

CLIMATE CHANGE 101

Business Solutions



The response of business leaders to the problem of climate change is undergoing a major transformation. Just over a decade ago, the corporate sector was almost uniformly opposed to serious government action on the issue. But increasing certainty about the science of climate change—and an ever greater understanding of the risks and opportunities it presents for businesses and society—have contributed to a new willingness among corporate leaders to help shape solutions. In addition to acting on their own to reduce greenhouse gas emissions and explore new, low-carbon market opportunities, a growing number of businesses are calling on the government to establish mandatory measures to protect the climate.

ASSESSING THE RISKS

For corporate leaders responsible for paying attention to the full range of risks confronting their businesses, climate change has become an issue that can no longer be ignored. As Marsh, the world's leading risk and insurance services firm, put it in a 2006 report, "Climate change is a clear example of a risk where long-term planning is essential to mitigate some potentially irreversible long-term effects."¹

Insurance companies have played an important part in drawing attention to the risk of economic losses from climate change. According to the global insurance giant, Allianz, climate change is increasing the potential for property damage at a rate of between 2 and 4 percent every year.² The reinsurance company Swiss Re has said, "It's not possible to predict precisely what the climate will be like in the future. And yet, there is growing consensus that the consequences of unabated climate change are likely to be very serious.... After all, this much is certain: inaction would be far more expensive than taking action."³

Regulation Viewed as Inevitable. One of the largest and most immediate risks businesses face from climate change is what experts refer to as "regulatory risk"—or the risk to companies posed by government limits on greenhouse gas (GHG) emissions. Nearly all business leaders surveyed for the Pew Center's 2006 report, *Getting Ahead of the Curve: Corporate*

Strategies That Address Climate Change,⁴ view national greenhouse gas regulations as inevitable in the United States. More recently, a December 2007 survey conducted by the McKinsey Quarterly of more than 2,000 global executives found that over 80 percent of those polled expected some form of climate change regulation in their companies' home country in the next five years.⁵

A major reason why businesses view national climate regulations as inevitable is because many U.S. states and regions have already put in place mandatory policies to reduce greenhouse gas emissions.⁶ Power generators in 10 northeastern states already have to comply with a recently established cap-and-trade program, and a similar, but broader regulatory system will soon get underway in the western region of the country. Additionally, there continues to be strong international action on climate change, particularly within the European Union (EU).⁷ For several years, U.S. businesses with significant operations in Europe have had to comply with the EU's emissions trading system.

The effect of regulations on business operating costs and the value of company assets could be significant, especially for firms with large carbon footprints. As a result, many companies have begun taking early action to reduce their emissions voluntarily now. For example, EPA's Climate Leaders program, which enlists companies to measure GHG emissions



and set long-term reduction targets, has grown to over 200 members since it began in 2002.⁸ Companies set voluntary goals for a number of different reasons, including gaining a head start over competitors in learning what climate strategies work, preparing to respond rapidly once regulations do take effect, better managing the costs of reducing their emissions over time, and reducing costs in the short-term by improving energy efficiency. In addition, many companies recognize that acting early to reduce emissions is an important way to gain credibility and influence among lawmakers as they consider what policies will work best. Increasingly, firms are also taking steps to reduce emissions in response to consumer and shareholder demands for climate action.

Threats to Competitiveness. Government climate policies and growing customer awareness about climate change are combining with other forces to produce significant changes in the markets for products ranging from cars and trucks to electricity. For companies to remain competitive, they will need to position themselves to succeed in the face of two related trends: a decline in the value of inefficient and greenhouse gas-intensive technologies; and a corresponding increase in demand for climate-friendly technologies and services.

