cap to be exceeded if allowance prices rose above a certain level — the so-called 'safety valve' approach. The Pew Center remains concerned, however, that if the safety valve price is set too low, it could both render the emission levels set in the bill meaningless and undermine investment in the next-generation of climate-friendly technologies.

The other proposal for limiting costs would establish an appointed board that could authorize the borrowing of allowances from future years' caps if the program's costs started to hurt the economy. This approach appears more promising because it would not undermine the program's environmental objectives and the economic efficiency of a market-based system.

Hon. Eileen Claussen

Senators Lieberman (ID-CT) and Warner (R-VA) have announced their intention to move through their subcommittee of the Senate Environment and Public Works Committee a cap-and-trade bill that embraces this borrowing approach, as well as other provisions suggested by key Senate moderates. The Lieberman-Warner bill is likely to be the vehicle for Senate action on cap-and-trade.

While establishing a domestic policy that reduces GHG emissions is critical, meeting the challenge of climate change will require an equitable and effective international policy framework for the period after 2012, when the Kyoto targets expire.

To help develop workable options for a post-2012 agreement, three years ago the Pew Center brought together 25 senior policymakers and stakeholders from 15 countries, including major corporations from the Center's Business Environmental Leadership Council in the Climate Dialogue at Pocantico. The group's report calls for engaging all major economies through a flexible framework that allows them to take on different commitments to fit their national circumstances. To set the stage for such an agreement, the Pocantico group urged an informal, high-level dialogue among major economies to reach a broad political consensus on the general nature and scope of future multilateral efforts.

Key to achieving this consensus is cooperation. Concerns about rapidly growing emissions from China and India are valid, and clearly all major emitters including developing countries will need to take on commitments to reduce their emissions. However, Congress should be wary of legislative proposals that include punitive trade measures intended to prod the developing world into action. Threats of retaliatory action could have the perverse effect of alienating China and others, and actually delay the time when they take on meaningful commitments.

One of the most important ways of smoothing the economic impact of mandatory GHG limits on the U.S. is to stimulate domestic industry to catch up with the rapidly growing clean technology marketplace. With a well-designed climate policy that puts a clear price on carbon, U.S. businesses are more than capable of leading the world in producing climate-friendly technologies. Many of the USCAP companies are combining their public policy efforts with business strategies that seek to maximize the financial opportunities inherent for first movers in a carbon-constrained economy.

Companies that are ahead of the curve support market-based policies to limit GHG emissions. CDP can help by calling on companies to disclose their policy positions on climate change.

These and other forward-thinking companies are in the process of setting a new standard for what counts as leadership on the climate issue. Several years ago, the mere acknowledgement of the threat of climate change was enough to place a company out in front on the issue. Today, the companies truly ahead of the curve are those that publicly support market-based federal climate policies that include meaningful mandatory GHG limits.

Investors and the public ought to know whether companies are working to advance sound solutions to the climate challenge, or working to undermine them through lobbying against mandatory policy. Taking a constructive stance is a reasonable expectation from the standpoint of corporate social responsibility, but it also is an indication of whether a company fully understands how markets will change under climate regulations — a key to building future shareholder value. CDP can help by calling on companies to disclose their climate policy positions. With this information widely available, the public can press companies to work toward sensible climate change solutions, and investors can better allocate capital to the likely winners in a carbon-constrained world.

*— Eileen Claussen is the President of the **Pew Center on Global Climate Change and Strategies for the Global Environment**. She is the former Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs, and was responsible for U.S. policy development on major international issues, including climate change.*

7 S&P500 respondents to the CDP5 survey showed strong interest in implementing energy efficiency programs to abate their greenhouse gas (GHG) emissions.

GHG Emissions Management

S&P500 respondents to the CDP5 survey showed strong interest in implementing energy efficiency programs to abate their greenhouse gas (GHG) emissions. Less than half of the respondents said they were involved in renewable energy projects or green power purchases. While 78% of the respondents made reference to energy efficiency initiatives, only 37% discussed renewable energy projects or targets. Other major findings with respect to GHG emissions management include:

- 29% of respondents had set GHG reduction targets for their Scope 1 emissions
- Of those setting targets, 54% had set absolute targets (rather than intensity targets)
- 36% of respondents have considered emissions trading, but only 17% of those have actively traded GHG emission credits
- Most emissions trading (71%) is taking place through the European Union's Emissions Trading Scheme, which is implementing regional regulatory requirements under the Kyoto Protocol.

ENERGY EFFICIENCY

Respondents have widely embraced energy efficiency programs to abate GHG emissions and achieve cost savings at their firms. Among CDP5 respondents, consumer-oriented and Telecommunications firms were the most likely to promote these initiatives, with Energy and Health Care firms citing the least activity. However, among Energy and Health Care firms with energy efficiency initiatives, 31% of respondents had set targets to achieve actual reductions in energy use. Only the Consumer Discretionary sector had a greater percentage of respondents (59%) with energy initiatives involving efficiency targets. With the exception of Energy firms, most companies with energy efficiency targets have set them for the company as a whole, rather than for specific facilities or regions of operation.

Consumer Discretionary

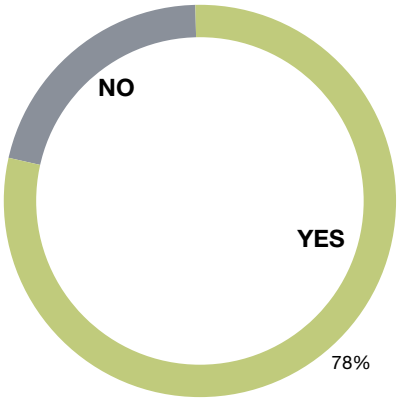
Carnival is one of the largest GHG emitters among respondents in this sector, owing to the large volume of fuel consumed in its cruise ships. (Airlines are also large fuel consumers in this sector, but none responded to the CDP5 survey.) Carnival is working on several initiatives to improve the energy efficiency of its operations. For example, it uses two shore power installations, in Juneau, Alaska, and in Seattle, Wash., that permit ships mooring in these ports to shut down their engines. These land-based power plants use non-carbon fuels, such as hydropower, which reduces the ships' air emissions. Carnival has also signed an agreement to use shore electrical power for ships docking at the Port of Los Angeles. In addition, the company is evaluating the use of a plasma incinerator for disposal of shipboard wastes. Plasma technology burns waste very efficiently and significantly lessens air emissions and ash byproducts.

Consumer Staples

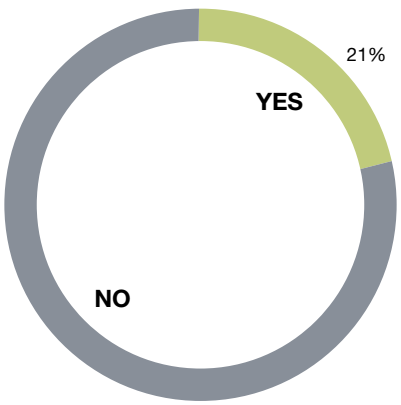
Wal-Mart has committed $500 million annually to invest in sustainable technologies and innovations to achieve a 20% reduction in GHG emissions from existing stores over the next six years. It has also pledged to design and open a viable prototype store within three years that is 25 – 30% more energy efficient and will produce up to 30% fewer GHG emissions. It plans to improve its logistical efficiency through a combination of better fuel economy and aerodynamics in its trucking fleet, using less packaging in consumer items and other technological improvements. Wal-Mart will also show preference to suppliers that set their own energy efficiency goals and aggressively reduce their GHG emissions.

S&P500 respondents to CDP5 showed strong interest in implementing energy efficiency programs to abate their GHG emissions

Respondents with Energy Efficiency Programs



Respondents Setting Energy Efficiency Targets



Energy firms highlighting energy efficiency initiatives typically are expanding the use of cogeneration, which produces electricity and thermal steam simultaneously

Kimberly Clark has also focused on making energy efficiency improvements. From 1990 through 2005, it reduced its carbon emissions per sales dollar by approximately 40%.

Avon Products has a target to reduce its total energy consumption per unit of production by 10% at its manufacturing locations by 2008.

Sara Lee and several other companies in this sector are researching strategies to achieve GHG reductions mainly through energy efficiency improvements.

Energy

Energy firms highlighting energy efficiency initiatives typically are expanding the use of cogeneration, which produces electricity and thermal steam simultaneously. Companies involved in oil and gas production are also working to reduce the venting and flaring of methane, a potent greenhouse gas.

ExxonMobil has committed to improving the energy efficiency of its U.S. refining operations by 10% between 2002 and 2012, as part of its participation in the American Petroleum Institute's voluntary Climate Challenge Program. It has also invested more than $1 billion in cogeneration projects, and now has interests in 100 such facilities with a combined capacity of 4,300 megawatts (MW)[1] of power. This cogeneration capacity is estimated to reduce carbon dioxide emissions by more than 10.5 million metric tonnes annually. The company plans to increase its cogeneration capacity to more than 5,000 MW by 2010.

ConocoPhillips U.S. refining unit has also set a goal of improving its energy efficiency by 10% through 2012. The company's upstream operations continue to pursue GHG abatement by reducing flaring and fugitive emissions of methane.

Occidental has an ongoing commitment to enhance the energy efficiency of its operations and has achieved a 39% improvement in the intensity of its energy use since 1996. To achieve this improvement, Occidental has invested heavily in energy conservation and cogeneration projects. Like ExxonMobil and ConocoPhillips, the company is also involved in methane flaring reduction programs for its upstream operations.

Financials

Citigroup is planning to set energy efficiency targets for all of its facilities this year.

JPMorganChase and many other financial services firms also are focusing on energy efficiency improvements in their corporate and branch offices to achieve emission reduction targets.

Industrials

Eaton owns a business that focuses on implementing energy efficiency programs for other companies, so putting its staff to work at its own company has been a natural fit. Eaton reports that from 2003 to 2006, this business unit conducted 14 audits and recommended 120 energy reduction projects that yielded a reduction of 9,000 tons[2] of carbon dioxide. This group will continue to conduct energy audits and trainings in 2007 and recommend other areas where Eaton can make progress.

United Parcel Service is working on increasing the fuel efficiency of its vehicles and aircraft, while supporting and maintaining a fleet of support vehicles that run on alternative fuels. UPS is testing and deploying new technologies for its air and ground fleet and facilities, including solar, wind and distributed power technologies.

Information Technology

Dell plans to conserve energy by implementing capital improvements to double its average Leadership in Energy and Environmental Design (LEED) building score.

Hewlett Packard plans to reduce the combined energy consumption of its operations and products by 20% below 2005 levels by 2010.

IBM has reduced or avoided CO_2 emissions by an amount equivalent to 40% of its 1990 emissions through 2005 as part of its global energy conservation program.

[1]A 1 MW power plant can power 650 to 1,000 homes when running at full capacity.

[2]One short or English ton is equivalent to .91 metric tonnes.

Microsoft has reduced energy consumption by 72,000 kilowatts annually at its headquarters by reducing heating, ventilation, air conditioning and lighting during workdays, replacing high-energy lighting with more energy-efficient lighting and maintaining heating and cooling systems to operate at maximum efficiency. It has similar efforts underway at its other offices.

Materials

DuPont has a goal to keep total energy use flat between 1990 and 2010.

Dow has pledged to reduce the intensity of its energy use by 25% by 2015, using 2005 as a baseline.

Others in the industry also cited energy efficiency as the cornerstone of their emissions reduction programs.

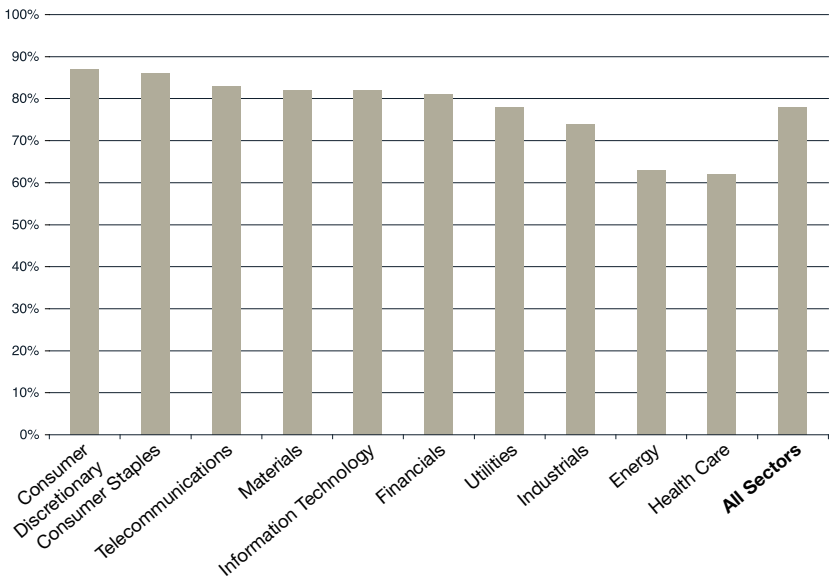
Utilities

Many electric utilities also are heavily involved in energy efficiency programs, both for their customers and their own operations.

