Questions and Answers for Investors on Climate Risk

Prepared for the Investor Network on Climate Risk Research Consortium by Ceres and the World Resources Institute

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In 2004, Ceres and WRI established the **Investor Network on Climate Risk Research Consortium**. This collaborative research and engagement effort will identify and assess potential impacts of climate change on investment portfolios. The goal of the Consortium is to help leading institutional investors understand the financial implications of climate change and use that understanding to embed climate change risks and opportunities into standard portfolio management practices. The Consortium's Co-Directors are Chris Fox of Ceres and Fred Wellington of WRI. This report was made possible through the support of the Better World Fund.

Ceres is a coalition of investment funds, environmental organizations, and public interest groups. Ceres' mission is to move businesses, capital, and markets to advance lasting prosperity by valuing the health of the planet and its people. Ceres serves as the Secretariat for the Investor Network on Climate Risk (INCR). INCR was launched by U.S. institutional investors managing over $700 billion in assets at the Institutional Investor Summit on Climate Risk at United Nations Headquarters in 2003. The purpose of INCR is to promote better understanding of the risks of climate change among institutional investors.

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For more information, visit **http://www.ceres.org** and **http://www.incr.com**.

The **World Resources Institute** is an independent nonprofit organization with a staff of more than 100 scientists, economists, policy experts, business analysts, statistical analysts, mapmakers, and communicators working to protect the Earth and improve people's lives.

Capital Markets Research is a project within the Sustainable Enterprise Program at WRI that provides detailed research and analysis to financial institutions, investors and issuers that seeks to embed environmental risks and opportunities into financial analysis and investment decisions.

Reports are available at **http://capitalmarkets.wri.org**.

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Please note: The electronic version of this document contains **active links in blue font**.

1 What studies show that climate change is a reality and caused by human activity?

There is a broad scientific consensus that emissions of greenhouse gases (GHGs)[1] into the earth's atmosphere, most notably carbon dioxide, are causing a warming of the Earth's surface.[2] The Intergovernmental Panel on Climate Change, in consultation with thousands of scientists, has found that humans are responsible for the dramatic rise in greenhouse gas emissions over the last 50 years. This rise in emissions is likely to cause major disruptions in the Earth's climate, as well as to social and economic systems. Scientists report that not only could average temperatures on Earth and precipitation increase, but that individual regions could experience varying degrees of climatic changes and disparate impacts. Among the most severe consequences of global warming are:

- Rising sea levels that threaten coastal areas;
- More heat waves and droughts, resulting in more conflicts for water resources;
- More extreme weather events, producing floods and property destruction;
- Threats to ecosystems, forests, and agriculture; and
- Greater potential for heat-related illnesses and deaths as well as the wider spread of infectious diseases carried by insects and rodents, including into areas previously without them.

To find out more on climate change, **Dr. John Holdren's presentation at the Institutional Investor Summit on Climate Risk** is a good compilation of recent scientific evidence and trends (available online at http://www.incr.com/summit_record.htm). Much of the scientific evidence in this presentation comes from the Intergovernmental Panel on Climate Change **Third Assessment Report**, which can be found at http://www.ipcc.ch/.

Several studies also indicate that climate change could cause considerable economic damage in the United States. Water resources and coastal communities, sectors with long-lived infrastructure and investments, will have the most difficulty adjusting, according to ***A Synthesis of Potential Climate Change Impacts on the U.S.*** and ***U.S. Market Consequences of Global Climate Change***, both from the Pew Center on Global Climate Change. (http://www.pewclimate.org/global-warming-in-depth/all_reports/synthesisimpacts/index.cfm and http://www.pewclimate.org/global-warming-in-depth/all_reports/marketconsequences/index.cfm)

Other studies that assess climate change impacts in the United States include:

Confronting Climate Change in California
Union of Concerned Scientists
http://www.ucsusa.org/global_environment/global_warming/page.cfm?pageID=500

Confronting Climate Change in the Great Lakes Region
Union of Concerned Scientists
http://www.ucsusa.org/global_environment/global_warming/page.cfm?pageID=1156

Confronting Climate Change in the Gulf Coast Region
Union of Concerned Scientists
http://www.ucsusa.org/global_environment/global_warming/page.cfm?pageID=920

2 How does climate change create risk for the companies in which we invest?

Companies will be exposed to different types of risk depending on their sector and geographic location. Broadly speaking, climate risk can be divided into the following five categories:

- **Regulatory risk:** Efforts by governments at the international, national and state levels to regulate GHG emissions will have direct implications for the industry sectors and businesses with the highest emissions. Russia's recent ratification of the Kyoto Protocol[3] (which makes Kyoto a legally binding document), as well as the advent of the Emission Trading Scheme (ETS) in the European Union in January 2005 makes this the most potent risk faced by investors. The specific policy designs under Kyoto and the ETS will determine which sectors will be affected and the severity of financial impacts, but the following sectors are most likely to face significant regulatory risk due to their high GHG emissions: electric power, manufacturing, oil and gas, and transportation (especially automobiles).
- **Physical risk:** Some sectors and businesses will face direct consequences from the physical impacts of climate change, including droughts, floods, storms and sea level rise. Sectors such as agriculture, fisheries, forestry, health care, insurance, real estate, tourism and water may be particularly exposed because of their dependence on the physical environment, human health, water and weather—all of which are now less predictable.

