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Scrubbing the Sky

Climate Change and the Productive Center

Marcy Murningham

This article sketches out the efforts of government, business, and civil society to address the problem of climate change. It identifies some of the key initiatives underway — including proposals for more stringent caps on greenhouse gas (GHG) emissions; the creation of a market-based trading system that provides incentives and profits for entities that reduce their GHG emission levels; more robust research and development of alternative energy sources as well as new approaches to traditional ones; and continued public education — and portrays the bipartisan, collaborative, multilateral nature of saving Mother Nature. While acknowledging that ultimately these efforts may be futile, given the current amount of carbon concentrated in the atmosphere, the author calls for a covenant on climate change, at both institutional and individual levels, rooted in those inconvenient truths we should hold to be self-evident.

We are now facing a planetary emergency: the planet has a fever. It's a challenge to the moral imagination of humankind to actually accept the reality of the situation we are now facing.

—Al Gore, February 9, 2007

In Paris on February 2, 2007, the International Panel on Climate Change, the main international scientific body assessing causes of climate change, released its fourth report, which reflects the conclusions of some 2,000 scientists from 113 countries, recognized as experts in their respective fields. The strongly worded *Summary for Policy Makers* (three more reports will be issued later in 2007; the next is due in April) states that the warming effect of greenhouse gases (GHG)¹ increased by 20 percent during the past decade — “the largest change observed or inferred for any decade in at least the last 200 years.”

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The scientists continue by claiming “with 90 percent certainty” that human-generated greenhouse gas emissions — chiefly brought about through burning fossil fuels and changes in land use — have caused most of the globally average temperature increases since the mid-twentieth century, and that more warming, high intensity storms such as hurricanes, intense levels of precipitation, prolonged droughts, and rising sea levels are on the way.²

Eminent Harvard biologist E. O. Wilson, who addresses the problem of climate change in his recent book *The Creation: An Appeal to Save Life on Earth*, estimates that if we do not abate the forces causing global warming, we could lose one-half of the world’s species, or bring them close to extinction, by the end of this century. Calling for an alliance between religion and science, Wilson predicts the current trend toward climate change can reduce global biodiversity by as much as one-quarter by 2050.³

Speaking in Boston to a group convened by Ceres, a nonprofit organization dedicated to sustainable prosperity, Tim Wirth, president of the UN Foundation, put the issue succinctly: the important issue is the concentration of carbon dioxide in the atmosphere, which is rapidly approaching the doubling point. According to every scientific model, this is a point we cannot go beyond without risk of irreparable and irreversible damage to the planetary ecosystem. With 400 million new members of the middle class in India, China, and Brazil consuming more fuels and producing more carbon dioxide in the process, we’ll have to reduce our emissions of CO₂ by 70 percent to stay within the doubling point. Wirth’s sober assessment to the group: current efficiencies have not made much of a difference due to this worldwide expansion in fuel consumption; global negotiations have been futile (taking up to six years to reach agreement for a 4 percent emissions reduction, rather than 70 percent); and there is no single, silver bullet solution.⁴

The Productive Center: A Call to Collaborative Action

The climate change debate no longer can be divided neatly into separate arguments or criticisms advanced by business, government, and nonprofit organizations. Needed are multiple strategies on multiple fronts, featuring multiple partnerships that transcend borders and ideologies.

Within the past year, various forms of coordinated, collective action taken by policy makers, NGOs, companies, and their stakeholders have come into being, many involving corporations, who traditionally have been reluctant players. Indeed, with respect to environmental accountability, corporate shareholder activists, not corporate boards and executives, historically have been the leaders in persuading companies to reduce carbon emissions and adopt sustainable business practices, while maintaining transparency and accountability in their efforts to do so.

Nowadays, there is room for everyone to take action, be it through reducing energy consumption or raising public awareness, through innovative technologies or public policy, all of which involve changes in behavior and a transformation of our energy system. But first we need some straight talk from policy makers and corporate leaders about the costs and uncertainties, the loopholes and windfalls, because ultimately global warming is on automatic pilot: carbon emissions continue; are concentrated in an atmosphere whose carrying capacity is limited; and linger there for one hundred years or more.

The sky needs scrubbing, but how are we to do it? Do we have the requisite courage and wisdom? Indeed, despite the urgent and fevered calls to action, the nagging thought is, can we, indeed, make a difference, or are we just going through the motions? And do we have the luxury of waiting for an answer?

Melting Opposition: The Business of Climate Change

There is a rapidly evolving political consensus at all levels of government and across national borders that something must be done; that no single solution will make things better; that while the scale of the undertaking is daunting, there is room for everyone to take part; that the climate change challenge poses more opportunities than risks; that “business as usual” is a recipe for disaster; and — this is perhaps the most powerful incentive — there is money to be made by doing the right thing.