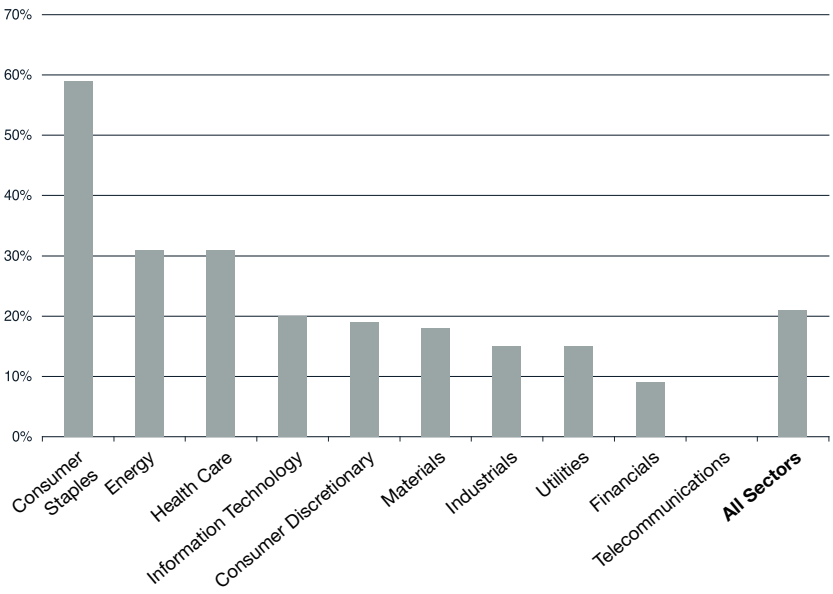
NiSource, for example, committed in 2005 to improve the efficiency of its energy delivery by 7% between 2001 and 2012, as part of the EPA's Climate Leaders program. Total benefits of NiSource's efforts are expected to reduce projected GHG emissions for 2012 by approximately 1.9 million tons.

Climate Leaders is an EPA industry-government partnership that works with companies to develop long-term comprehensive climate change strategies. Partners set a corporate-wide greenhouse gas (GHG) reduction goal and inventory their emissions to measure progress

Respondents with Energy Efficiency Programs



Companies Setting Energy Efficiency Targets



GUEST COMMENTARY

Climate Change Legislation: The Time Is Now

by Jason Grumet

The case for legislation to limit U.S. greenhouse gas (GHG) emissions has become more compelling than ever. According to the federal Energy Information Administration, our nation's energy-related CO_2 emissions are likely to grow another 34% by 2030 if current trends continue. At the same time, we know from the latest assessment of the Intergovernmental Panel on Climate Change that the risks of climate change are real and growing. Meanwhile, there is mounting evidence that the costs of further delay in initiating reductions are likely to be substantial. The faster we get started, the smaller the burden of future mitigation and adaptation efforts and the smaller the human suffering and long-term environmental damage.

As the science grows stronger, so does consensus that we need a Federal legislative solution. New players are coming to the table, including labor unions, evangelical Christians, farmers, sportsmen, national security hawks and coal-based utilities. Members of Congress have responded with a variety of bills with different emissions targets and other features. One proposal by Sens. Jeff Bingaman (D-NM) and Arlen Specter (R-PA) is based on a mandatory climate program put forward by my organization. More bills are in the works that will likely combine many elements of existing proposals.

So the question is not whether there will be legislation, but rather what features will best meet the multiple goals of a comprehensive climate policy for the United States. The National Commission on Energy Policy has taken the position that six key components should be included in any mandatory GHG program.

Any legislation should contain six elements to send proper signals to investors, consumers and other nations

First, the immediate goal should be to put in place a policy framework that can last many years and be adjusted over time in response to evolving scientific, economic, technological and international developments. We must get started with a clear signal to investors, consumers and other nations.

Second, a climate change program should be market-based and economy-wide. Market-based approaches, like the landmark Acid Rain Program, have yielded the least cost emissions-reduction options and created powerful technology incentives. Moreover, because CO_2 emissions arise throughout the economy, only an economy-wide program can deliver maximum reductions at the lowest cost.

Third, cost certainty is critical to forging the political consensus needed to move forward without further delay. Cost debates usually bog down in fruitless arguments over who is making the right assumptions about technology, fuel prices and other factors. Different assumptions can produce wildly different estimates of economic impact. The safety valve feature in our proposal — which would make additional emissions allowances available for purchase from the government at a predetermined, but steadily escalating price — helps to cut through these debates by assuring that the per-ton cost of emissions reductions required under the program cannot rise above a known level. At the same time, the Commission recognizes that the need for environmental certainty is likely to outweigh the need for cost certainty such that it would be appropriate — especially if significant progress has occurred at the international level — to transition away from the safety valve toward firm emission caps over time. Meanwhile, a healthy debate has begun about the best approach for managing cost uncertainty and economic risk. One Senate proposal has a cost-containment mechanism that involves permit borrowing governed by a 'Carbon Market Efficiency Board' akin to the Federal Reserve.

Fourth, allowance allocation is vitally important politically because it determines who bears the costs and benefits of a climate program. The Commission believes that allocation decisions should be guided by equity considerations and seek to maximize benefits to stakeholders and society as a whole. Based on economic modeling to assess the rough distribution of cost burdens associated with GHG regulation across different industry sectors, the Commission has recommended that no more than 50% of all emissions permits or allowances available in an economy-wide cap-and-trade program should be allocated for free, with the remainder devoted to finance other policy goals. Over time, the share of allowances allocated at no cost to industry should decline gradually as the economy adjusts to carbon constraints. This approach would provide adequate resources to compensate firms that confront significant un-recovered costs under the policy, would avoid conferring large windfall profits, and would generate major resources to speed the

Jason Grumet

development of low-carbon technologies, assist vulnerable areas with adaptation, and ease the burden of higher energy prices on low-income households.

Fifth, any successful national policy must place considerable emphasis on promoting wider international cooperation. By some accounts, China is now adding new coal capacity at the rate of one large power plant every week to ten days, and it has just surpassed the United States in total carbon emissions. In this context, it is clear that the U.S. must lead, but also that our major trade partners and other large emitters follow suit. The Commission has therefore proposed a domestic policy that (a) provides for periodic review (every five years) to assess international and scientific developments, (b) explicitly links continued tightening of program targets to progress in other countries, and (c) signals the United States' intent to work with other countries to forcefully address trade and competitiveness concerns if other major emitting nations fail to act within a reasonable timeframe.

Sixth, market-based efforts to limit GHG emissions must be paired with a major technology push to develop and deploy the low-carbon alternatives that will allow us to meet critical environmental objectives while maintaining secure, reliable and affordable means of meeting our energy needs. We believe that a combined strategy of market signals and robust technology incentives is the most effective and least costly way to achieve a meaningful shift from business-as-usual trends, while equitably sharing the burden of emissions mitigation among shareholders and taxpayers. Our approach therefore calls for a combined package of policies and public incentives to accelerate the development and early deployment of promising energy-efficiency and low-carbon-supply technologies.

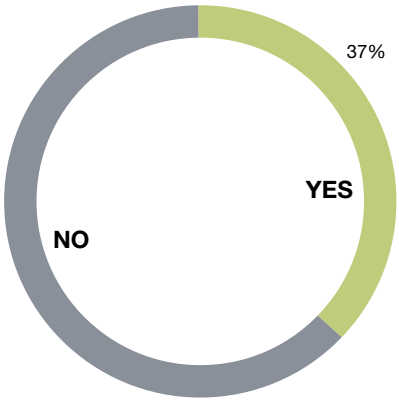
Finally, solutions to climate change must be pursued in concert with other critical energy policy goals such as improving America's energy security, reducing oil dependence, and ensuring that our energy systems are adequate and reliable to meet future needs. Thus, the Commission has also called for efforts to improve vehicle fuel economy; promote cost-effective energy efficiency investments; develop promising renewable energy resources, including biofuels; diversify available supplies of fossil fuels, especially natural gas, in an environmentally responsible manner; address obstacles to nuclear power; develop the technologies needed to preserve a major role for coal, especially technologies for carbon capture and storage; and invest in critical energy infrastructure.

Eventually, a 'safety valve' on carbon prices might give way to a firm emissions cap to provide environmental certainty in addressing global warming

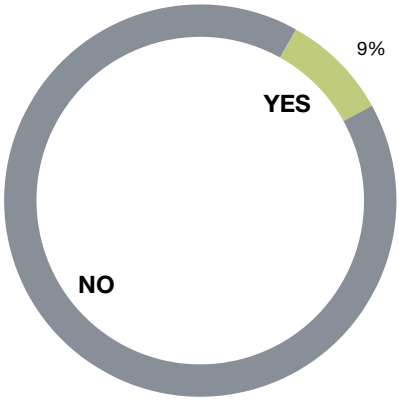
Of course, the devil is in the details when it comes to translating these principles into specific legislative language. But the urgent imperative to act — and act soon — must not get lost as the Congressional debate over U.S. climate policy intensifies in the days to come. Getting it right is essential. But so is getting started.

*— Jason Grumet is the Executive Director of the **National Commission on Energy Policy**, a bipartisan group of energy experts from industry, labor, environmental and consumer groups and academia (www.energycommission.org). The Commission issued a comprehensive set of consensus recommendations for U.S. energy policy in December 2004 and updated these recommendations in April 2007. The Commission is a project of the Bipartisan Policy Center www.bipartisanpolicy.org.*

Respondents with Renewable Energy Products



Respondents Setting Renewable Energy Targets



RENEWABLE ENERGY

Among S&P500 respondents to the CDP5 survey, 37% referenced involvement in renewable energy projects. Utilities lead in this category (70%), followed by companies in the Consumer Discretionary (48%) and Consumer Staples (41%) sectors. Despite a proliferation of "green power" purchase programs and Renewable Portfolio Standards at the state level, relatively few respondents have set targets for their own renewable energy use. The sectors with the most respondents setting targets are Consumer Staples (23%) and Consumer Discretionary (13%), followed by Information Technology (11%) and Utilities (11%). No respondents in the Telecommunications sector have set renewable energy goals.

Consumer Discretionary

Carnival is involved in a project that is testing bio-diesel fuels as a replacement for petroleum-based fuels in some ship engines.

Consumer Staples

Molson Coors has a Virginia facility that runs on biogas from anaerobic treatment of wastewater. In addition, it is investigating installing a small-scale solar photovoltaic system to supply electricity at the facility.

Financials

Citigroup, **JPMorganChase, Wells Fargo** and other banks plan to achieve GHG reductions in part through green power purchase prgrams.

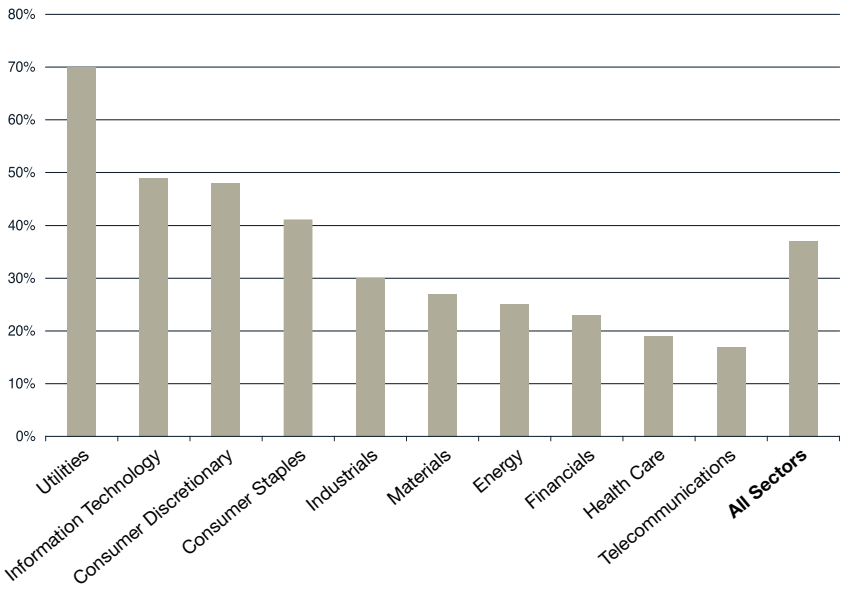
Health Care

Pfizer has pledged to meet 35% of its electricity needs through the use of renewable and cogeneration technologies by 2010.

Industrials

United Parcel Service is using solar power to meet approximately 70% of the power needs at its Palm Springs, Calif., sorting facility. In addition, UPS has several facilities in California using biomass sources as part of their electricity supply. UPS says that it continues to evaluate additional renewable energy projects in the area of solar, wind, hydrogen fuel cells and green power purchasing.