1. The six greenhouse gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).
2. See, e.g., Intergovernmental Panel on Climate Change, Third Assessment Report (Sept. 2001).
3. In 1992 the United Nations Framework Convention on Climate Change began to negotiate a global treaty to reduce greenhouse gas emissions contributing to climate change. This process resulted in the Kyoto Protocol, which was adopted at the Convention's third meeting in 1997 in Kyoto, Japan. The Kyoto Protocol requires member countries comprising 55 percent of industrialized countries' CO_2 emissions to ratify the treaty before it enters into force. As of November 18, 2004, 128 nations comprising 61.6 percent of global CO_2 emissions have ratified the treaty. The Protocol goes into effect on February 16, 2005.

- **Litigation risk:** Companies could face risk from lawsuits. For instance, in an initiative led by New York Attorney General Eliot Spitzer, eight states and New York City have filed an unprecedented lawsuit against five of America's largest power companies, demanding that they cut carbon dioxide emissions because of global warming. The companies named in the suit are American Electric Power Co., Southern Co., Xcel Energy, Cinergy and the federal Tennessee Valley Authority. Similar to the lawsuits faced by the tobacco and asbestos industries, there is a possibility that companies and sectors responsible for large amounts of GHG emissions could be liable for damages associated with the physical effects of climate change (e.g., flooding, severe weather damage, crop failures, etc.).
- **Competitiveness risk:** Companies that take positive and proactive measures to mitigate climate risk may create a competitive advantage for themselves relative to the rest of their sector. These advantages may take the form of lower costs and higher profit margins and/or enhanced reputation and customer loyalty. This aspect of climate risk has two essential components:
  - Strategic response to anticipated shifts in demand; and
  - Corporate strategy to respond to regulatory action.
- **Reputational risk:** Companies that are viewed negatively with respect to climate change (either for their politics or their pollution) may face backlash from consumers in markets where the public is concerned about climate change. This is especially true in highly competitive sectors such as automobiles and oil and gas.

Studies also show that for certain sectors, climate risk may be substantial and "material" with positive or negative impacts on a company's shareholder value.[4] (See Question 10 for more information on these studies).

Please see Ceres' ***Climate Risks Facing Investors*** (http://www.incr.com/summit_record.htm) or ***Value at Risk*** (http://www.ceres.org/reports/main.htm) for more information on climate risk.

Also see the Ceres ***Investor Guide to Climate Risk*** which outlines specific strategies for addressing the financial risks and investment opportunities posed by global warming. The guide identifies actions that pension plans, fund managers and companies can take to address climate risk. It also recommends that investors support government action to reduce investor and business uncertainty on global warming and includes links to nearly 50 resources for investors, fund managers, and companies seeking to evaluate and mitigate the risks posed by global warming and coming regulations. (Guide available at **www.incr.com**)

4. "Material" is defined as information necessary to understand a company's financial condition, changes in financial condition and results of operations.

3 Why address climate risk over other environmental risks?

While many environmental risks (such as air and water emissions) may be extremely important to specific industries and companies, the magnitude of effects that climate change may have on the entire global economy dwarfs any other environmental risk. This is especially true in the long term, where damage from climate change may impose widespread economic costs on many sectors, including agriculture, forestry, and water. Climate change will also be a defining factor for industries that produce significant emissions such as energy, autos and forestry. Scientists have stated that emissions may have to be reduced by as much as 80 percent in order to stabilize the climate, suggesting very dramatic changes in how we produce and use energy, in particular. As a result, climate change is likely to become the most financially significant environmental issue facing investors.

4 How does the U.S. compare with other major countries on regulation of greenhouse gas emissions? How do these regulations create climate risk in a portfolio?

Companies with international operations (regardless of the nation of incorporation) will be subject to CO_2 emissions regulations and standards in the European Union, Canadian, and Japanese markets. As a result, multinational corporations are likely to be exposed to regulatory, reputational, and competitiveness climate risk, increasing the need for disclosure and reporting of this risk to investors.

The European Union (EU) has moved aggressively to reduce greenhouse gas emissions, including the adoption of the Kyoto Protocol in 2002. Beginning in 1998 it struck a voluntary agreement with automobile manufacturers to reduce carbon dioxide (CO_2) of new passenger cars by 25 percent by 2008 (and possibly by an additional 10 percent by 2012). The EU has also adopted carbon dioxide emission limits for more than 5,000 energy and industrial plants. These limits, coupled with an emissions trading program, begin to take effect in 2005. In addition, the EU has adopted a directive to increase the share of electricity produced from renewable energy sources such as wind and solar to 12 percent by 2010, a doubling of current levels. Finally,

it has announced its intention to further regulate emissions from air conditioners in cars. These policies will affect a variety of sectors.