For example, electric utilities that invest in high-emission power plants today may be at a competitive disadvantage in later years when governments impose limits on GHG emissions. Under this scenario, investors, too, may be exposed to significant risk. This is one of the reasons several major banks, including Citi, JPMorgan Chase, and Morgan Stanley, came together in 2007 to unveil the “Carbon Principles,” which lay out a process lenders can use to more closely scrutinize the potential regulatory risks associated with coal-based power plant investments.⁹ In the transportation sector, car companies that produce mainly gas guzzlers already are losing market share to competitors that produce higher numbers of efficient hybrid and diesel models. Market dynamics appear to be shifting as record high gasoline prices and new domestic fuel economy regulations are driving major U.S. automakers to shift production to smaller, more fuel-efficient vehicles.¹⁰

Physical Risks to Business. Businesses also face risks from the projected impacts of climate change, including stronger hurricanes, increased drought, sea level rise, and flooding. The industries most likely to be affected directly by these physical risks include agriculture, forestry and paper products,

Businesses Face Growing Pressures to Disclose Climate Risks and Strategies

An increasing number of investors are realizing that climate change could affect the value of their investments. As a result, they are pressing companies to disclose climate-related risks and corporate climate strategies. For example:

- During the 2008 proxy season, investors filed a record 54 climate-related shareholder resolutions—nearly double the number filed two years ago—many of them seeking greater analysis and disclosure of business impacts of climate change and future regulation of GHG emissions.¹²
- The Carbon Disclosure Project (CDP) was launched in 2003 to enable institutional investors to collectively sign a single global request to companies for disclosure of their GHG emissions and climate strategies. The 2008 CDP disclosure request was sent to 3,000 companies under the signatures of 385 institutional investors with combined assets of \$57 trillion—up over tenfold from \$4.5 trillion in 2003. In 2008, 1,550 companies responded to the questionnaire. This was a significant increase over 2003, when only 235 companies responded.¹³

tourism, real estate, offshore energy development, and insurance.¹¹ For other industries, as well as companies located far away from regions facing direct climate impacts, the indirect effects can be substantial. As the United States experienced following Hurricane Katrina in 2005, the loss of oil and gas platforms in the Gulf of Mexico not only increased gasoline prices, but also hurt profits in other industries, including chemical companies and fertilizer manufacturers that use fossil fuels as ingredients in their own products. Damages to highways and port facilities in Louisiana and Mississippi slowed the shipment of goods to companies in a host of other industries hundreds of miles away. Some companies have begun taking steps to address the physical risks of climate change. Entergy, the New Orleans-based electric utility, began relocating important business operations to areas less vulnerable to severe weather events after suffering \$2 billion

in losses from Hurricanes Katrina and Rita. Mining giant Rio Tinto has also taken steps to buffer its business against physical risks, including using high-resolution climate modeling to conduct detailed site assessments and gauge risks to high-priority assets.¹⁴

Litigation & Reputational Risks. In addition to regulatory and physical risks, businesses face additional climate risks. For example, some investors and analysts believe that the federal Sarbanes-Oxley law, by requiring disclosure of financially “material” risks, should force some industries to disclose whether (and how) climate change and carbon policy will affect future earnings.

CAPTURING THE OPPORTUNITIES

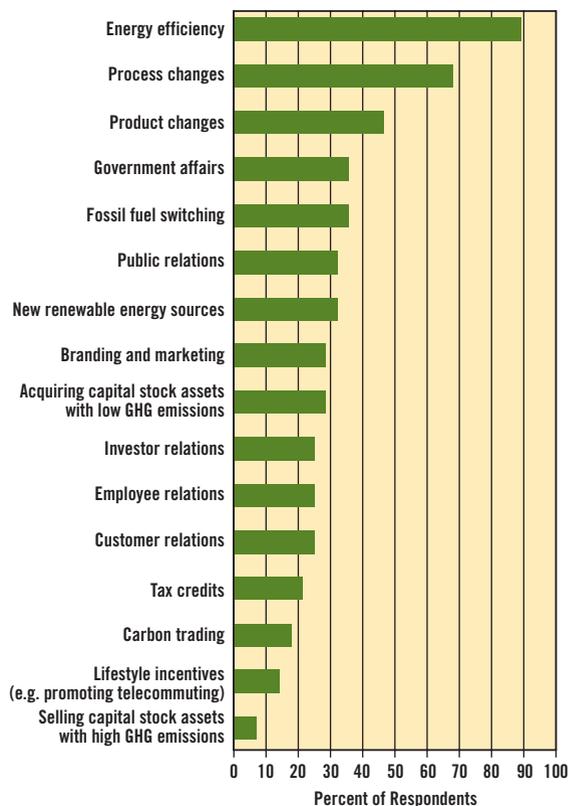
Although there will be significant costs associated with achieving the deep long-term emission reductions essential to protect the climate, the experience of companies that have already begun to reduce their emissions demonstrates there are numerous options for reducing GHGs that can both decrease costs and increase profits. Figure 1 shows a ranking of programs that benefit the bottom line based on a 2006 Pew Center on Global Climate Change poll of 33 major corporations. Also, climate policy can be designed so that businesses can respond with innovative solutions that will minimize costs.