Companies with Renewable Energy Projects



Information Technology

Google is committed to creating 50 MW of new renewable generating capacity by 2012. Earlier this year, it completed the first major phase of a 1.6-megawatt photovoltaic solar panel installation at its Mountain View, Calif., headquarters. The company says that the installation is the largest one by a corporation in the United States to date.

Microsoft installed a solar electric system at its Silicon Valley Campus in Northern California in 2006. It generates 480 kilowatts at peak capacity, enough energy to meet approximately 15% of the facility's total energy needs. The system will reduce the campus' CO_2 emissions by 4,000 tons annually over the next 30 years.

Motorola plans to increase its purchases of renewable energy from 5.2% in 2006 to approximately 10% by 2008.

Dell is also considering direct purchases of renewable energy and purchases of renewable energy credits.

Materials

DuPont has a goal to increase renewable energy use to 10% by 2010 and is developing a pilot-scale 'bio-refinery.'

Dow is also committed to increasing green power purchases and makes a line of high-performance plastics from corn.

Utilities

Many electric utilities also are involved in renewable energy development, often through unregulated subsidiaries or under state mandates.

FPL Group is the largest wind energy developer in the United States; it owns more than 4,015 MW of wind generation in 16 states. In addition, the company's Sunshine Energy program in Florida installs 150 kilowatts of solar capacity for every 10,000 customers that sign up for this program.

Duke Energy plans to expand its renewable energy generating capacity to 2,100 MW by 2012.

Entergy owns 80 MW of wind capacity.

Public Service Enterprise Group (PSEG) has proposed to invest $100 million to install solar photovoltaic panels throughout its local service territory in New Jersey. This initiative would provide funding for 30 MW of solar energy capacity, which is half of the New Jersey Board of Public Utilities' target for solar energy installations in PSEG's service territory in the state for 2010.

Sempra Energy s San Diego Gas & Electric subsidiary plans to meet California's 20% Renewable Portfolio Standard by 2010.

Despite a proliferation of "green power" purchase programs and Renewable Portfolio Standards at the state level, relatively few S&P500 respondents have set targets for their own renewable energy use

GUEST COMMENTARY

Renewable Energy Finance: Big Steps for US Investors, Smaller Ones for Industry

by Angus McCrone

In a film about Pearl Harbor, a Japanese admiral muses that his country's attack in 1941 had merely awakened a 'sleeping giant.' The same might be said of the current United States position on climate change. To outsiders, especially in Europe, the U.S. response to rising international concerns has appeared as 'sleepy,' if not 'sleeping.' Yet with formidable natural resources in wind, solar, geothermal and several other renewable energies, plus the money to invest in a shift away from fossil fuels, the U.S. giant might finally be awakening.

U.S. investment in clean energy has quadrupled in three years and is quickly catching up to Europe

Led by policy makers at the state level, heavyweight corporations, blue chip financial institutions and public opinion, America has thrown its muscle into clean energy. Data from New Energy Finance show that in 2006, the United States accounted for $22.5 billion of the $70.9bn invested in clean energy worldwide. This was up very sharply from $12.6bn in the U.S. in 2005 and $5.7bn in 2004.

The 2006 data showed the level of investment in the U.S. is closing the gap fast on the European Union's $27.1bn. The capital has come from all directions — private equity funds, hedge funds, public markets, large corporates and asset financing of projects via equity and debt.

America's advance has so far been led by policymakers below the federal level, by financiers and investors, and by entrepreneurs. The big corporations in the S&P500 have been swinging into line in 2006 – 07, but most of them have yet to adopt spearhead roles. It may well be a case of 'watch this space.'

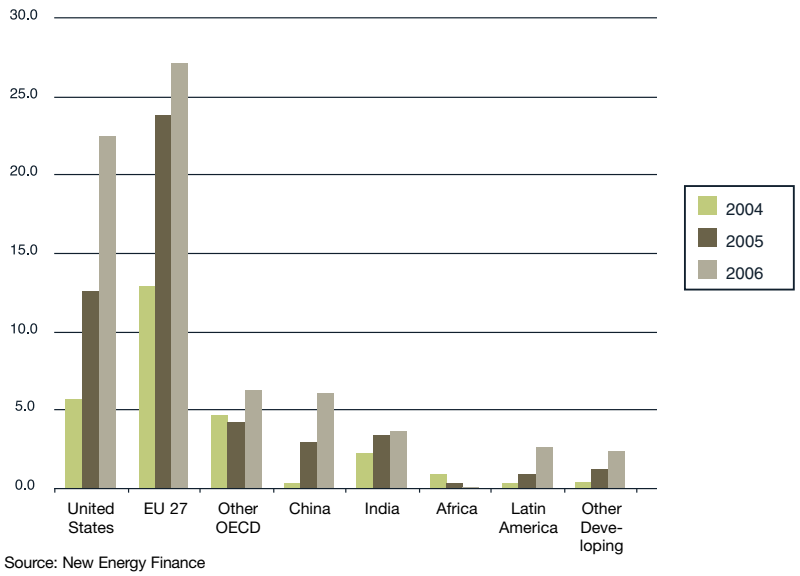
So what is awakening America from its slumber? Freak weather events such as Hurricane Katrina in 2005, the mild start of winter in 2006 – 07 and a rash of heat waves and floods this summer have raised awareness of the possible impacts of climate change and stolen thunder from climate change skeptics. At the same time, oil prices surging towards $80 a barrel have renewed concerns about the security of supply.

Policy moves also have had a profound impact, albeit with a lower profile. One change has been the partial deregulation of the power sector, giving electricity suppliers a freer hand to build their own generating capacity. Another was the introduction of the Federal Renewable Fuels Standard in 2006, encouraging the use of ethanol and biodiesel blends in motor fuels.

In addition, individual U.S. states have adopted aggressive measures to encourage the use of clean energy in their localities. Fully half have adopted Renewable Portfolio Standards obliging local utilities to derive a portion of their electricity from renewable generation. The most ambitious of these, in Minnesota, has set a figure of 25% by 2020. Others are just behind. Oregon has decreed 25% from renewables by 2025. Other states have stressed the greenhouse gas reduction side. Florida Governor Charlie Crist (R) in July 2007 issued an executive order for a reduction in emissions to 1990 levels by 2017.

The response from U.S. companies has been varied. One group of large corporations has spotted opportunities to become providers of generating equipment, or capacity — for instance

Worldwide Investment in Clean Energy (US$ billions)



Source: New Energy Finance

Angus McCrone

General Electric in wind turbines and **FPL Energy** in wind farm development.

A second group has identified the use of renewably generated power as a good way of locking in a fixed price for electricity over the long term, possibly earning carbon credits in the future, or merely generating good public relations. **Macy s** announced in June 2007 that it plans to install solar power systems in 26 stores in California, while **Wal-Mart** has unveiled a number of schemes, including cuts in packaging, efficiency in electronic goods and the use of solar panels.

A third group, the investment banks, has identified renewable energy investment and carbon trading as new profit centers. **Goldman Sachs** has made numerous large venture capital commitments, including taking a $210m stake in Brazilian biofuels firm **Vale Santelisa** and leading a $25m financing of efficient air cooling firm Ice Energy. **Morgan Stanley** has committed to put $3bn into carbon markets over five years.

A fourth group, including chemical firms **DuPont** and **Dow** and oil majors **Chevron** and **ConocoPhillips**, has dipped toes in the water by backing research into clean energy technologies or by investing in young clean energy firms.

Does this mean the big battalions of the S&P500 have embraced clean energy? Yes and no: intriguingly, even as of the third quarter of 2007, there is no pure-play U.S.-listed wind turbine manufacturer. The nearest, **Clipper Windpower**, is U.S. based but listed on London's AIM. Equally, the solar energy manufacturing industry remained largely European and Chinese based, and while there were a number of Chinese firms listed on U.S. exchanges, there has been no significant takeover of a solar firm by a U.S. corporation.

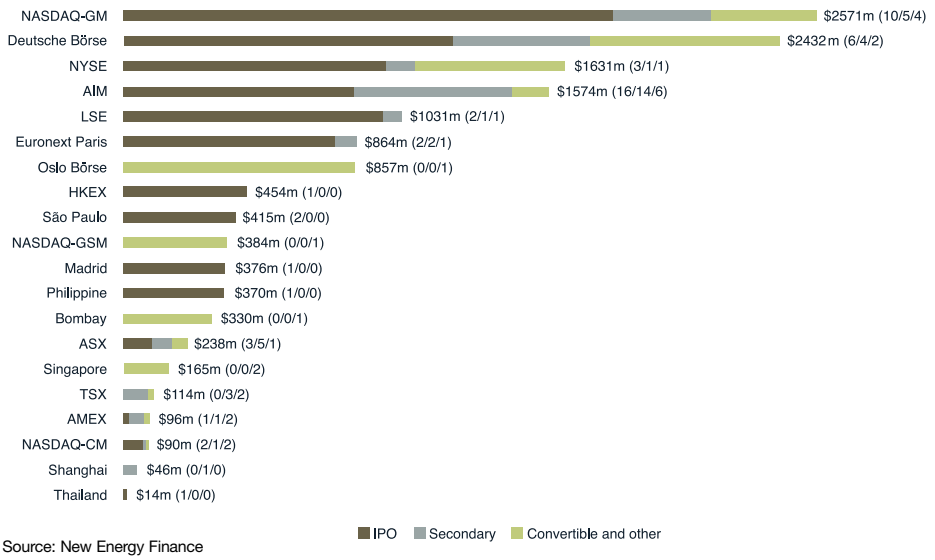
Even in biofuels, where U.S. owned businesses have proliferated in the last two years, the significant players — with the exception of integrated agribusiness giant **Archer Daniels Midland** — were generally mid-sized firms such as **Aventine**, **VeraSun** and **Imperium Renewables**. One reason for this may be that U.S. corporations remained somewhat leery of the valuations put on clean energy companies in 2007. This also extended to projects, with U.S. players often not paying top dollar for large wind farm portfolios — instead letting **Energias de Portugal** take **Horizon Wind** for an enterprise value of $2.7bn in the spring of 2007, and U.K.-based **International Power** taking the **Trinergy** portfolio for $2.5bn in August.

> Major U.S. corporations have not yet made major investments in renewables. It may be a case of 'watch this space.'

Nevertheless, U.S. investors have been in a bullish mood. In the year ending in the second quarter of 2007, **Nasdaq** saw a total of $2.6bn clean energy equity financings, more than any other exchange worldwide. The **New York Stock Exchange** weighed in with a further $1.6bn. Between the two, they accounted for nearly a third of the $14bn invested in clean energy companies by public market investors over the 12-month period.

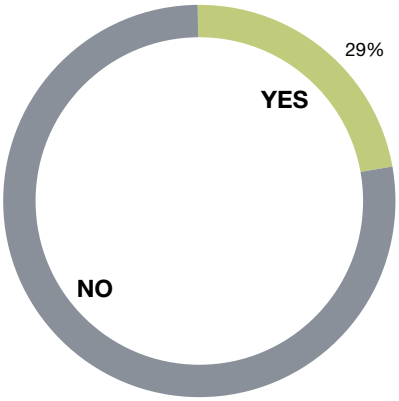
*— Angus McCrone is chief editor for **New Energy Finance**. Based in London, England, New Energy Finance is a specialist provider of information and research to investors in renewable energy, low-carbon technology and the carbon markets.*

Clean Energy Equity Offerings 7/1/2006 — 6/30/2007



Source: New Energy Finance

Respondents Setting GHG Reduction Targets



GHG REDUCTION TARGETS

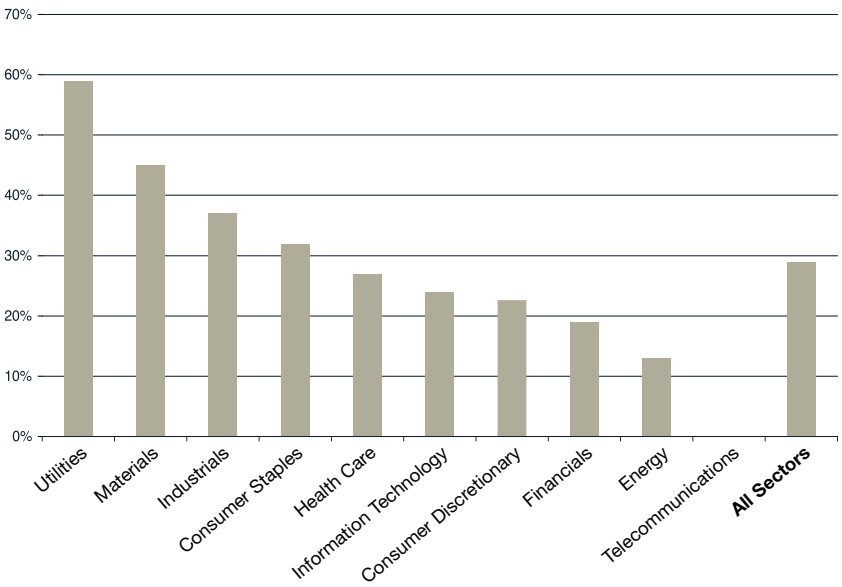
For some companies, energy efficiency and renewable energy programs are means toward the larger end of reducing greenhouse gas emissions. Among S&P500 respondents to the CDP5 survey, relatively few have declared formal GHG reduction goals. Altogether, 29% of respondents have set GHG targets; these include emission intensity targets as well as targets to reduce levels of absolute emissions.