Canada, like the EU, has committed to the Kyoto Protocol and is obligated to reduce its GHG emissions by 6 percent from the 1990 baseline. To achieve this, the Climate Change Plan for Canada establishes a 3-prong approach for large final emitters, including reduction targets, emissions trading and technology standards. The government is currently negotiating with the automobile industry reduce carbon dioxide emissions from new vehicles by 25 percent by 2010.

Japan has also ratified the Kyoto Protocol and has designed an implementation plan that requires greenhouse gas reduction targets for major economic sectors. Specifically, this plan includes an increase in fuel economy standards for passenger vehicles, new standards for commercial vehicles and aircraft, tax incentives for low emission vehicle technologies, and overall energy efficiency improvements in the economy.

Russia recently ratified the Kyoto Protocol. However, given that industrial production has declined significantly since 1990 (Kyoto's base year), it may not have to reduce its GHG emissions in the near future.

Unlike the EU, Canada, Japan, and Russia, the United States has not adopted the Kyoto Protocol or any binding national commitments to reduce GHG emissions. This policy discrepancy with most of the industrialized world could eventually lead to increased pressure for the United States to re-engage in global climate negotiations.

5 Are there states in the U.S. that have passed laws requiring a reduction in carbon dioxide emissions? How do these regulations create climate risk in a portfolio?

In the United States, state governments have taken the lead in regulating pollutants that cause climate change. As with different international regulatory plans, companies that operate in states with climate-related regulations may face increased climate risk compared to companies that do not operate in these states. It will be important for investors to know how these state-level operations impact the financial performance of companies in their portfolio.

Key state actions include:

- California automobile greenhouse gas emissions standards: In 2003, California adopted legislation directing the California Air Resources Board (CARB) to achieve the maximum feasible and cost-effective reduction of greenhouse gases from California's motor vehicles. CARB has approved a rule that would reduce emissions by approximately 30 percent. The California legislature will likely finalize the regulation by January 1, 2006, and the standard will take effect with 2009 model year automobiles. Maine, Massachusetts, New York, and Vermont have the same auto standards as California, and Connecticut, New Jersey, and Rhode Island have announced that they intend to adopt the standards as well. Canada has also indicated they may follow California's rules to meet their Kyoto Protocol Commitments. Along with California and Canada, these states represent approximately 30 percent of all cars sold in North America.
- Massachusetts electricity carbon dioxide standard: In April 2001, Massachusetts established a rule requiring designated power plants to reduce carbon dioxide emissions ten percent from 1997–1999 levels. Plants must meet the deadline by 2006, unless undertaking a fuel shift, in which case they may delay until October 2008.
- New Hampshire electricity carbon dioxide standard: In May 2002, New Hampshire adopted limits on carbon dioxide emissions from power plants. By 2007, plants must reduce their emissions to the level they were in 1990.
- Oregon, Washington require carbon dioxide offsets: Both Oregon and Washington require that new power plants constructed in the state offset carbon dioxide emissions.
- Maine, New Jersey greenhouse gas plans: In the summer of 2003, Maine enacted a law requiring state officials to develop a climate action plan that would reduce CO_2 emissions to 1990 levels by 2010, cut them by 10 percent more by 2020, and eventually reduce them by a total of 80 percent. In 1998, led by then-governor Christine Todd Whitman, New Jersey set a voluntary goal of reducing greenhouse gas emissions by 3.5 percent below 1990 levels by 2005.
- States require renewables: Seventeen states have now adopted renewable portfolio standards that require electric power companies to use increasing percentages of electricity produced from renewable sources such as wind and solar. These standards in Arizona, California, Colorado, Connecticut, Iowa, Maine, Maryland, Massachusetts, Hawaii, Nevada, New Jersey, New Mexico, New York, Pennsylvania,

Rhode Island, Texas, and Wisconsin reduce emissions of carbon dioxide and greenhouse gases because these energy sources produce no emissions while generating electricity.

6 What is the time horizon that investors should be concerned about related to investments?

The time horizon varies depending on the type of climate risk associated with an investment portfolio. Regulatory risk is the most proximate and certain, as some governments have already begun to regulate greenhouse gases while others are designing policies for the next five to ten years (see Questions 4 and 5 for further information). Impacts from regulatory risks on a portfolio will be felt beginning in 2005 with the EU ETS and will likely increase as more governmental regulations take effect in different regions of the world. In the United States, state regulation of carbon dioxide pollution from power plants takes effect in 2006 in Massachusetts and in 2007 in New Hampshire, while California's emissions standard for carbon dioxide takes effect for cars in model year 2009. Reputational and competitiveness risks may also occur in the near and medium terms, as consumers develop preference for climate friendly companies (or boycott those who are not) and as companies must adapt to a new regulatory environment. Physical risks are more likely to occur over the long term when the negative effects of climate change begin to be felt on a widespread scale.