Among the companies that have leading climate strategies, there is a major shift underway from a focus on risk management and emissions reductions toward developing and marketing new climate-friendly products and services. In a carbon-constrained future, the market will demand a wide range of low-GHG technologies, especially in the electricity, buildings, and transportation sectors. (These technologies and their contribution to global emissions reductions are discussed in *Climate Change 101: Technological Solutions*).

Each technology area represents enormous potential annual revenue for the companies and countries that emerge as major producers. In fact, low-carbon technologies are already experiencing explosive growth in the market place. CleanEdge, a clean technology market research firm, reported that revenue from solar photovoltaics, wind, biofuels, and fuel cells grew from \$55 billion in 2006 to \$77.3 billion in 2007, a 40 percent increase. CleanEdge estimates that global revenues from these clean energy technologies could surpass \$250

Figure 1

Ranking of Climate-Related Programs That Increase Companies' Profits



Source: Based on findings of survey in *Getting Ahead of the Curve: Corporate Strategies That Address Climate Change*, Pew Center on Global Climate Change, 2006

billion by 2017.¹⁵ Key suppliers of components for these new technologies—for example, manufacturers such as Eaton and Parker-Hannifin whose hydraulics and electrical systems can enable hybrid vehicles and wind turbines—also may have considerable new sales opportunities.

As investors focus on the risks of climate change, they also are taking note of opportunities to earn high returns from investments in climate-friendly businesses:

- The U.N. Environment Programme (UNEP) reported that in 2007 global clean energy investment surpassed \$148 billion, a 60 percent increase over 2006 levels. Total investment in clean energy technologies is expected to reach \$450 billion a year by 2012 and \$600 billion a year by 2020, UNEP projects.¹⁶

- Venture capital investing in so-called “cleantech” industries—which include firms developing environmentally friendly technologies in the energy, agriculture, information technology, transportation, and other sectors—has surged in recent years. In 2006, cleantech investing in North America totaled \$2.9 billion, a 78-percent jump from the previous year’s level of \$1.6 billion.¹⁷ Within cleantech, climate-related energy investments are by far the largest segment (see Figure 2).
- In 2007, Citi and Bank of America announced separate environmental initiatives that include commitments to invest billions of dollars in alternative energy and clean technologies over the next decade.¹⁸
- A recent study by Ceres found that hundreds of new insurance products are emerging to tackle climate change and resulting weather-related losses. For example, Lexington Insurance Company is launching a green buildings product for homes, Japanese insurers are offering lower premiums for low-emitting cars, and Swiss Re is developing a program to assist vulnerable regions of the world to adapt to the physical impacts of climate change.¹⁹