Among survey respondents, Utilities lead in setting GHG reduction goals (59%), followed by Materials (45%) and Industrials (37%) firms. No respondents in the Telecommunications sector have set GHG reduction goals, and only 13% of Energy sector respondents and 19% of Financial Services respondents have set such goals.

A majority of Utilities setting GHG reduction targets have opted for intensity targets. Energy, Materials and Industrials companies are more evenly split between absolute and intensity targets. Among other sectors where respondents have set reduction goals, the vast majority of the Financial Services firms have set absolute targets (89%), followed by Health Care (71%), Consumer Staples and Consumer Discretionary firms (62%).

Most respondents with GHG reduction targets have chosen relatively short-term goals; 88% have set a target within six years, with only 12% setting longer-term goals. All of the Energy companies with such targets look out no further than two years. A majority of the companies in the Financial Services, Industrials, Utilities, Information Technology, Consumer Staples, Health Care and Materials sectors with targets have opted for a three to six year window. Materials, Consumer Discretionary and Consumer Staples firms, as well as Utilities, are the most likely to have goals more than six years out.

Respondents Setting GHG Reduction Targets



Consumer Discretionary

American automobile manufacturers continue to focus on reducing their facility (Scope 1) emissions, while not directly addressing GHG emissions from their products (which are a far greater source of emissions).

Ford has a target to improve global manufacturing energy efficiency by 1% annually, following an improvement of more than 12% in 2000-2004 (normalized for changes in production). It has cut its North American facility GHG emissions by 10% by 2006, relative to a 1998-2001 baseline.

General Motors has set a global goal to reduce energy use at its facilities by 25%, and CO_2 by 21% by 2010, using a 2000 baseline.

Johnson Controls and several other companies in the Consumer Discretionary sector reference their participation in the Business Roundtable's Climate Resolve program. This industry initiative mirrors a goal set by the Bush administration in 2002 to achieve an 18% reduction in the GHG emissions intensity of the U.S. economy by 2012 (specific targets vary by industry). For its part, Johnson Controls says that it is looking beyond its Climate Resolve pledge and is working with the EPA's Climate Leaders program to set a more aggressive GHG reduction target. Johnson Controls also says that it is aiming to achieve carbon neutrality within the next 10 years. To get there, the company says it will rely on internal process and energy efficiency improvements, as well as on emissions credits obtained for delivering energy efficiency improvements to its customers.

Two others companies in the Consumer Discretionary sector have made reference to achieving 'carbon neutrality' in their operations.

Nike says it plans to have its facilities and business travel activities become carbon neutral by 2015.

News Corp. intends to reduce its use of non-renewable energy sources to decrease its total carbon footprint by 10% in 2012, compared with 2006, and says it is on its way to reaching net zero carbon emissions.

Consumer Staples

Colgate-Palmolive has set a goal to reduce its CO_2 emissions by 5% by 2010, using 2002 as a baseline.

As noted earlier, **Wal-Mart** has committed to investing approximately $500 million annually to achieve a 20% reduction in GHG emissions from its existing stores over the next six years, and a 30% reduction from a new prototype store over the next three years.

Energy

While all of the respondents from the energy sector are managing GHG emissions to some degree, none have set targets to cut absolute emissions.

Chevron is managing the growth of its GHG emissions, using 2004 as a baseline. In 2005, it met its goal of having no net increase in GHG emissions from its operations, even though it added production capacity and explored for energy in more complex, remote and energy-intensive environments. Chevron's overall emissions grew in 2005 and 2006, although it met its goals for controlling emissions growth in both years. In 2007, Chevron aims to reduce its GHG emissions below 2006 levels (but still above 2005 levels).

Hess fell short of its goal to achieve a 5% reduction target in normalized emissions between 2001 and 2005; as of 2006, its normalized emissions were 4% below 2001 levels. Consulting firm DNV will complete a review of Hess's operations before it decides on any future targets.

As noted earlier, **ConocoPhillips, ExxonMobil** and **Occidental** have also set GHG emissions intensity targets for some of their operating units.

Financials

With minimal direct emissions, most financial services firms have focused on GHG reductions related to their energy purchases and business travel.

Citigroup has committed to reducing its GHG emissions from facility-related energy use by 10% between 2005 and 2011.

JPMorganChase plans to achieve an absolute reduction of 7% below its 1990 emissions by 2012.

Merrill Lynch has acquired credits to offset its GHG emissions related to electricity consumption, heat usage and business travel for the next three years. It is also striving to reduce its overall GHG emissions footprint by 2% a year.

Wachovia has pledged to reduce its absolute CO_2 emissions by 10% from 2005 levels by 2010.

Health Care

Most pharmaceutical companies are ahead of other companies in the manufacturing sector in terms of setting GHG reduction targets.

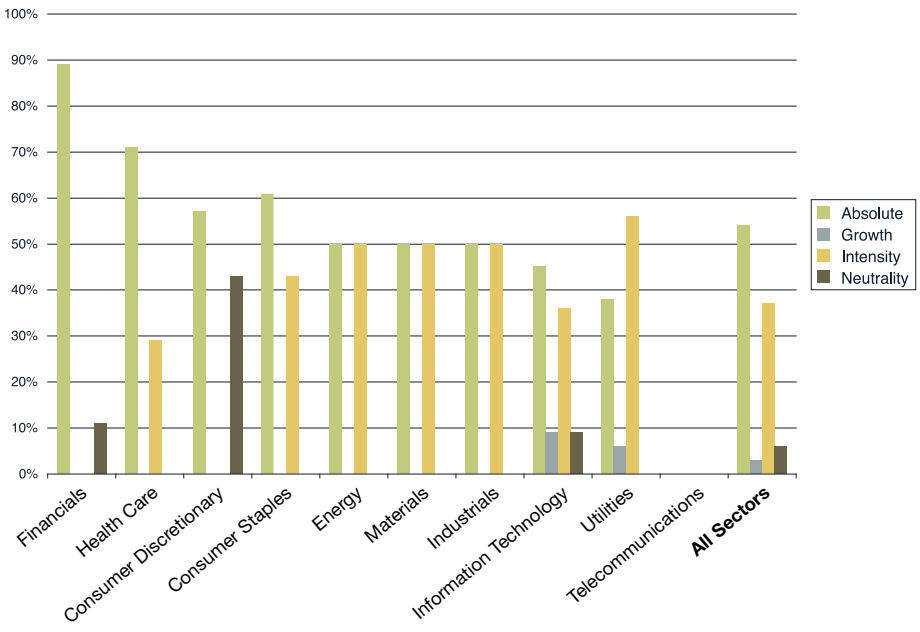
Johnson & Johnson, in partnership with the World Wildlife Fund, announced a goal in 1999 to reduce carbon dioxide emissions by 7% in absolute terms below 1990 levels by 2010. This goal includes all Scope 1 and Scope 2 emissions associated with its owned and controlled facilities worldwide.

Schering-Plough has established an absolute GHG emission reduction goal of 5% below 2002 levels by 2012, with the focus on stationary source emissions.

29% of respondents have set GHG targets; these include emission intensity targets as well as targets to reduce levels of absolute emissions

Most respondents with GHG reduction targets have chosen relatively short-term goals

Greenhouse Gas Target Types (for those setting targets)



To view individual company responses to CDP5, please visit www.cdproject.net

Several other pharmaceutical companies have set targets to reduce their GHG emissions intensity.

Baxter International set a goal to reduce its energy use and associated GHG emissions by 30% per unit of product value between 1996 and 2005, and achieved a 27% reduction over that time frame. In 2006, Baxter set a new goal that commits it to reduce its GHG emissions intensity by 20% between 2005 and 2010, indexed to sales.

Bristol Myers Squibb has established an enterprise-wide goal to reduce GHG emissions by 10% from 2001 to 2010, normalized to sales.

Eli Lilly has set a sales-related intensity goal to reduce its energy intensity and GHG emissions by one-third between 2003 and 2010. To date, it says, it has reduced its energy intensity by 13% and the intensity of its GHG emissions by 11%.

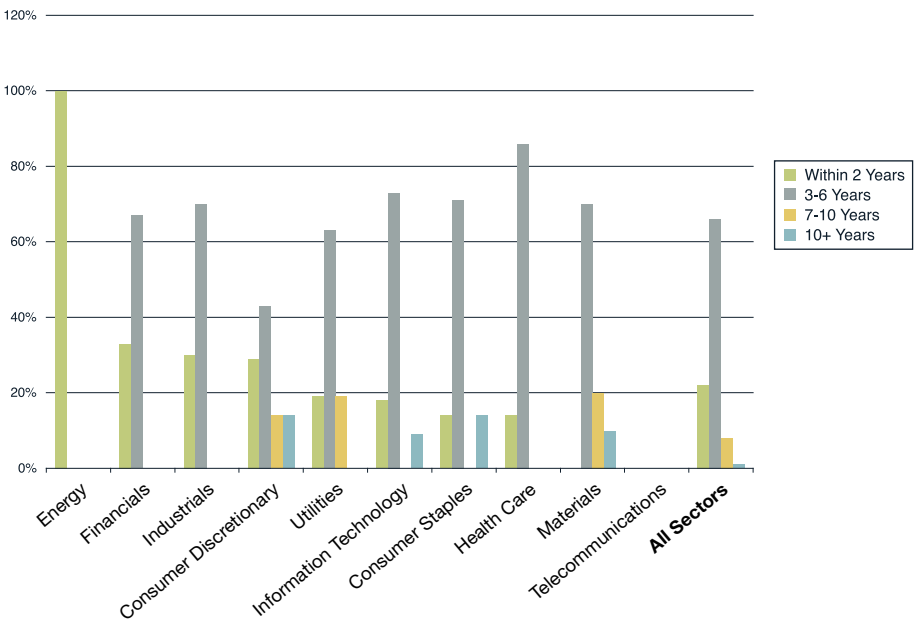
Pfizer aims to reduce the GHG emissions intensity by 35% between 2000 and 2007, relative to sales, as part of its participation in the EPA's Climate Leaders Program.

Merck also is working with the EPA's Climate Leaders Program to develop a GHG emissions reduction target.

Industrials

Several large industrial firms have set goals to reduce their absolute GHG emissions.

Greenhouse Gas Target Horizons (for those setting targets)



United Technologies has pledged a 12% absolute reduction in GHG emissions from 2007 to 2010.

General Electric, on the heels of the announcement of its 'ecomagination' campaign, pledged to reduce its total GHG emissions by 1% from a baseline of 2004 through 2012. It also pledged to cut the intensity of its emissions, relative to sales, by 30% by 2008.

Waste Management, as a founding member of the Chicago Climate Exchange, has committed to reduce its GHG emissions by 6% from 1998-2001 baseline emissions by 2010, including a 1% annual reduction from 2003 to 2006, and a 0.5% reduction from 2007 to 2010.

Information Technology

IBM has set a number of second-generation goals, including reducing CO_2 emissions associated with its energy use by 12% between 2005 and 2012, as part of its membership in the EPA's Climate Leaders Program. IBM has also agreed to reduce emissions of perfluorocarbons to 10% below 1995 levels by 2010, in line with the World Semiconductor Council's program to reduce emissions of this potent greenhouse gas. IBM also plans to cut CO_2 and PFC emissions in North America by 6% by 2010, as measured against annual average direct and indirect emissions over the period 1998 – 2001. This pledge comes under the Chicago Climate Exchange Phase II program.

Motorola has committed to achieve an absolute 6% reduction in its GHG emissions in 2000 – 2010, as part of its membership in the Chicago Climate Exchange. It has also pledged to decrease its normalized carbon footprint — including direct GHG emissions and indirect emissions from electricity use — by 15% between 2005 and 2010.

Intel plans to reduce its GHG emissions by 30% per unit of production between 2004 and 2010. It also is a member of the EPA's Climate Leaders Program and is a signatory to the World Semiconductor Council agreement to reduce emissions of PFCs.

Advanced Micro Devices (AMD) has pledged to reduce its energy intensity and GHG emissions intensity by 30% and 40%, respectively in 2002 – 2007, relative to production. AMD also plans to reduce PFC emissions by 50% between 1995 and 2010.

Dell has committed to reduce its GHG emissions intensity by 15% between 2006 and 2012 as part of its participation in the EPA's Climate Leaders Program.