7 Are companies required to disclose climate risk in their financial reports?

In the United States, under Rule S-K, Item 303 of the Securities Act of 1933, the SEC requires publicly traded companies to disclose instances "where a trend, demand, commitment, event or uncertainty is both **presently known to management and reasonably likely to have material effects** on the registrant's financial condition or results of operation." Such trends must be disclosed in the Management Discussion and Analysis (MD&A) section of a financial report.

Many investors and environmental groups feel that companies are not adequately reporting their exposure to the various aspects of climate risk (outlined in Question 2). For example, of the automobile manufacturing companies listed in the United States only five mentioned climate change in their most recent SEC filing.[5] This low level of reporting is troublesome for some investors because it is likely that the automobile sector is one of the industries that will be most impacted by climate change regulation. An example of this risk currently facing automobile manufacturers in the United States is the recent legislation in California to reduce greenhouse gas emissions from new vehicles (see Question 5). Many companies, however, have argued that climate risk is either not significant or too uncertain to report on.

It is important to note that there is an aspect to disclosure that is separate from the MD&A requirements. With Kyoto ratified and the EU emissions trading scheme (ETS) moving forward, global carbon trading is virtually certain. Companies participating in carbon trading that are also domiciled in countries that will be adopting International Financial Reporting Standards[6] will have to record carbon assets and liabilities on their balance sheets. Recently, the International Accounting Standards Board (IASB) through its International Financial Reporting Interpretations Committee (IFRIC) has provided financial accounting guidance with respect to carbon emission assets and liabilities.[7] The guidance, formalized in December 2004, will establish a financial value for a company's GHG emissions liability and corresponding assets.

For more information about the state of corporate climate disclosure, please see the **GAO's report on environmental disclosure** at http://www.gao.gov/docsearch/abstract.php?rptno=GAO-04-808
Read **Ceres' response to the GAO report** at http://incr.com/wc_lead_forum.htm.

Released in July 2004, this report examined the extent to which the SEC was enforcing corporate environmental reporting. The report concludes that little is known about the extent to which companies are disclosing environmental information in their SEC filings, and given the flexibility in the disclosure requirements, it is unclear if SEC enforcement of this issue is adequate.

Survey of Climate Change Disclosure in SEC Filings, Friends of the Earth, http://www.foe.org/camps/intl/corpacct/index.html

This report reviews climate change disclosure in 2003 SEC filings of companies likely to be impacted by climate change. It found that compared with last year, the overall rate of climate change reporting has stayed the same (39 percent), while the quality of climate disclosure has generally improved. Among reporting companies, the majority forecast that climate risk will adversely impact their firms, while 14 percent maintain that global warming poses little to no risk. About 11

5. These companies are DaimlerChrysler, Ford, Honda, Volvo and Toyota. From Friends of the Earth's *Survey of Climate Change Disclosure in SEC Filings 2004*.

6. The International Financial Reporting Standards will be adopted by over 60 countries by 2005.

7. Please refer to the IASB website for complete information, **www.iasb.org**

percent state that the impact of climate change cannot be estimated, while 23 percent of reporting companies avoid addressing the issue of financial risk altogether.

Letter from 14 investors to the SEC calling for greater disclosure by companies on climate change risks (Spring 2004) http://ceres.org/newsroom/press/invest_sec_disclosure.htm.

8 What is the difference between screening in, screening out, and rebalancing for climate risk in a portfolio?

"Screening in" refers to the process of selecting companies that are considered leaders in their industry with respect to climate change, while "screening out" is essentially the opposite excluding companies that are considered laggards relative to their peers on climate change issues. Rebalancing refers to changing the sectoral composition of the portfolio to include climate friendly or neutral industries while excluding those that are exposed to climate risk.

9 In what capacity has financial research assessed climate risk?

Many studies have shown that climate change could have a significant financial impact on companies. Yet the analytical process to arrive at these conclusions have differed substantially. Analysts have used three tools to assess climate risk. They have examined:

- **Corporate governance** to assess if a company has adequate management systems to assess risk;
- **Emissions** because companies have different emissions profiles; and
- **Financial analysis** to assess the financial impact on a company of possible greenhouse gas limits.

The following reports are categorized under these three headings. Recent studies addressing **corporate governance** include:

Ceres/IRRC

- *Corporate Governance and Climate Change: Making the Connection*, 2003. This report assesses how 20 of the world's largest greenhouse gas emitting corporations are factoring climate change risks and opportunities into their governance practices. The report also includes a checklist of 14 specific governance actions that companies can take to address climate change.

Carbon Disclosure Project

- *Climate Change and Shareholder Value in 2004.* The Carbon Disclosure Project is a coordinating secretariat for institutional investor collaboration regarding climate change, whose reports are authored by Innovest. This group has written to the 500 largest companies in the world by market capitalization in 2002 and 2003, asking for disclosure of investment-relevant information concerning their greenhouse gas emissions. This report includes a Climate Leadership Index, comprising the 50 "best in-class" responses to their survey.

Goldman Sachs

- *Introducing the Goldman Sachs Energy Environmental and Social Index (GSEES)*, 2004. The GSEES ranks energy companies based on 30 environmental and social metrics in the categories of climate change, pollution, human rights, management diversity, investment in the future, workforce, safety and transparency. Most of the metrics in the climate change category relate to corporate governance issues.