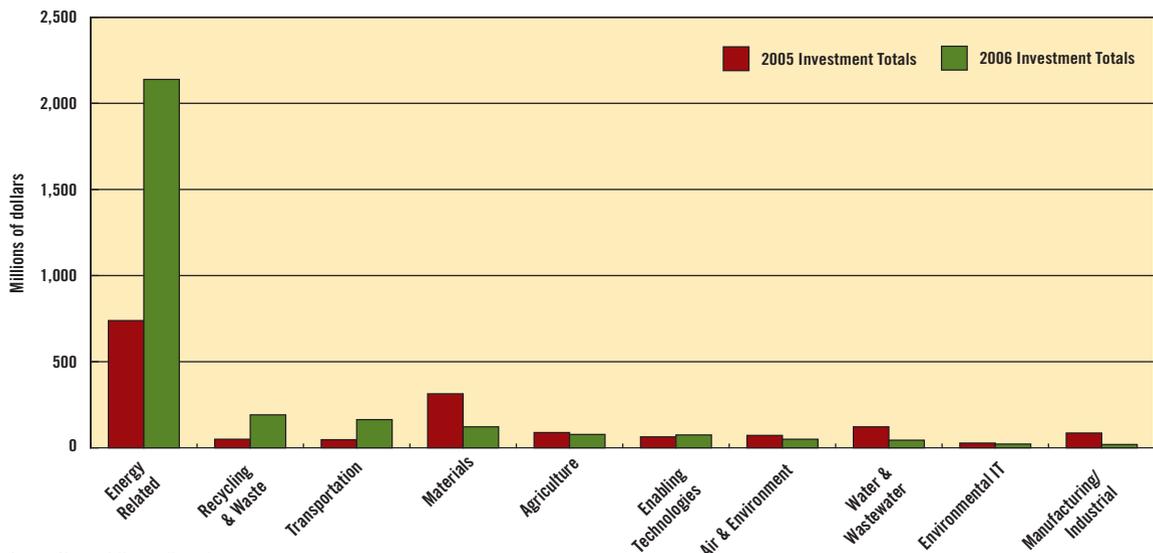
Businesses in energy, technology, and other sectors also are making substantial new investments of capital and effort

to expand their climate-friendly business. GE, for example, has committed to doubling its annual investment in environmental technologies to \$1.5 billion by 2010,²⁰ and BP aims by 2015 to invest \$8 billion in solar, wind, hydrogen, and efficiency-enhancing “combined cycle” power generation.²¹ (“Business Actions on Climate” on page 5 outlines other examples of leading companies transforming their businesses to succeed in a carbon-constrained world.)

While the figures above are significant, the absence of clear mandatory climate policy in the United States has meant that the scale of overall U.S. investment in climate-friendly technologies is not keeping up with the magnitude of the challenge or with investment in Europe and, increasingly, China. While private funding from investors and corporations can help the United States compete in some of these technology markets, the United States cannot compete in other areas without greater government support for research, development, and deployment. The solar power market provides a clear historical example. In 1996, U.S. manufacturers had 44 percent of market share worldwide, but that has slipped to 9 percent in 2005—lost mostly to producers in Germany and other countries that have strong policies in place to accelerate solar deployment.²²

Figure 2

North American Cleantech Venture Capital Investments by Industry Segment, 2005–2006



Source: Cleantech Venture Network

Business Action on Climate

As of October 2008, 44 companies have joined the Pew Center's Business Environmental Leadership Council (BELC). The majority are Fortune 500 companies; collectively, they have revenues over \$2 trillion and nearly 4 million employees.²³ They represent most industrial sectors and many of the largest emitters of greenhouse gases, including coal-burning utilities, mining companies, aluminum producers, automobile manufacturers, pulp and paper manufacturers, chemical companies, oil and gas businesses, and the cement industry.

Of the 44 companies, 40 have set targets to reduce their emissions; in fact, many have already met initial targets and subsequently set new, more ambitious targets. The following are some of the many actions that BELC members have taken to reduce emissions, while also reducing costs below those of their competitors and building new climate-related sales growth opportunities:

- In June 2006, **Dupont** and **BP** announced a partnership to develop, market, and produce biobutanol, a new type of biofuel potentially superior to ethanol in terms of energy content, reduction in greenhouse gases, and ease of integration into existing fuel distribution infrastructure.²⁴ Dupont projects that 60 percent of its business will stem from the use of biology to reduce fossil fuel use in the next few decades.²⁵
- **BP** and **GE** in July of 2006 formed a partnership to build up to 15 hydrogen power plants that will generate electricity while using advanced technology to capture and store up to 90 percent of the carbon dioxide that would otherwise be emitted.²⁶
- **Weyerhaeuser**, the world's largest lumber company, announced in April of 2007 that it had entered into a partnership with Chevron to explore the development of cellulosic biofuels from plants, wood fiber, and other organic materials.²⁷
- From 1990 to 2002, **IBM's** energy conservation measures resulted in a savings of 12.8 billion kWh of electricity—avoiding approximately 7.8 million tons of carbon dioxide emissions and saving the company \$729 million in reduced energy costs. IBM in 2007 also launched Project Big Green, which includes a number of new products and services designed to use information technology to increase energy efficiency and reduce greenhouse gas emissions in its own operations and those of its clients.²⁸
- **Alcoa** has saved hundreds of millions of dollars by reducing the electricity required to produce a ton of aluminum by 7.5 percent over the last 20 years. Indirectly, the company also helps other sectors and companies reduce their energy use by supplying strong lightweight material that can substitute for heavier material—for example in packaging where aluminum has significant transport benefits over heavier materials like glass. The search for light-weight materials will no doubt continue to grow as pressure for GHG reductions from transportation increases.
- **Toyota** has become a leader in developing and producing clean energy vehicles, including hybrid, electric, compressed natural gas and fuel-cell electric vehicles. In May of 2008, Toyota announced that global sales of its Prius, a highly efficient gas-electric hybrid car, had topped 1 million.²⁹
- **United Technologies (UTC)** is developing zero-emission, energy-efficient fuel cells for transportation applications. The company has deployed zero-emission fuel cell buses in Washington, DC, California, Madrid, and Turin. UTC is also co-chairing an initiative of the World Business Council on Sustainable Development with the ambitious goal that by 2050 new buildings will consume zero net energy from external power supplies and produce zero net carbon dioxide emissions.
- Since 1976, customer energy efficiency programs at **PG&E Corporation** have cumulatively saved more than 135 million tons of carbon dioxide emissions.³⁰ In addition, as part of the company's groundbreaking Climate Protection Program, customers can choose to pay a small premium on their monthly bill to fund projects to reduce or offset carbon dioxide emissions.

BUSINESS SUPPORT FOR STRONGER POLICY

Scientists say that the world needs to reduce total greenhouse gas emissions by 40 to 75 percent below baselines in order to stabilize atmospheric greenhouse gas concentrations and avoid dangerous climatic change.³¹ Despite the recent upsurge in private-sector involvement in the climate issue, voluntary action by selected companies and their investors is not achieving sufficient reductions to solve the problem.

Recognizing both that government action is inevitable and that policy decisions made on this issue will have substantial implications for future profits, business leaders increasingly are engaging with policymakers to help influence those decisions. Many of these business leaders favor approaches that level the playing field among companies and spread responsibility for reductions to all sectors of the economy. They favor market-based measures such as “cap-and-trade” policies that give businesses flexibility either to reduce their own greenhouse gas emissions or to buy emissions credits from others who can reduce emissions at lower cost (thereby minimizing the overall cost of meeting national and international reduction goals).

The emergence of the U.S. Climate Action Partnership (USCAP), a coalition of major corporations and non-governmental organizations—including the Pew Center on Global Climate Change—calling for the prompt establishment of a binding domestic cap on emissions, is perhaps the most dramatic example of positive business engagement on the climate issue. The coalition urges the adoption of a market-driven, economy-wide approach to reducing GHG emissions 80 percent below 2005 levels by 2050. USCAP also supports a robust federal research and demonstration program aimed at developing low-carbon technologies, as well as renewed U.S. leadership in the ongoing efforts to craft a viable international climate change agreement. The coalition publicly unveiled its “Call for Action” in January of 2007 and followed up with its more detailed “Blueprint for Legislative Action” in January 2009.³²

An important reason why many corporations support a move to federal regulation is the specter of complying with a growing patchwork of state and regional climate regulations and programs. In the familiar pattern of how environmental regulation often develops in America, the states are taking the lead on the climate issue ahead of the federal government.³³

Business leaders also seek greater certainty from the government to help guide their long-term planning. In the electricity sector, for example, companies face decisions about replacing aging plants and building new capacity to meet ever-increasing demand. Without an understanding of future regulatory requirements, however, it is impossible to know the bottom-line implications of building lower-cost, higher-emission plants versus lower-emission alternatives. What is higher-cost today may be cost-effective tomorrow, once carbon emissions are constrained by national policy. The same need for certainty applies to other industries as well.