Materials

Weyerhaeuser has set a long-term target to reduce its GHG emissions by 40% between 2000 and 2020. This is the most aggressive target in the forest products sector.

International Paper has set a goal of committing to reduce its GHG emissions by 15% in 2000 – 2010 as part of its participation in the Climate Leaders Program.

MeadWestvaco has set a target to cut its absolute emissions by 6% below 2002 levels by 2010 at its principal U.S. manufacturing facilities**,** as part of its participation in the Chicago Climate Exchange.

Alcoa has set a particularly ambitious target to reduce its direct GHG emissions to 25% below its 1990 baseline by 2010. It is working on several voluntary programs with regulatory authorities in the United States and Canada to reduce emissions from its smelters.

Dow has committed to a 2.5% per year reduction in the intensity of its GHG emissions per pound of produced product from 2005 to 2015. By 2025, Dow plans to halt the absolute growth of its GHG emissions and reduce them below its 1990 levels.

DuPont has set one of the most aggressive GHG reduction targets of any firm. In 1999, it established a GHG reduction goal of 65% from a 1990 baseline. By the end of 2003, it had reduced its GHG emissions by 72%. Taking divestitures into account, it says its total reductions were 56%. The company has further pledged that by 2015, it will reduce its GHG emissions by at least 15% from a base year of 2004.

Utilities

Several electric utilities, including **Constellation Energy** and **DTE Energy,** highlight their participation in a voluntary industry agreement to reduce sector-wide GHG emission intensity of electricity production by 3 – 5% by 2012, compared to average levels during 2000 to 2002.

Public Service Enterprise Group has gone a step further, committing to reduce its GHG emissions intensity by 18% between 2000 and 2008.

Entergy in 2006 made its second five-year voluntary GHG stabilization commitment in partnership with Environmental Defense and Climate Leaders. It says it will stabilize CO_2 emissions from its power plants and from its controllable purchases of energy at 20% below 2000 levels from 2006 through 2010.

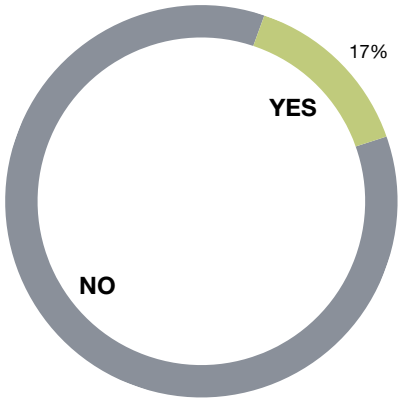
EMISSIONS TRADING

One other means that companies have to manage their GHG emissions is to enter markets where carbon credits can be bought and sold. Among S&P500 respondents to CDP5, this option has been used sparingly thus far. Only 36% of respondents say they have considered engaging in emissions trading, and just 17% have actually participated in any trades.

Utilities (78%), Materials firms (68%) and Energy firms (56%) are the most likely to have considered trading; half of the respondents in the Materials sector have traded already. Conversely, fewer than 20% of the respondents in the Consumer Discretionary, Information Technology and Telecommunications sectors report any consideration of emissions trading.

Most respondents' involvement in emissions trading has come as a result of the European Union's Emissions Trading

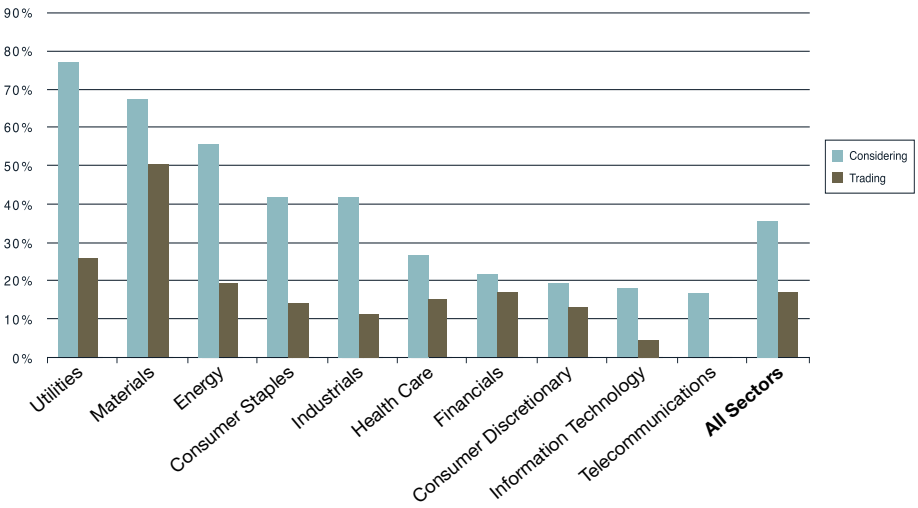
Respondents Trading Emissions



Scheme. This is a mandatory program for U.S. companies with facilities in Europe that are subject to GHG regulations under the Kyoto Protocol. A smaller percentage has participated in the voluntary Chicago Climate Exchange; credits bought and sold on this exchange do not count toward compliance with the Kyoto Protocol.

Only a handful of respondents have sought credits through the Clean Development Mechanism and Joint Implementation programs set up under the Kyoto Protocol.

Respondents Involvement in GHG Emissions Trading



GUEST COMMENTARY

Catching Up to Climate Change: Prospects for the Kyoto Protocol after 2012

by Dr. William R. Moomaw

Now that a consensus has emerged in government, business and among the public that climate change is happening, the debate has shifted to what can be done, and how much will it cost. The Kyoto Protocol expires in 2012, and requires only a miniscule 5% reduction in emissions below 1990 levels by the world's industrial nations. The United States, the world's leading annual and cumulative emitter of heat trapping gases, opted out of the Protocol's requirements and is now struggling to figure out how it can reenter the process, and meet the spirit of its commitments under the U.N. Framework Convention on Climate Change.

A massive transformation of our economy and energy sources will be needed in the next 50 years — but we have done it before

The cost of coastal damage from intense hurricanes is increasing, storm surges are becoming more intense and frequent as sea level rises; coastal infrastructure and trillions of dollars in beachfront property is in jeopardy as beaches erode; droughts and fires stalk the western United States and other countries; torrential downpours inundate communities and the free storage of fresh water in snowfields and glaciers is silently vanishing. We are learning that not paying for mitigation to slow climate change, and failing to adapt, leave us with major damage costs and much human suffering.

Europe and Japan are trying to meet their obligations under the Kyoto Protocol. In the United States, the voluntary and incremental actions taken to date by individuals, corporations, communities and states have provided some useful learning, but are scarcely enough to make the kind of difference that is required to avoid the worst climate impacts. To limit global warming to as little as 4° F in this century requires that all economies participate, but also that Americans and other industrial nations reduce their emissions 80% by the 2050s. This is equivalent to reductions of 3% per year (compounded) over the next half century. This sounds like a massive task to transform our economy and the energy sources that fuel it in such a short time.

But we have done it before just a century ago. In 1905, only 3% of American homes had electric lights, and Henry Ford had just introduced his first assembly line for the Model T car. Despite the fact that electricity cost 10 times more than gaslights did, and an automobile and the fuel to run it cost more than a horse and buggy, Americans made the change. Who could have imagined that 50 years later, electricity would be in most homes, and the automobile would profoundly transform mobility and lifestyles and create the suburbs?

Fast-forward to 2005, and we see that just under 3% of U.S. electricity was produced by non-hydro renewable technology, and highly efficient hybrid cars were still a curiosity. In the past 20 years, Denmark and some German states have shifted more than 20% of their electricity production to wind power. Is it so impossible to achieve such a radical technological and societal shift to low emitting homes, power plants, vehicles and industries by mid-century?

It is estimated that 80% of emissions come from cities, with half of that from our buildings and the electricity to power them. Given the large amount of underperforming buildings already in existence, a massive effort to upgrade their performance and standards for new construction can reduce energy requirements by half to two-thirds. Doubling and tripling the efficiency of electrical appliances is well within economic and technological capabilities. Over the next half-century most existing electrical power plants will have to be replaced, and the need for new ones can be dramatically reduced through improved efficiency in lighting and appliances.

Shifting to zero emitting renewable energy, and distributed combined heat and power systems can lower emissions and greatly reduce the cost of transmission and distribution, which accounts for more than half of our electrical power system investment. If coal is to continue to be used in existing or new power plants, the carbon dioxide emitted will need to be captured and stored for millennia in geological formations, depleted gas and oil fields, or else captured by algae or other photosynthesizing organisms to produce biofuels. Perhaps a new generation of nuclear power may make a contribution to future reductions in

Long-term reduction goals with intermediate benchmarks are needed to assure investors and companies that there is an enduring market for low-carbon energy supplies and energy-efficient equipment

Dr. William R. Moomaw

emissions if the problems of waste storage, weapons proliferation and vulnerability can be solved.

Finally, transportation emissions must be addressed through a combination of more efficient vehicles, and aircraft, through the use of low emission fuels, and by reducing the distance traveled through improved land use and transportation patterns. It is important to set long-term performance and adoption incentives rather than to dictate specific technologies.

So what is needed to induce such a massive transformation? The post-Kyoto agreement needs to set a framework, allocate responsibilities and then each nation must develop an appropriate system for implementation.

- First, there need to be long-term global emission reduction goals for the next 50-100 years with intermediate benchmarks to assure investors and companies that there is an enduring market for low emission energy supply systems and highly efficient appliances, lighting, vehicles and equipment.
- Second, there needs to be a set of policies that reward the most efficient and cleanest options while penalizing or restricting high emitting options.
- Third, all nations must participate in the process of lowering their emissions of heat trapping gases. In doing so, the development needs of developing countries must be recognized and technological innovations and financial instruments will need to be implemented that will allow them to develop without overburdening the atmosphere with heat trapping gases.
- Fourth, any agreement must address adaptation as well as mitigation and also the damages that will occur from the inevitable climate change that is already imbedded in our atmosphere and oceans.
- Fifth, to avoid the worst effects of climate change will require the mobilization of all policy tools available: international trade; the creation of new, climate dedicated international financing systems including possible tariffs on internationally traded fossil fuels and international travel; a Tobin type tax on currency exchanges to dampen speculation and raise revenue; an expanded Clean Development Mechanism with lower transaction costs and a reorientation of the World Bank and other regional Banks to finance only climate compatible projects.

Both developed and developing countries must address climate change as the central challenge to sustainable development rather than treating it merely as another pollution problem

The most critical change that is required is for both developed and developing countries to address climate change as the central challenge to sustainable development rather than treating it merely as another pollution problem. Structuring the rules to promote a more energy efficient economy that utilizes a much higher percentage of locally produced clean energy will also reduce air and water pollution, require less land degradation, increase energy and economic security and remove a source of resource based conflict.

— William R. Moomaw is Professor of International Environmental Policy and Director of the Center for International Environment and Resource Policy at the Fletcher School, ***Tufts University****. He is the lead author of several reports by the* ***Intergovernmental Panel on Climate Change*** *addressing energy and energy efficiency issues.*

8 Results of the CDP5 survey of S&P500 companies show that American industry is making progress in confronting the challenges posed by global warming, but hard work lies ahead.

Conclusion

More than half of S&P500 firms responded to the CDP5 survey. The increase in respondents to 56% represents a jump of almost 10 percentage points compared to the CDP4 survey results.

The highest-emitting sectors are providing the most disclosure. Electric utilities and Materials companies had the highest response rates and generated the best Climate Governance Index scores. Only the Consumer Discretionary sector had a response rate below 50%.

Management and directors are paying more attention to climate issues. Half of the S&P500 respondents have assigned board and/or upper-level management responsibility for overseeing climate-related issues. Two-thirds of respondents are tracking and have reported greenhouse gas emissions data. Four-fifths of respondents recognize commercial risks posed by climate change.

Results of the CDP5 survey are not uniformly positive, however. American industry still lags behind its international competitors in some key respects.

S&P500 firms lag the FT500 in responding to CDP. Three-quarters of the world's largest publicly traded companies (in the FT500) responded to CDP5, compared to 56% of the S&P500. However, the large increase in the S&P500 response rate this year is in line with historical trends for the FT500 survey.

Action to reduce emissions lags well behind climate awareness. Only 29% of S&P500 respondents have implemented GHG control programs with specific targets and timelines. Many of the targets set do not limit absolute emissions. The lack of federal GHG controls is clearly a factor in this low percentage.

Material effects of climate change remain largely undetermined and undisclosed. While most S&P500 respondents can identify regulatory and physical risks associated with climate change, few have attempted to quantify these risks in dollar terms or have discussed them in securities filings. In addition, carbon pricing is rarely factored into their capital investment decisions, even though such decisions typically require a multi-year planning process and have long payback periods.

Looking forward, three trends are clear.