Recent studies analyzing company **emissions** include:

Ceres/NRDC/PSEG

- *Benchmarking Air Emissions at the 100 Largest Electric Generation Owners in the U.S. – 2000,* 2002. Produced through a collaboration between the Natural Resources Defense Council, the Public Service Enterprise Group and Ceres, this report compares and ranks the air pollution emissions (CO_2, mercury, NO_x and SO_2) of the 100 largest electrical generation owners in the U.S.

Environmental Defense

- *Automakers' Corporate Carbon Burdens*, 2002. This report ranks automakers in the United States with respect to the lifetime CO_2 emissions of their vehicle fleets.

JP Morgan

- *CO_2 emissions: no windfall for European utilities*, 2003. As the title suggest, the authors believe that regulators will not allow utilities to gain at the expense of industry and consumers. However, this report ranks electric utility company position-

ing based on a variety of inputs including pollution content of current generation portfolio.

PricewaterhouseCoopers

- *Climate Change and the Power Industry*, 2002. The report compares the CO_2 emissions of the 25 largest European power producers as well as the 10 largest European and U.S. power generators.

Standard & Poor's

- *Emissions Trading: Carbon Will Become a Taxing Issue for European Utilities*, 2003. This report ranks CO_2 emissions from the 25 largest European electrical utilities to indicate companies most at risk under the trading scheme. However the report does not analyze the implications of CO_2 trading for company bond ratings.

Union of Concerned Scientists

- *Automaker Rankings: The Environmental Performance of Car Companies*, 2002. This report ranks the environmental performance of automakers in the United States by analyzing the emissions of smog-forming pollutants and greenhouses gases from each company's vehicles.

Recent studies using **financial analysis** include:

World Resources Institute

- *Changing Drivers: The Impact of Climate Change on Competitiveness and Value Creation in the Automotive Industry*, 2003. This study by Sustainable Asset Management and WRI explores how carbon constraints in global automotive markets may affect value creation in 10 leading automotive companies between now and 2015. Regulations to reduce GHGs in the three largest automobile markets (the U.S., EU and Japan) are likely to have significant impacts on the earnings of major auto companies, ranging from a possible increase in discounted EBIT of 9 percent to a decrease of 10 percent.
- *Changing Oil: Emerging Environmental Risks and Shareholder Value in the Oil and Gas Industry*, 2002. This report examines the impact of emerging climate policies for the financial performance of 16 leading oil and gas companies. Across several different scenarios, from no action to widespread adoption of the Kyoto Protocol, future climate policies could create financial impacts for companies ranging from a 2 percent gain to a loss of over 9 percent of shareholder value.

UNEP Finance Initiative

- *The Materiality of Social, Environmental and Corporate Governance Issues to Equity Pricing*, 2004. This report compiles eleven sector studies by European, Japanese and South African brokerage house analysts covering the pharmaceutical, retail, electric utility, energy, aviation and insurance industries, as well as several multi-sector issue-specific studies. Key findings include:
  - Environmental, social, and corporate governance issues affect long-term shareholder value, in some cases significantly. Companies and investors should incorporate these issues in their analysis or risk losing share value over time.
  - The paucity of corporate reporting on environmental, social, and governance issues and insufficient disclosure of these issues in annual reports hinders financial research.
  - Clear government positions with respect to environmental, social, and corporate governance issues greatly aids financial research. Some analysts were not able to provide in-depth reports due to a lack of certainty about government policy.

  Many of the reports outlined in this section were part of this initiative. **http://www.unepfi.net/stocks/**.

ABN AMRO

- *Climate Change and Analysis*, 2003. Provides a framework for analysts to assess the environmental and regulatory risks along with climate change opportunities for the metals and mining, utilities, auto, aviation, construction, real estate, chemical and insurance industries.

Credit Suisse First Boston

- *EU Carbon Trading: Utilities to get a carbo-boost*, 2003. The report analyzes the impacts of the EU trading scheme for electric utilities and finds that the "winners" are likely to increase shareholder value by 13 percent while the relative "losers" will not see any improvement in shareholder value and will possibly lose value (–1 percent).

Citigroup Smith Barney

- *The Impact of Carbon Trading on the European Sector*, 2003. Although this report does not quantify impacts of the trading scheme on electric utility companies, it does conclude that the scheme is unlikely to create shareholder value for

the industry because they believe that the European Commission will not establish National Allocation Plans that will lead to high prices for emissions permits.

Dresdner Kleinwort Wasser

- *Emission trading, Carbon Derby Part II: And they're off* (2003) quantifies the likely impacts of CO_2 emissions trading for the largest European electric utilities, ranging from +22 to 0 percent of market capitalization.
- *Aviation emissions: Another cost to bear* 2003. Scenarios are used to quantify the impact that possible GHG taxes in the UK may have on the aviation sector. The first scenario is business as usual with no impacts on earnings, the second is an increase in the existing Air Passenger Duty (APD) tax resulting in earnings losses of 10 to 17 percent, while an EU-wide emissions charge could result in earnings losses of 20 to 80 percent.