Calls for changes in national policies are coming from a diverse array of businesses—automobiles, chemicals, heavy and high-tech manufacturing, medical products, retail, information technology, and major oil and gas companies. In addition to USCAP, recent examples of business leadership on climate policy include:

- In June of 2008, Alcoa, Exelon, FPL Group, GE, NRG, National Grid, the Public Service Enterprise Group, and PG&E aligned with several environmental and labor organizations to publicly support the Lieberman-Warner Climate Security Act, a bill that would have established a mandatory domestic GHG reduction program.
- Representatives from Shell, American Electric Power, and Pacific Gas & Electric Co. spoke at a September 2007 briefing, organized by the Pew Center, for Capitol Hill staff on the various approaches to distributing emissions allowances under a national cap-and-trade regulatory system.
- Duke Energy, Exelon, GE, and Wal-Mart testified at the Senate Energy Committee’s climate conference in April 2006 in support of mandatory GHG regulations. Eight other companies, including BP, provided written testimony in support of mandatory controls.

Many of the businesses making the case for government action also see a pressing need for U.S. leadership in the international arena. Multinational firms in particular are seeking coordinated global policies that will be as predictable, integrated, and consistent as possible. Many corporations operate in countries that have committed to emissions reductions under the Kyoto Protocol, and for these companies, it makes sense to implement company-wide climate change

strategies, rather than operate with varying requirements across the globe. Firms also want to be sure that their competitors in developing countries, especially China and India, are soon subject to carbon constraints. Those with the most experience on the climate issue realize that the most important first step to encourage China and India to move toward climate commitments is for the United States to adopt its own mandatory emissions limits and re-engage in the international effort to address climate change.

CONCLUSION

Businesses that are taking action to address climate change, both within their companies and in the policy arena, recognize two things: 1) regulation of greenhouse gas emissions is inevitable; and 2) mandatory climate policies, if properly designed, are consistent with sound business planning and good corporate governance. As more companies and more investors come to this realization, pressure will mount for other businesses to take a more responsible and proactive stance.

While business action has grown over the last several years, some concerns have been raised that the current global economic turmoil may dampen business and government support for addressing climate change. Pessimists fear that tighter credit markets could slow financing for renewable energy projects, cash-strapped consumers may pull back from paying premiums on “greener” goods, and deteriorating macroeconomic conditions could distract policymakers from putting in place new regulations designed to limit emissions of greenhouse gases, for example.

Despite these concerns, there are encouraging signs that the climate issue will stay near the top of corporate and government agendas through this period of global economic anxiety. Governments at the state, federal, and international levels have so far shown no signs of slowing or drawing down efforts aimed at reducing greenhouse gas emissions, and companies continue to announce new, ambitious voluntary GHG reduction targets.³⁴ Increasingly, leading companies recognize that environmental protection and economic prosperity are not competing ideals, but are in fact dependent on one another. In the midst of the turmoil on Wall Street in October 2008, the 26 companies in USCAP and their NGO partners released a statement saying, “Given current economic challenges, USCAP believes a sustainable

environment is inextricably linked to a strong economy where increased energy efficiency, new technologies and wise energy infrastructure investments will create economic opportunities.”³⁵ Many analysts have also noted the potential for government and private sector investment in clean energy to serve as a powerful economic stimulus tool for the U.S. and other countries around the world.

Still, long-term efforts to address climate change will not be cost free—but early, voluntary action by companies such as those in the Pew Center’s BELC proves that firms can achieve major reductions in ways that actually boost profits. The sooner that flexible, market-based regulations are put in place, the greater the likelihood of motivating climate action that achieves significant emissions reductions with minimal impact on the U.S. economy. With the right policies, the United States can become a global leader in producing the climate-friendly technologies that will dominate markets in the 21st century and beyond.

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