Energy efficiency and renewables will be drivers of GHG emission reductions. The U.S. now rivals Europe in total annual investment in clean energy. More than one-third of S&P500 respondents are involved in renewable energy projects or purchases, and three-quarters are engaged in energy efficiency initiatives.

Much more investment will be required to achieve major cuts in GHG emissions over the next half-century. This will require a massive transformation of the global economy and a sustained commitment to low-carbon energy supplies and energy-efficient equipment.

Companies that are ahead of the curve support mandatory, market-based policies to achieve emission reductions. In embracing greenhouse gas controls, these companies know they will have greater certainty in their investment planning decisions and new business opportunities to exploit, giving them an edge over companies that hang on to business-as-usual strategies.

Four-fifths of respondents recognize commercial risks posed by climate change and two-thirds are tracking and have reported greenhouse gas emissions data. But less than a third have set GHG reduction targets

9 Appendices

Appendix I

Scores and Emissions

Company	Climate Governance Grade (%)	Emissions			Disclosure					
							Scope 3			
		Total Amount[1]	Rank[2]	Intensity[3]	Scope 1	Scope 2	Products	Supply Chain	Logistics & Distribution	Business Travel
3M	75	6,540	40	285	✓	✓				
Abbott Laboratories	29	415	112	18	✓	✓				
ACE Limited	13	-								
Adobe Systems	13	-								
Advanced Micro Devices	29	341	117	60	✓	✓				
AES	32	-								
Aetna	25	90	147	4	✓	✓				
Air Products & Chemicals	46	18,000	22	2,034	✓	✓				
Alcoa	75	60,100	8	1,978	✓	✓				
Allergan	36	92	146	30	✓	✓				
Altria Group	38	513	107	7	✓	✓				✓
American Electric Power	71	145,400	2	11,520	✓					
American Express	17	-								
American International Group	42	273	123	2	✓	✓				✓
American Standard	46	932	84	83	✓	✓				
Anadarko Petroleum	46	5,331	43	523	✓	✓				
Anheuser-Busch	56	3,032	54	193	✓	✓				
Applied Materials	58	124	140	14	✓	✓				
Ashland	43	730	93	101	✓	✓				
Avery Dennison	21	-								
Avon Products	54	116	142	13						
Bank of America	63	1,380	70	12	✓	✓				
Baxter International	42	731	92	70	✓	✓		✓	✓	✓
BB&T	13	-								
Becton Dickinson	29	465	108	80	✓	✓				
Bed Bath & Beyond	17	-								
Bemis	25	681	96	187	✓	✓				
Black & Decker	29	295	120	46	✓	✓				
Boston Scientific	21	177	131	23	✓	✓				
Bristol Myers Squibb	50	998	83	56	✓	✓				✓
CA	25	47	155	12		✓				
Carnival	25	9,005	34	761	✓					
Caterpillar	43	2,343	62	56	✓	✓				
CB Richard Ellis Group	50	-								
Centerpoint Energy	36	-								
Charles Schwab	0	-								
Chevron	61	65,850	5	321	✓	✓	✓			
Cisco Systems	42	339	118	12	✓	✓				✓
Citigroup	75	1,387	69	9	✓	✓	✓			✓
Citizens Communications	17	-								
CMS Energy	39	-								
Coca Cola	44	4,868	46	202	✓	✓				✓
Coca-Cola Enterprises	38	-			✓	✓				
Colgate-Palmolive	46	672	97	55	✓	✓				
Comcast	0	-								
Comerica	13	-								
Comverse Technology	13	-								
ConocoPhillips	54	62,289	6	372	✓	✓				
Consolidated Edison	79	6,240	41	514	✓					

continued

Appendix I Scores and Emissions *continued*

Company	Climate Governance Grade (%)	Emissions			Disclosure					
							Scope 3			
		Total Amount[1]	Rank[2]	Intensity[3]	Scope 1	Scope 2	Products	Supply Chain	Logistics & Distribution	Business Travel
Constellation Energy Group	50	20,800	19	1,079	✓					
Cooper Industries	17	-								
Corning	17	1,002	82	194	✓	✓				
Cummins	36	614	101	54	✓	✓				
Dell	33	384	114	7	✓	✓				
Devon Energy	29	-								
Dow Chemical	50	37,700	14	767	✓	✓				
Dow Jones	4	-								
DTE Energy	46	42,200	12	4,677	✓	✓				
Duke Energy	43	98,400	4	6,481	✓					
E.I. du Pont de Nemours	93	12,100	29	427	✓	✓				
Eastman Chemical	25	-								
Eastman Kodak	67	2,350	60	177	✓	✓				
Eaton	29	835	87	67	✓	✓				
Ebay	17	-								
Ecolab	32	295	119	60	✓	✓				✓
Edison International	36	-			✓	✓				
El Paso	32	-								
Electronic Data Systems	50	46	156	2	✓	✓				✓
Eli Lilly	29	2,296	63	146	✓	✓				
Embarq	17	-								
EMC	33	264	124	24	✓	✓				
Emerson Electric	25	641	99	32	✓					
Entergy	79	29,124	16	2,664	✓	✓				
Exelon	79	13,000	28	830	✓	✓				
Exxon Mobil	57	158,800	1	474	✓	✓				
Fidelity Nat'l Information Services	17	-								
Fifth Third BanCorp	13	778	90	96		✓				
First Horizon National	13	-								
FirstEnergy	46	46,761	11	4,066						
Ford Motor	75	6,800	38	42	✓	✓				
FPL Group	54	4,914	44	313	✓					
Freddie Mac	29	41	159	1	✓					
Freeport-McMoRan Copper & Gold	39	3,032	53	524	✓	✓				
General Dynamics	7	-								
General Electric	57	10,835	31	67	✓	✓				
General Mills	33	1,083	81	93	✓	✓				
General Motors	88	11,021	30	53	✓	✓				
Gilead Sciences	8	-								
H&R Block	13	-								
H.J. Heinz	17	901	85	100		✓				
Halliburton	32	3,150	52	140	✓					
Hartford Financial Services Group	29	123	141	5	✓	✓				✓
Health Management Associates	0	-								
Hess	57	5,357	42	191	✓	✓				
Hewlett-Packard	73	1,599	67	17	✓	✓				✓
Hospira	63	284	121	106	✓	✓				
Humana	13	-								
Ingersoll-Rand	18	-								
Intel	29	3,870	49	109	✓	✓				
International Business Machines	63	2,824	56	31	✓	✓				
International Paper	61	14,766	26	671	✓	✓				
JC Penney	29	1,144	78	57	✓	✓				
Johnson & Johnson	54	810	88	15	✓	✓				
Johnson Controls	64	2,498	58	77	✓	✓	✓			✓
JP Morgan Chase	46	-								
Juniper Networks	38	30	160	13	✓	✓				✓
Kellogg	21	1,100	80	101	✓					
Keyspan	64	9,028	33	1,257	✓					
Kimberly-Clark	36	6,849	37	409	✓	✓				
Kroger	4	-								
Lexmark International	38	204	129	40	✓	✓				✓
Marathon Oil	43	19,590	21	327	✓	✓				
Marsh & McLennan	29	165	133	14						✓

Appendix I Scores and Emissions *continued*

Company	Climate Governance Grade (%)	Emissions			Disclosure					
							Scope 3			
		Total Amount[1]	Rank[2]	Intensity[3]	Scope 1	Scope 2	Products	Supply Chain	Logistics & Distribution	Business Travel
Masco	50	-								
Mattel	21	99	145	18						
MBIA	13	-								
McKesson	13	42	157	0		✓				
MeadWestVaco	61	3,467	51	531	✓	✓				
Medco Health Solutions	21	61	152	1		✓				
Merck	39	1,146	77	51	✓	✓			✓	
Merrill Lynch	75	214	127	3	✓					✓
MGIC Investment	13	-								
Microsoft	42	153	136	3	✓	✓				✓
Millipore	25	61	151	48	✓	✓				
Molex	17	-								
Molson Coors Brewing	33	1,179	76	202	✓	✓				
Monsanto	36	1,901	65	259	✓	✓				✓
Morgan Stanley	75	212	128	3	✓	✓	✓			✓
Motorola	63	383	115	9	✓	✓				
National Semiconductor	38	277	122	143	✓	✓				
NCR	17	-								
Newmont Mining	29	3,875	48	777	✓	✓				
News Corp.	79	582	103	23	✓	✓				✓
Nicor	21	-								
Nike	54	78	148	5		✓				✓
Nisource	50	21,755	18	2,905	✓	✓	✓			
Northern Trust	33	66	150	15	✓	✓				✓
Northrop Grumman	32	-								
NVIDIA	33	18	165	6	✓	✓				✓
Occidental Petroleum	46	16,220	24	918	✓	✓				
Office Depot	42	461	109	31	✓	✓		✓		
Parametric Technology	4	-								
Pepsi Bottling Group	25	-								
PepsiCo	25	-								
PerkinElmer	29	59	153	38	✓	✓				
Pfizer	50	2,408	59	50	✓	✓				✓
PG&E	54	4,144	47	330	✓	✓				
Phelps Dodge[4]	39	1,257	73	106	✓					
Pinnacle West Capital	57	17,808	23	5,235	✓	✓				
PMC-Sierra	21	-								✓
PNC Financial Services Group	13	-								
PPG Industries	39	6,690	39	604	✓	✓				
PPL	39	30,300	15	4,392	✓					
Praxair	50	13,107	27	1,575	✓	✓			✓	
Procter & Gamble	39	2,889	55	42						
Progress Energy	46	53,580	9	5,599	✓					
Progressive	13	-								
ProLogis	46	6	170	-	✓	✓				✓
Public Service Enterprise Group	39	25,176	17	2,070	✓					
QUALCOMM	33	56	154	7	✓	✓				
Questar	46	2,000	64	705						
Qwest Communications	17	-								
Raytheon	39	708	95	35	✓	✓				
Rockwell Automation	33	169	132	30	✓	✓				
Rockwell Collins	21	134	138	35	✓	✓				
Safeco	17	-								
Sanmina-SCI	17	-								
Sara Lee	25	-								
Schering Plough	57	579	104	55	✓	✓				
Sempra Energy	57	-								
Sherwin-Williams	21	616	100	79	✓	✓				
Simon Property Group	29	575	105	167	✓	✓				
Southern	43	145,000	3	10,100	✓					
Staples	60	381	116	21	✓	✓				
Starbucks	19	-								
Starwood Hotels & Resorts	21	129	139	22				✓		
State Street	38	67	149	7	✓	✓				✓

Appendix I Scores and Emissions *continued*

Company	Climate Governance Grade (%)	Emissions			Disclosure					
							Scope 3			
		Total Amount[1]	Rank[2]	Intensity[3]	Scope 1	Scope 2	Products	Supply Chain	Logistics & Distribution	Business Travel
Sun Microsystems	63	255	125	20	✓	✓				
Symantec	29	42	158	8		✓				✓
Synovus Financial	13	-								
Target	33	2,634	57	44	✓	✓				
Tektronix	29	29	161	26	✓	✓				✓
Teradyne	25	19	163	14	✓					
Travelers	21	-								
Tyco International	14	-								
Unisys	33	163	134	28	✓	✓				✓
United Parcel Services	46	7,373	35	155	✓	✓		✓		
United States Steel	39	48,500	10	3,086	✓	✓				
United Technologies	75	2,345	61	49	✓	✓				✓
Verizon Communications	29	7,171	36	81	✓	✓				
Wachovia	42	-								
Wal-Mart Stores	71	20,389	20	59	✓	✓				
Walt Disney	13	-								
Washington Mutual	17	-								
Wells Fargo	29	551	106	11	✓					
Weyerhaeuser	68	10,700	32	489	✓	✓				
Williams Companies	25	-								
William Wrigley Jr.	17	220	126	47		✓				
Wyeth	32	1,107	79	54	✓	✓				
Xcel Energy	64	62,209	7	6,322	✓					
Xerox	54	448	110	28	✓	✓				
XTO Energy	29	3,719	50	812	✓	✓				
Yahoo!	46	-								
Zimmer	13	-								

Emissions are for latest period reported (usually 2006). Where no checkmark appears under Disclosure, the company did not break down emissions according to GHG Protocol Scopes 1, 2 and 3. Twenty-nine companies, listed below, provided emissions data but did not make their CDP5 responses public; their emissions data all included in aggregate rankings but not disclosed individually.

[1]Scopes 1 and 2, or total global emissions where companies reported only a total figure; units in thousand metric tonnes of CO_2e.

[2]Rank in descending order of Scope 1 and 2 total emissions; Scope 3 reporting not included.

[3]Scope 1and 2 emissions totals divided by annual revenue.