HSBC

- *Aviation and climate change: prepare to trade*, 2003. This report does not quantify the impacts of possible carbon regulations on aviation companies; however, it does estimate that fares would increase by 30-50 Euros per flight in order to accommodate the reduction in CO_2 emissions necessary to meet Kyoto targets.

Innovest/World Wide Fund for Nature

- *Power Switch: The Impacts of Climate Policy on the Global Power Sector*, 2003. WWF commissioned Innovest to assess the financial consequences of climate change policy for 14 leading global power companies. The study finds that climate policy will have important consequences for power generation costs, fuel choices, wholesale power prices and the profitability of utilities. Even under conservative scenarios, additional costs could exceed 10 percent of 2002 earnings, although there are upside opportunities for utilities as well.

UBS

- *European Emissions Trading Scheme: Bonanza or bust?* 2003. This report analyzes the potential impacts of the EU CO_2 emissions trading scheme on the shareholder value of prominent European utilities. Findings for companies range from +57 percent to –22 percent of shareholder value depending on the scenario.

West LB

- *Carbonomics: Value at Risk through Climate Change*, 2003. By modeling macroeconomic scenarios around the possible risks associated with climate change, the report finds that $192 to $915 billion in the world's equity markets are at risk. The report also finds that there is a positive correlation between climate change exposure and management quality at the sector level.

Yale University

- *Environmental Exposures in the U.S. Electric Utility Industry*, 2003. Robert Repetto and James Henderson conducted a quantitative analysis of 47 U.S. electric utilities' environmental exposures to impending air quality and climate policies. The study assessed the financial impacts of three scenarios by estimating the least cost option to comply with current and pending air quality regulations. In the worst case scenario, compliance costs range from over 110 percent of 2000 revenues for the most affected company to no cost for the least affected company. In the least cost scenario for companies overall, results ranged from a compliance cost of almost 30 percent to a profit of about 6 percent of 2000 revenues.

10 Is assessing climate risk a fiduciary responsibility?

Fiduciaries have a responsibility to their beneficiaries. Pension funds must maintain a long term view and extend their fiduciary duty to the future viability of the fund, at which time climate change's physical risks are likely to affect its financial performance. Funds with a short to medium term horizon must analyze regulatory and competitive risks posed to a portfolio. Ultimately, an investor may shift assets to minimize risks or to maximize opportunities, or be an active shareholder to minimize risks at companies that are already in their portfolio.

Environmental risks, including climate change, are increasingly being recognized as part of the fiduciary duty of corporate directors and portfolio managers. In 2004, Connecticut State Treasurer Denise Nappier, along with other state pension funds, filed a shareholder resolution with American Electric Power (AEP) asking them to issue a report to shareholders on the actions the company is taking to mitigate negative economic impacts due to regulatory and other pressures to reduce

CO_2 and other emissions. After negotiations with AEP, shareholders agreed to withdraw the resolution, and company agreed to issue the report, which it did on August 31, 2004. In a letter responding to the shareholder resolution, AEP President and CEO Michael Morris and Board member Robert Fri wrote, "**Since we share your position that management and the Board have a fiduciary duty to carefully assess and disclose to shareholders appropriate information on the company's environmental risk exposure**, we have agreed to implement your request."

Reports and other evidence that make the case that fiduciary duty includes the assessment of environmental risks:

Ceres' ***Value at Risk***
http://www.ceres.org/reports/main.htm
This report finds that there is mounting evidence that failure to respond to the risks posed by climate change could result in multi-billion dollar losses for U.S. businesses and investment portfolios, and this failure could represent a breach of fiduciary duty on the part of corporate directors and investment decision-makers.

INCR ***Call for Action***
http://www.incr.com/call_for_action.htm
Eight state and city treasurers and comptrollers and two major labor pension fund leaders issued a 10-point "call for action" demanding new steps by the U.S. Securities and Exchange Commission (SEC), corporate boards and Wall Street firms to increase corporate disclosure of the risks posed by climate change to investors.

The Rose Foundation, ***The Environmental Fiduciary***
http://www.rosefdn.org/efp.html
This report finds that fiduciaries who manage funds for institutional investors should incorporate environmental factors into their portfolio management policies. The report shows how a corporation's ability to profit from environmental innovations and prepare for future environmental risks and exposures can have a significant impact on corporate earnings potential, cash flow and growth opportunities. Consequently, the report argues that fiduciaries for institutional investors should institute financially sound policies to encourage strong corporate environmental performance in the corporations held in their portfolios.

11 Is it harmful to the U.S. economy and jobs to reduce climate change emissions?

According to many studies, the economic costs of addressing climate change in the United States will be small or favorable. In addition, addressing climate change will not worsen employment overall and may actually increase employment. For example, the Apollo Alliance's job report finds that a $300 million investment in clean energy technologies will create 3.3 million jobs for the U.S. economy.