British billionaire Richard Branson of the Virgin Group recognizes the importance of money to fuel innovation: In early February, with Al Gore at his side, he offered a \$25 million prize for anyone who can come up with a way to temper global climate change by capturing and removing at least a billion tons of carbon dioxide a year from the earth’s atmosphere. His “Virgin Earth Challenge” acknowledges that the problem with climate change is not just the emissions generated, but the concentration of carbon dioxide in the atmosphere. “We are now facing a planetary emergency. The earth has a fever,” said Gore. “It’s a challenge to the moral imagination of humankind.”⁵

Appeals to the moral imagination of humankind are lofty, but more down-to-earth, even pecuniary, ones beckon, too, particularly to the private sector. For companies, meeting this challenge means developing smart approaches to sustainability that rely on innovation to unlock value and build competitive advantage; indeed, a virtual cottage industry of sustainability consulting and publishing has sprung up and continues to mushroom.

For many investors and financial services providers, this means having access to consistent and comprehensive information on the climate risk exposure of their investments, as well as knowledge of existing and new

technologies that are profitable in a future carbon-restrained environment. In the short term, by far the most popular mechanism under development is one that blends a commodities market model with a shared-risk approach, thus providing companies the flexibility to achieve their emissions targets while setting a mandatory overall limit on greenhouse gas emissions. This “cap-and-trade” program puts specified limits on greenhouse gas emissions and a financial value on emissions that fall between these limits and a baseline set for each emitter.

One major assumption underlying the policy response to climate change is you cannot have compliance and innovation without carrots and sticks. Put another way, innovative market solutions often require innovative government, a truism demonstrated throughout the country in local cities and states — most notably by California Governor Arnold Schwarzenegger.

The New Bipartisanship: Congress, Corporations, and Civil Society Act

We need to reclaim the environmental politics of the productive center.

—*Christine Todd Whitman, December 5, 2006*⁶

Many people expect some form of climate change legislation during the first session of the 110th Congress, despite previous failed efforts to pass laws for market-based limits and incentives on emissions of greenhouse gases. Throughout January the drumbeat of public expectation grew louder, not only for Congress, but the White House as well.

In his State of the Union address, President Bush finally acknowledged that climate change was a real challenge, even though he disappointed most observers who were hoping for a more aggressive proposal for dealing with it. As he so often does, Bush cast our dependence on oil in national security terms and proposed future American reduction of gasoline use by 20 percent within the next ten years through improved vehicular fuel efficiency and the use of alternative fuels. He said nothing about setting limits on greenhouse gas emissions or the creation of a cap-and-trade mechanism, in spite of the call from many influential bipartisan groups urging him to do so.

Meanwhile, a few days before the SOTU address, four major bills were introduced in Congress, with more expected, and a special House committee was proposed to help advance a sweeping legislative agenda. During the same period, business executives held news conferences to call for accelerated action on federal policy and regulation, including a mandatory cap on carbon dioxide emissions. An Oslo-based firm called PointCarbon, in partnership with the Pew Center on Global Climate Change, held a two-day conference on “North America and the Carbon Markets,” which was oversubscribed and packed with representatives from corporate, financial, legal, and nonprofit organizations who wanted to move quickly so as to

capitalize on the multibillion-dollar opportunity to be among the first to profit from buyers and sellers willing to trade credits at competitive prices.⁷

At the same time, “Saving the Creation,” a group of twenty-eight prominent scientists and evangelical Christian leaders, set aside their differences over the origin of life to concentrate on the future of life: in mid-January they issued a “call to action,” claiming that the protection of life on earth “is a profound moral imperative” and declaring their intention to fight the causes of climate change as well as public confusion on the subject.

Despite differences in emphasis and tone, there were key themes running throughout the array of policy appeals: “Business as usual” is catastrophic for the planet. Set limits on carbon emissions. Provide market incentives for conservation and alternative energy. Invest in research and development for newer, nonpolluting energy technologies. Set aside existing differences to find common sky, not just for ourselves but for future generations.

On January 18, House Speaker Nancy Pelosi (D-CA) and Senate Majority Leader Harry M. Reid (D-NV) held a news conference to pledge passage of “groundbreaking legislation that addresses global warming and energy independence.”⁸ To facilitate this, Pelosi announced plans to create a new Select Committee on Energy Independence and Global Warming, charged with examining climate change and developing approaches that slow the pace of global warming.