[4]Now part of Freeport-McMoRan

CDP5 emissions reported but response not made public

Agilent Technologies
Allegheny Energy
Amgen
AT&T
Ball
Bank of New York
Boeing
Convergys
CR Bard
Danaher
FedEx
Forest Laboratories
Genzyme
Goldman Sachs Group
ITT
Lehman Brothers Holdings
McDonalds
Navistar International
Parker Hannifin
Prudential Financial
Reynolds American
Rohm and Haas
Schlumberger
Sealed Air
SYSCO
Transocean
Waste Management
Weatherford International
Xilinx

Appendix II

CDP5 Questionnaire

Carbon Disclosure Project (CDP5) Greenhouse Gas Emissions Questionnaire

We request a reply to the following questions by the 31st May 2007. Please answer the questions as comprehensively as possible or state the reasons why you are unable to supply the information requested. If at this stage you can only provide indicative information we still welcome this, as a 'best guess' is more valuable to us than no response.

One of the main objectives this year is to improve the quality of the responses and standardize reporting to facilitate better comparison of data across and within sectors. We therefore request that answers to the following questions are provided for your company as defined in your consolidated audited financial statements. If you are unable to respond on this basis, please explain why and detail the reporting boundaries you have used.

We recognize GHG emissions and climate change have varying impacts on sectors and companies. We have therefore divided the questionnaire into two sections to reflect these differences. Companies are encouraged to answer both parts of the questionnaire where relevant.

Section A: For all companies to complete.

Section B: For the following companies to complete:

1. Companies with combustion installations with a rated thermal input exceeding 20 MW.

2. Companies involved in the following sectors:

- automobiles & components
- aerospace & defense
- chemicals
- construction materials
- electric utilities
- energy equipment & services
- oil, gas & consumable fuels
- metals & mining
- paper & forest products
- transportation

3. Companies in any sector that may be significantly influenced by GHG emissions or climate change.

New procedures for CDP in 2007.
Please use our website for direct data entry via www.cdproject.net/cdp5. If necessary, send your response electronically in English to the Project Coordinator at info@cdproject.net.

Your response will be made publicly available at www.cdproject.net in September 2007, unless you notify us to the contrary. If you inform us that you do not want your information disclosed, we will only use it in production of aggregate statistics.

For additional guidance and information please see the Further Information attached to this questionnaire, or refer to the Reporting Guidance section at www.cdproject.net.

Section A: For all companies to complete

1 Climate Change Risks, Opportunities and Strategy

For each question please state the time period and where possible the associated financial implications.

a **Risks:** What commercial risks does climate change present to your company including, but not limited to, those listed below?

i Regulatory risks associated with current and/or expected government policy on climate change e.g. emissions limits or energy efficiency standards.

ii Physical risks to your business operations from scenarios identified by the Intergovernmental Panel on Climate Change or other expert bodies, such as sea level rise, extreme weather events and resource shortages.

iii Other risks including shifts in consumer attitude and demand.

b **Opportunities:** What commercial opportunities does climate change present to your company for both existing and new products and services?

c **Strategy:** Please detail the objectives and targets of the strategies you have undertaken or are planning to take to manage these risks and opportunities. Please include adaptation to physical risks.

d **Reduction targets:** What are your emissions reduction targets and time frames to achieve them? What renewable energy and energy efficiency activities are you undertaking to manage your emissions? (This question not required if answering Section B.)

2 Greenhouse Gas Emissions Accounting[1]

a **Methodology:** Please provide the following information on your company's emissions measurements:

i The accounting year used to report GHG emissions.[2]

ii The methodology by which emissions are calculated.

iii Whether the information provided has been externally verified or audited.

iv An explanation for any significant variations in emissions from year to year, e.g. due to major acquisitions, divestments, introduction of new technologies, etc.

b **Scope 1 and 2 of GHG Protocol:** Direct and Indirect GHG emissions and electricity consumption.[3]
Please complete the table below for tonnes CO_2e emitted and electricity consumption:

	Globally	Annex B Countries
Scope 1 activity tonnes CO_2e emitted		
Scope 2 activity tonnes CO_2e emitted		
MWh of purchased electricity		
Percentage of purchased MWh from renewables		

c **Scope 3 of GHG Protocol:** Other Indirect GHG emissions. Where feasible please provide estimates for the following categories of emissions:

i Use/disposal of company's products and services.

ii Your supply chain.

iii External distribution/logistics.

iv Employee business travel.

[1] The six main Greenhouse Gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).
[2] If you are responding to CDP for the first time, please provide details where available, of emissions for the last three measurement cycles.
[3] For the purposes of responding to this section, please follow the World Resources Institute (WRI), World Business Council for Sustainable Development's (WBCSD's) Greenhouse Gas Protocol (corporate standard revised version), details of which can be found at www.ghgprotocol.org

Section B: To be completed by companies defined in the introduction to this questionnaire

3 Additional Greenhouse Gas Emissions Accounting

Using the methodology as set out in 2(a), please state your Scope 1 and 2 emissions as follows:

a **Countries:** For each country in which you have operations, where available.

b **Facilities:** For facilities covered by the EU Emissions Trading Scheme (EU ETS). Please also include the number of allowances you were issued under the applicable National Allocation Plans.

c **EU ETS impact:** What has been the impact on your profitability of the EU Emissions Trading Scheme?

4 Greenhouse Gas Emissions Management

a **Reduction programmes:** What emission reduction programs does your company have in place? Please include any reduction programs related to your operations, energy consumption, supply chain and product use/disposal.

i What is the baseline year for the emissions reduction program?
ii What are the emissions reduction targets and over what period do those targets extend?
iii What investment has been/will be required to achieve the targets and over what time period?
iv What emissions reductions and associated costs or savings have been achieved to date as a result of the program?
v What renewable energy and energy efficiency activities are you undertaking to manage your emissions?

b **Emissions trading:** What is your company's strategy for trading in the EU Emissions Trading Scheme, CDM/JI projects and other trading systems (e.g. CCX, RGGI, etc), where relevant?

c **Emissions intensity:** Please state which measurement you believe best describes your company's emissions intensity performance? What are your historical and current emissions intensity measurements? What are your targets?

d **Energy costs:** What are the total costs of your energy consumption e.g. from fossil fuels and electric power? What percentage of your total operating costs does this represent?

e **Planning:** Do you estimate your company's future emissions? If so please provide details of these estimates and summarize the methodology for this. How do you factor the cost of future emissions into capital expenditure planning? Have these considerations made an impact on your investment decisions?

5 Climate Change Governance

a **Responsibility:**

i Which Board Committee or other executive body has overall responsibility for climate change?
ii What is the mechanism by which the Board or other executive body reviews the company's progress and status regarding climate change?

b **Individual performance:** Do you provide incentive mechanisms for managers with reference to activities relating to climate change strategy, including attainment of GHG targets? If so, please provide details.

Appendix III

S&P500 Company Responses to CDP4 & 5

Company	CDP4	CDP5
3M	AQ	AQ*
Abbott Laboratories	AQ	AQ*
ACE	NR	AQ*
ADC Telecommunications	NR	AQ* (NP)
Adobe Systems	AQ	AQ*
Advanced Micro Devices	NR	AQ*
AES	AQ	AQ*
Aetna	AQ	AQ*
Aflac	DP	NR
Agilent Technologies	IN	AQ* (NP)
Air Products & Chemicals	AQ	AQ*
Alcoa	AQ	AQ*
Allegheny Energy	DP	AQ* (NP)
Allegheny Technologies	IN	AQ* (NP)
Allergan	AQ	AQ*
Allied Waste Industries	NR	IN
Allstate	NR	DP
Alltel	AQ	AQ* (NP)
Altera	DP	AQ
Altria Group	DP	AQ*
Amazon.com	NR	NR
Ambac Financial Group	NR	NR
Ameren	IN	DP
American Electric Power	AQ	AQ*
American Express	AQ	AQ*
American International Group	AQ	AQ*
American Standard	AQ	AQ*
Ameriprise Financial	NR	DP
Amerisourcebergen	NR	NR
Amgen	AQ	AQ* (NP)
Anadarko Petroleum	AQ	AQ*
Analog Devices	AQ	NR
Anheuser-Busch	IN	AQ*
Aon	AQ	AQ
Apache	AQ	AQ
Apartment Investment & Management	NR	DP
Apollo Group	NR	NR
Apple Computers	AQ	NR
Applera	AQ	DP
Applied Materials	AQ	AQ*
Archer Daniels Midland	DP	DP
Archstone-Smith Trust	DP	DP
Ashland	AQ	AQ*
AT&T	AQ	AQ* (NP)
Autodesk	NR	NR
Automatic Data Processing	IN	IN
AutoNation	NR	DP

Company	CDP4	CDP5
AutoZone	NR	NR
Avaya Communications	AQ	AQ* (NP)
Avery Dennison	AQ	AQ*
Avon Products	AQ	AQ*
Baker Hughes	AQ	AQ* (NP)
Ball	NR	AQ* (NP)
Bank of America	AQ	AQ*
Bank of New York	AQ	AQ* (NP)
Barr Pharmaceuticals	NI	NR
Bausch & Lomb	AQ	DP
Baxter International	AQ	AQ*
BB&T	AQ	AQ*
Bear Stearns	NR	NR
Becton Dickinson	AQ	AQ*
Bed Bath & Beyond	IN	AQ*
Bemis	NR	AQ*
Best Buy	AQ	AQ* (NP)
Big Lots	NR	DP
Biogen Idec	NR	NR
Biomet	NR	DP
BJ Services	NR	NR
Black & Decker	DP	AQ*
BMC Software	AQ	AQ* (NP)
Boeing	AQ	AQ* (NP)
Boston Properties	NI	NR
Boston Scientific	IN	AQ*
Bristol Myers Squibb	AQ	AQ*
Broadcom	NR	DP
Brown-Forman	NR	NR
Brunswick	NR	DP
Burlington Northern Santa Fe	AQ	AQ
CA	AQ	AQ*
Campbell Soup	NR	DP
Capital One Financial	DP	IN
Cardinal Health	AQ	DP
Carnival	AQ	AQ*
Caterpillar	AQ	AQ*
CB Richard Ellis Group	NI	AQ*
CBS	NI	DP
Celgene	NI	NR
Centerpoint Energy	AQ	AQ*
Centex	IN	NR
CenturyTel	NR	DP
Charles Schwab	IN	AQ*
Chesapeake Energy	NI	NR
Chevron	AQ	AQ*
Chicago Mercantile Exchange Hldgs	NI	AQ* (NP)
Chubb	DP	DP
CIENA	AQ	AQ* (NP)
CIGNA	IN	AQ
Cincinnati Financial	IN	AQ* (NP)
Cintas	NR	DP
Circuit City Stores	NR	NR
Cisco Systems	AQ	AQ*
CIT Group	NR	NR
Citigroup	AQ	AQ*
Citizens Communications	NR	AQ*
Citrix Systems	AQ	NR
Clear Channel Communications	AQ	NR
Clorox	NR	DP
CMS Energy	DP	AQ*
Coach	NR	DP
Coca Cola	AQ	AQ*

Company	CDP4	CDP5
Coca-Cola Enterprises	AQ	AQ*
Cognizant Technology Solutions	NI	NR
Colgate-Palmolive	AQ	AQ*
Comcast	AQ	AQ*
Comerica	NR	AQ*
Commerce Bancorp	NI	NR
Compass Bancshares	NR	NR
Computer Sciences	NR	NR
Compuware	NR	NR
Comverse Technology	NR	AQ*
ConAgra Foods	NR	NR
ConocoPhillips	AQ	AQ*
CONSOL Energy	NI	NR
Consolidated Edison	AQ	AQ*
Constellation Brands	NR	DP
Constellation Energy Group	AQ	AQ*
Convergys	AQ	AQ* (NP)
Cooper Industries	AQ	AQ*
Corning	AQ	AQ*
Costco Wholesale	NR	DP
Countrywide Financial	DP	DP
Coventry Health Care	NR	NR
CR Bard	AQ	AQ* (NP)
CSX	NR	NR
Cummins	AQ	AQ*
CVS Caremark	NR	AQ* (NP)
Danaher	AQ	AQ* (NP)
Darden Restaurants	IN	NR
Dean Foods	NI	NR
Deere	IN	IN
Dell	AQ	AQ*
Devon Energy	AQ	AQ*
Dillard's	NR	NR
DIRECTV Group	DP	DP
Dollar General	NR	DP
Dominion Resources	IN	IN
Dover	NR	DP
Dow Chemical	AQ	AQ*
Dow Jones	NR	AQ*
DR Horton	NR	IN
DTE Energy	AQ	AQ*
Duke Energy	AQ	AQ*
Dynegy	IN	IN
E*TRADE Financial	NR	NR
E. W. Scripps	NI	IN
E.I. du Pont de Nemours	AQ	AQ*
Eastman Chemical	AQ	AQ*
Eastman Kodak	AQ	AQ*
Eaton	AQ	AQ*
Ebay	AQ	AQ*
Ecolab	AQ	AQ*
Edison International	IN	AQ*
El Paso	DP	AQ*
Electronic Arts	DP	DP
Electronic Data Systems	NR	AQ*
Eli Lilly	AQ	AQ*
Embarq	NI	AQ*
EMC	IN	AQ*
Emerson Electric	AQ	AQ*
Entergy	AQ	AQ*
EOG Resources	DP	AQ
Equifax	NR	DP
Equity Residential	NR	NR