However, with a transition towards cleaner energy sources it is likely that some jobs would be lost in the most carbon-intensive sectors (mainly coal and electric utilities). Studies show that, under the right policy conditions, new growth in the clean energy sector will create more jobs than those lost. Policies that include effective transition programs to provide workers with new skills and opportunities would greatly reduce the impact of job losses. It is important to note that there are studies with conclusions that conflict with some of these findings

For more Information, please see the following:

New Energy for America: The Apollo Alliance's Jobs Report
http://www.apolloalliance.org/jobs/index.cfm
The Apollo Alliance is a broad coalition within the labor, environmental, business, urban, and faith communities in support of good jobs and energy independence. Seventeen labor groups support the Apollo Alliance, including United Auto Workers, the Steelworkers and Machinists, and the AFL-CIO. The report shows that a $300 billion investment in clean energy technologies over 10 years would have the following benefits:

- 3.3 million new jobs added to the economy
- $1.4 trillion increase in GDP
- 22.3 percent annual rate of return on investment to the U.S. economy

Clean Energy and Jobs: A comprehensive approach to climate change and energy policy by James Barrett and Andrew Hoerner
http://www.redefiningprogress.org/newprograms/sustEcon/cleanenergy.htm
This study finds that a policy package (including a modest energy tax, incentives for energy efficiency and renewables, compensation for energy intensive industries,

and assistance for affected workers) could be adopted without the decline in economic growth and employment that previous economic studies have predicted. Specific results of the economic model include:

- A reduction in carbon dioxide emissions in 2020 to about two-thirds of their 1999 level.
- A significant net increase in job creation, with about 660,000 more jobs created by 2010 and about 1.4 million more jobs by 2020. This would also lead to declines in the unemployment rate by 2010 and 2020.

Clean Energy: Jobs for America's Future by the Tellus Institute and MRG & Associates
http://www.tellus.org
This study analyzes the impacts of a climate protection scenario, including incentives and regulations to improve building efficiency, regulations on electric utilities and regulations to improve the efficiency of automobiles and aircraft. The study finds:

- Net annual increase of 700,000 jobs in 2010, rising to 1.3 million by 2020;
- An additional $51.4 billion in wage and salary compensation by 2020;
- An 8.5 percent decline in U.S. CO_2 emissions by 2010 (as opposed to a 20 percent increase in the base case) and a 28 percent decline by 2020 (as opposed to a 36 percent increase); and
- $43.9 billion increase in GDP above the base case.

The Trade-Off Myth: Fact and Fiction About Jobs and the Environment by Eban Goodstein
This book dispels the common myth that there is a trade-off between jobs and the environment by analyzing past regulations in the U.S. and their impact on jobs; by analyzing how employment models work and the assumptions upon which they are based; and by assessing models' predictions of job growth under programs to address climate change.

12 How are investors already addressing this issue?

Investors are engaging in the climate issue by:

- Learning about climate change and the risks it poses to their portfolios;
- Assessing climate risk in their portfolios;
- Pressing for increased corporate disclosure of climate risk;
- Engaging in shareholder activism to improve corporate responsibility on climate change; are
- Making investments in environmentally screened funds and clean technologies.

The following is a summary of recent investor initiatives on climate change:

Institutional Investor Summit on Climate Risk
November 21, 2003 – United Nations
Major pension funds and other institutional investors met for the first time to consider the risks to portfolios posed by climate change at the Institutional Investor Summit on Climate Risk at the United Nations on November 21, 2003. Investment leaders convened the Summit to explore the connection between climate risk and fiduciary responsibility. The Summit provided a forum for those with responsibility for the preservation of pension funds and endowments to exchange views as peers, to consider the implications of climate risk for long-term asset allocation, and to share best practices for moving forward. Participants reviewed and discussed:

- The science of climate change,
- The importance of climate change as a risk issue that investors should be concerned about, and
- Possible actions that investors might take to address climate risk in their portfolios.

At the meeting, eight state and city treasurers and comptrollers and two major labor pension fund leaders issued a 10 point "Call for Action" demanding tough new steps by the SEC, corporate boards and Wall Street firms to increase corporate disclosure of the risks posed by climate change to investors. These investors also announced the creation of an Investor Network on Climate Risk (INCR) to promote better understanding of the risks of climate change among institutional investors and to follow through on the "Call for Action."

Senior executives of financial services firms including Bank of America, Bank of New York, Goldman Sachs, Lazard Asset Management, Lehman Brothers, Marsh and McLennan, Morgan Stanley, Moody's, and Standard and Poor's attended the Summit, as did trustees of Los Angeles and New York City, the heads of the California Public Employees Retirement System (CalPERS) and the California State Teachers' Retirement System (CalSTRS), and representatives of the New York State Teachers' Retirement System, Michigan Municipal Employee Retirement System, among many others.

Ceres organized the Summit, and Connecticut State Treasurer Denise Nappier and United Nations Foundation President Timothy Wirth co-chaired it. The United Nations Fund for International Partnerships, the UN Environment Program (UNEP), and other UN agencies (UN Global Compact, UNDP) supported the meeting, and UN Secretary General Kofi Annan and UNEP Executive Director Klaus Toepfer spoke at the Summit.

The **2003 Summit final report** is available at www.incr.com, and a printed copy is available by request from Ceres.

Investor Actions on Climate Risk since the 2003 Summit

Since the Summit, investors have continued to raise concerns about climate risk and the failure of corporations to disclose adequate information about it. As a result of this investor pressure, companies with substantial greenhouse gas emissions have begun to change corporate policies and increase disclosure. Key events demonstrating this growing concern and progress include:

- **Investors in INCR Call for SEC Disclosure Action:** In April 2004, thirteen major public pension fund leaders — in 2004 eight state treasurers and comptrollers, four labor pension fund leaders, and the New York City Comptroller, collectively managing assets of nearly $800 billion — called on the SEC to eliminate any doubt that publicly traded companies should be disclosing the financial risks of global warming in their securities filings.
- **Global Warming Shareholder Resolutions Reach Record Levels:** U.S. investors filed record numbers of climate resolutions with corporations and achieved record vote totals, especially in the oil and gas sector. State, city, religious and other institutional shareholders filed 28 resolutions requesting risk disclosure and plans to reduce greenhouse gas emissions with 22 companies. In the oil and gas sector, 37 percent of Apache shareholders, 31 percent of Anadarko shareholders, and 27 percent of Marathon shareholders supported the global warming shareholder resolutions. In another sign of growing investor support, the number of public pension funds filing resolutions doubled this year. The resolutions have been sponsored by public pension funds (Connecticut, New York, New York City and Maine), foundations (the Nathan Cummings Foundation), and investment funds and religious institutional investors affiliated with Ceres and ICCR. For the first time ever, a state treasurer spoke on behalf of a global warming shareholder resolution at a company annual meeting (Maine State Treasurer Dale McCormick spoke at the ExxonMobil annual meeting).
- **Investors win changes in corporate global warming policies and practices:** Investors succeeded in changing corporate climate policies at several leading oil companies – ChevronTexaco, ConocoPhillips, and Valero – and at one major electric utility – Cinergy. Many of these policy changes occurred in connection with extensive and time-consuming dialogues that shareholders undertook with the companies.
  - ***ChevronTexaco*** has already incorporated a cost of carbon into its investment decisions, and will announce in 2004 both a major commitment to renewable energy and a voluntary emissions reduction target.
  - ***ConocoPhillips*** committed to reducing its emissions, integrating climate risk into its core business strategy, and investing in low- and no-carbon technologies like renewable energy.
  - ***Valero*** agreed to reduce its emissions 5 percent by 2008, and committed to reducing the emissions related to the combustion of its gasoline an additional 2 million tons per year. This is the first time an oil company or refiner has taken responsibility for the emissions related to its end product, which are typically an order of magnitude higher than operational emissions.
  - ***Cinergy*** agreed to cut its emissions of greenhouse gases 5 percent by 2012, although it may accomplish these reductions through actions at facilities that are not a part of the Cinergy system.
- **Investors secure increased climate risk disclosure in electricity and oil sectors:** Many of the largest carbon dioxide emitters in the electricity sector, including American Electric Power, Southern, TXU, Cinergy, and Reliant, agreed to comply with shareholder resolutions seeking new disclosure on climate risk before they came to votes. Each company has committed to producing a public report analyzing how they are planning to respond to future constraints on carbon dioxide and other emissions. Investors also made significant progress in expanding disclosure from two oil companies, Devon and Unocal. Unocal, for example, is disclosing its baseline emissions for the first time, expanding its discussion of climate change in its 10-K, and hiring staff to coordinate its entry into greenhouse gas emissions trading.

- **CalPERS and CalSTRS Begin Addressing Climate Risk:** CalPERS announced in April 2004 that it will invest up to $500 million in environmentally screened stock funds—either in mutual funds with proven track records, or through leading public equity investment managers with proven track records. In addition, the CalPERS Investment Committee voted to invest up to $200 million over the next few years in the clean technology sector through private equity investments, venture capital, and project financing. CalSTRS has also begun to implement new policies.
- **New INCR Working Group to Persuade Wall Street Fund Managers to Address Climate Risk:** INCR launched a new Working Group on April 14, 2004 to help fiduciaries ask their Wall Street fund managers to report on the exposure of their investments to climate risk. In August 2004, the Treasurers/Comptrollers of New York State, New York City, Maryland, Connecticut, Vermont, Maine, and the CWA/ITU Negotiated Pension Plan sent a joint letter on climate risk to the top 50 pension fund money managers. It requested information on money managers' capacity to address climate risk. INCR will analyze the responses in 2005.

13 As an investor, where do I start to learn about climate risk?

The **Investor Network on Climate Risk** website is a good place to start:
http://www.incr.com

The **Institutional Investors Group on Climate Change**, based in Europe, maintains a useful website as well:
http://www.iigcc.org/

The **United Nations Environment Programme's Finance Initiative (UNEP FI)** website has links to current research on these issues:
http://www.unepfi.net/stocks/