Key:

AQ	Answered Questionnaire
IN	Provided Information (but did not answer questions)
DP	Declined to Participate
NR	No Response
NI	Not in Sample
NP	Response Not Public

Company	CDP4	CDP5
Estee Lauder	NI	NR
Exelon	AQ	AQ*
Express Scripts	NR	NR
Exxon Mobil	AQ	AQ*
Family Dollar Stores	NR	NR
Fannie Mae	DP	DP
Federated Department Stores	IN	NR
Federated Investors	AQ	AQ
FedEx	AQ	AQ* (NP)
Fidelity National Information Svcs	NI	AQ*
Fifth Third BanCorp	NR	AQ*
First Data	NR	DP
First Horizon National	AQ	AQ*
FirstEnergy	AQ	AQ*
Fiserv	AQ	AQ* (NP)
Fluor	NR	AQ
Ford Motor	AQ	AQ*
Forest Laboratories	AQ	AQ* (NP)
Fortune Brands	IN	DP
FPL Group	AQ	AQ*
Franklin Resources	NR	DP
Freddie Mac	IN	AQ*
Freeport-McMoRan Copper & Gold	NR	AQ*
Gannett	DP	DP
Gap	AQ	AQ
General Dynamics	IN	AQ*
General Electric	AQ	AQ*
General Mills	AQ	AQ*
General Motors	AQ	AQ*
Genuine Parts	NR	DP
Genworth Financial	NI	AQ* (NP)
Genzyme	AQ	AQ* (NP)
Gilead Sciences	AQ	AQ*
Goldman Sachs	AQ	AQ* (NP)
Goodrich	NR	NR
Goodyear Tire & Rubber	AQ	AQ* (NP)
Google	NR	AQ* (NP)
H&R Block	AQ	AQ*
H.J. Heinz	AQ	AQ*
Halliburton	AQ	AQ*
Harley-Davidson	NR	DP
Harman International Industries	NI	DP
Harrah's Entertainment	NR	NR
Hartford Financial Services Group	IN	AQ*
Hasbro	NR	NR
Health Management Associates	NR	AQ*
Hercules	NR	IN
Hershey	NR	NR
Hess	AQ	AQ*
Hewlett-Packard	AQ	AQ*
Hilton Hotels	NR	NR
Home Depot	AQ	AQ* (NP)
Honeywell International	IN	IN
Hospira	AQ	AQ*
Humana	AQ	AQ*
Huntington Bancshares	AQ	AQ* (NP)
IAC/InterActiveCorp	NI	DP
Illinois Tool Works	AQ	AQ* (NP)
IMS Health	NR	NR
Ingersoll-Rand	IN	AQ*
Intel	AQ	AQ*
International Business Machines	AQ	AQ*
International Flavors & Fragrances	NR	NR
International Game Technology	NR	NR
International Paper	AQ	AQ*
Interpublic Group	NR	IN
Intuit	NR	NR
ITT	AQ	AQ* (NP)
Jabil Circuit	NR	AQ* (NP)
Janus Capital Group	DP	AQ* (NP)
JC Penney	AQ	AQ*
JDS Uniphase	DP	DP
Johnson & Johnson	AQ	AQ*
Johnson Controls	AQ	AQ*
Jones Apparel Group	NR	NR
JP Morgan Chase	AQ	AQ*
Juniper Networks	AQ	AQ*
KB Home	IN	IN
Kellogg	AQ	AQ*

Company	CDP4	CDP5
KeyCorp	NR	NR
Keyspan	AQ	AQ*
Kimberly-Clark	AQ	AQ*
Kimco Realty	NI	NR
King Pharmaceuticals	NR	NR
KLA-Tencor	NR	NR
Kohls	NR	NR
Kroger	IN	AQ*
L-3 Communications Holdings	NR	NR
Laboratory Corp. of America Holdings	NR	NR
Legg Mason	NI	DP
Leggett & Platt	IN	DP
Lehman Brothers Holdings	DP	AQ* (NP)
Lennar	NR	NR
Lexmark International	AQ	AQ*
Limited Brands	NR	NR
Lincoln National	DP	DP
Linear Technology	NR	NR
Liz Claiborne	AQ	AQ* (NP)
Lockheed Martin	IN	IN
Loews	NR	NR
Lowe's	IN	DP
LSI Logic	NR	AQ
M&T Bank	NR	AQ* (NP)
Manor Care	NR	NR
Marathon Oil	AQ	AQ*
Marriott International	AQ	NR
Marsh & McLennan	AQ	AQ*
Marshall & Ilsley	AQ	AQ* (NP)
Masco	AQ	AQ*
Mattel	NR	AQ*
Maxim Integrated Products	AQ	NR
MBIA	AQ	AQ*
McCormick	NR	AQ* (NP)
McDonalds	AQ	AQ* (NP)
McGraw-Hill	IN	IN
McKesson	IN	AQ*
MeadWestVaco	AQ	AQ*
Medco Health Solutions	IN	AQ*
Medtronic	AQ	AQ* (NP)
Mellon Financial	AQ	DP
Merck	AQ	AQ*
Meredith	DP	DP
Merrill Lynch	AQ	AQ*
Metlife	DP	NR
MGIC Investment	AQ	AQ*
Micron Technology	NR	NR
Microsoft	AQ	AQ*
Millipore	AQ	AQ*
Molex	IN	AQ*
Molson Coors Brewing	AQ	AQ*
Monsanto	IN	AQ*
Monster Worldwide	NR	NR
Moody s	IN	AQ* (NP)
Morgan Stanley	AQ	AQ*
Motorola	AQ	AQ*
Murphy Oil	NR	NR
Mylan Laboratories	NR	NR
Nabors Industries	NR	NR
National City	AQ	AQ* (NP)
National Oilwell Varco	NR	NR
National Semiconductor	NR	AQ*
Navistar International	AQ	AQ* (NP)
NCR	AQ	AQ*
Network Appliance	NR	NR
New York Times	AQ	NR
Newell Rubbermaid	NR	AQ* (NP)
Newmont Mining	AQ	AQ*
News	IN	AQ*
Nicor	AQ	AQ*
Nike	AQ	AQ*
Nisource	AQ	AQ*
Noble	AQ	DP
Nordstrom	NR	NR
Norfolk Southern	IN	DP
Northern Trust	AQ	AQ*
Northrop Grumman	AQ	AQ*
Novell	NR	NR
Novellus Systems	AQ	NR

Company	CDP4	CDP5
Nucor	NR	DP
NVIDIA	NR	AQ*
Occidental Petroleum	AQ	AQ*
Office Depot	AQ	AQ*
OfficeMax	NR	NR
Omnicom Group	AQ	AQ* (NP)
Oracle	AQ	AQ
PACCAR	NR	NR
Pactiv	NR	DP
Pall	NR	DP
Parametric Technology	NR	AQ*
Parker Hannifin	AQ	AQ* (NP)
Patterson	NR	NR
Paychex	DP	NR
Peabody Energy	NI	IN
Pepsi Bottling Group	NR	AQ*
PepsiCo	AQ	AQ*
PerkinElmer	AQ	AQ*
Pfizer	AQ	AQ*
PG&E	AQ	AQ*
Phelps Dodge[1]	AQ	AQ*
Pinnacle West Capital	AQ	AQ*
Pitney Bowes	NR	DP
Plum Creek Timber	NR	NR
PMC-Sierra	NR	AQ*
PNC Financial Services Group	AQ	AQ*
PPG Industries	AQ	AQ*
PPL	AQ	AQ*
Praxair	AQ	AQ*
Principal Financial Group	NR	NR
Procter & Gamble	AQ	AQ*
Progress Energy	AQ	AQ*
Progressive	DP	AQ*
ProLogis	AQ	AQ*
Prudential Financial	DP	AQ* (NP)
Public Service Enterprise Group	AQ	AQ*
Public Storage	NR	NR
Pulte Homes	NR	NR
QLogic	NR	DP
QUALCOMM	AQ	AQ*
Quest Diagnostics	NR	NR
Questar	NI	AQ*
Qwest Communications International	AQ	AQ*
R.R. Donnelley & Sons	NR	NR
RadioShack	NR	DP
Raytheon	AQ	AQ*
Regions Financial	DP	NR
Reynolds American	NR	AQ* (NP)
Robert Half International	IN	IN
Rockwell Automation	NR	AQ*
Rockwell Collins	AQ	AQ*
Rohm and Haas	AQ	AQ* (NP)
Rowan	NR	NR
Ryder System	IN	DP
Safeco	AQ	AQ*
Safeway	NR	NR
SanDisk	NI	DP
Sanmina-SCI	AQ	AQ*
Sara Lee	AQ	AQ*
Schering Plough	AQ	AQ*
Schlumberger	AQ	AQ* (NP)
Sealed Air	IN	AQ* (NP)
Sears Holdings	DP	DP
Sempra Energy	AQ	AQ*
Sherwin-Williams	AQ	AQ*
Sigma-Aldrich	AQ	NR
Simon Property Group	AQ	AQ*
SLM	DP	DP
Smith International	NI	NR
Snap-on	NR	NR
Solectron	NR	NR
Southern	AQ	AQ*
Southwest Airlines	IN	DP
Sovereign Bancorp	AQ	NR
Sprint Nextel	IN	NR
St. Jude Medical	DP	DP
Stanley Works	NR	NR
Staples	AQ	AQ*
Starbucks	AQ	AQ*

Company	CDP4	CDP5
Starwood Hotels & Resorts Wldwide	NR	AQ*
State Street	AQ	AQ*
Stryker	AQ	NR
Sun Microsystems	NR	AQ*
Sunoco	NR	NR
SunTrust Banks	IN	DP
SUPERVALU	NR	NR
Symantec	NR	AQ*
Synovus Financial	AQ	AQ*
SYSCO	IN	AQ* (NP)
T. Rowe Price Group	AQ	AQ* (NP)
Target	AQ	AQ*
Teco Energy	AQ	IN
Tektronix	AQ	AQ*
Tellabs	NR	NR
Temple-Inland	NR	DP
Tenet Healthcare	IN	IN
Teradyne	NR	AQ*
Texas Instruments	AQ	AQ* (NP)
Textron	NR	NR
Thermo Fisher Scientific	NI	NR
Tiffany	AQ	AQ* (NP)
Time Warner	IN	IN
TJX	NR	IN
Torchmark	NR	NR
Transocean	AQ	AQ* (NP)
Travelers	AQ	AQ*
Tribune	NR	IN
TXU	AQ	NR
Tyco International	IN	AQ*
Tyson Foods	DP	DP
U.S. BanCorp	AQ	NR
Union Pacific	IN	NR
Unisys	AQ	AQ*
United Parcel Services	AQ	AQ*
United States Steel	AQ	AQ*
United Technologies	AQ	AQ*
UnitedHealth Group	AQ	AQ* (NP)
UnumProvident	AQ	NR
UST	NR	NR
Valero Energy	AQ	NR
Verisign	NI	NR
Verizon Communications	AQ	AQ*
VF	NR	NR
Viacom	AQ	AQ* (NP)
Vornado Realty Trust	NR	NR
Vulcan Materials	NR	NR
W.W. Grainger	AQ	IN
Wachovia	AQ	AQ*
Walgreens	IN	IN
Wal-Mart Stores	AQ	AQ*
Walt Disney	AQ	AQ*
Washington Mutual	AQ	AQ*
Waste Management	AQ	AQ* (NP)
Waters	NR	DP
Watson Pharmaceuticals	NR	NR
Weatherford International	NR	AQ* (NP)
WellPoint	DP	DP
Wells Fargo	AQ	AQ*
Wendy's International	NR	NR
Western Union	NI	DP
Weyerhaeuser	AQ	AQ*
Whirlpool	NR	NR
Whole Foods Market	NI	IN
William Wrigley Jr.	AQ	AQ*
Williams Companies	AQ	AQ*
Windstream	NI	DP
Wyeth	AQ	AQ*
Wyndham Worldwide	NI	AQ* (NP)
Xcel Energy	AQ	AQ*
Xerox	AQ	AQ*
Xilinx	AQ	AQ* (NP)
XL Capital	NR	NR
XTO Energy	NR	AQ*
Yahoo!	NR	AQ*
Yum! Brands	NR	NR
Zimmer	AQ	AQ*
Zions Bancorporation	AQ	AQ* (NP)

[1]Now owned by Freeport McMoRan Copper & Gold

*Included in report analysis. A few companies also submitted amended responses after the analysis cut-off date; these and other late responses, if public, appear on the CDP website.

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