Chaired by Massachusetts Congressman Edward J. Markey, the new committee has no legislative power but is expected to carry oversight and investigative authority. The Select Committee will give visibility and legislative priority to climate change through its coordinating work among eight House committees having jurisdiction over U.S. energy, environment, and technology policy. The goal, according to Speaker Pelosi, is to produce sweeping legislation on global warming and energy independence by the Fourth of July, “so that this year, Independence Day is also ‘Energy Independence Day.’”⁹

In addition, days before the State of the Union address, four major cap-and-trade proposals were introduced in the Senate; in early February, a fifth was filed:

- On January 11, Senator Jeff Bingaman (D-NM), chair of the Energy and Natural Resources Committee, called for a reduction in emissions intensity at a rate of 2.6 percent per year from 2012 (which coincides with the end of the Kyoto Protocol) to 2021. The so-called “up stream” restrictions translate into an “absolute cap.”
- On January 12, Senator John McCain (R-AZ) and Senator Joseph Lieberman (I-CT) introduced the Climate Stewardship and Innovation Act of 2007, which contains a “declining cap” provision that cuts emissions steadily over the next several decades.¹⁰
- On January 15, eleven senators, including Senate Environment and Public Works Committee Chair Barbara Boxer (D-CA) and Senator

Bernie Sanders (I-VT), introduced the Global Warming Pollution Reduction Act, which calls for reductions in carbon dioxide (CO₂) and other heat-trapping emissions to 83 percent below their 2004 levels by 2050.¹¹

- On January 17, Senator Dianne Feinstein (D-CA) and Senator Thomas Carper (D-DE) announced their proposed legislation, which focuses on capping utilities emissions to 65 percent below 2004 levels by 2050.
- On February 1, Senator John Kerry (D-MA) and Senator Olympia Snowe (R-ME) reintroduced their Global Warming Reduction Act, which would freeze emissions in 2010 with a gradual reduction each year to 65 percent below 2000 levels by 2050.¹²

According to Senator McCain, the McCain-Lieberman bill — called “the best known brand in climate legislation” by the *New York Times* — is “an evolving process” that improves upon earlier legislation, to which further improvements are envisioned. Twice before, in 2003 and 2005, both Senators McCain and Lieberman brought climate legislation to a Senate vote, bills which included a system of tradable allowances to reduce greenhouse gas; each time, they failed to pass. The 2007 version of their law would cap emissions within the electric power, industrial, transportation, and commercial sectors of the economy at year 2004 levels by 2012, then gradually it lowers the emissions cap to roughly 65 percent of 2004 levels by 2050. It also features provisions for a cap-and-trade system and offset allowances; benefits to consumers, who have borne the costs as a result of greenhouse gas reduction requirements; the deployment of new climate change-related technologies; and adaptation transition assistance — meaning support for dislocated workers and communities affected by the move toward a carbon-neutral economy.

What are the prospects of significant legislation after so many years of inaction? According to Christine Todd Whitman, former Environmental Protection Agency Administrator and New Jersey’s first woman governor, climate change is an issue that will be prominent in the 2008 presidential election. In her view, congressional action before then is unlikely.

I’m worried that we are going to see so much focus on the presidential election that there’ll be a lot of game playing in order to keep certain issues alive for the campaign. That’s troublesome to me. What can happen is that somebody will put forward a grandiose plan for climate change, but they’ll have a poison pill in there that they know the other side can’t possibly accept. It’ll be subtle, and the average person won’t know it, but it will cause the other side to say, “No, we can’t accept that.” And each side can do it and probably will. Unfortunately, they’re doing it not because they really believe it, or want to solve the problem, but because that will be the issue out there, for the campaign. Climate change is now getting to the point where it can be an effective issue in a presidential

campaign. And that's different. We've never had a presidential election where the environment was an issue that was really talked about. If that happens, it will represent a real change in strategy and approach, which I think is good for the environment.¹³

Presidential politics aside, a hallmark of climate change activism is this: With no coordinated federal policy, the nation's states and cities have taken on the challenge, incubating new approaches to efficiency and renewable energy sources, revising existing laws that create barriers to sustainability, and adopting bipartisan regional strategies for reducing emissions and strengthening economies.

The States: Laboratories of Sustainability

We can show Washington how to break our nation's addiction to fossil fuels. . . . Massachusetts can create policies that properly reward smart energy decisions by consumers, businesses, and investors. We cannot solve all of the energy problems we face without changes at the national level, but we can teach the federal government about a new way forward.

—*Massachusetts State Representative J. James Marzilli, January 12, 2007*¹⁴

In response to the absence of federal leadership, for several years many states and municipalities have been busy developing regional initiatives and policies to combat climate change. State and regional action includes setting targets for greenhouse gas emissions, supporting renewable energy generation, selling agricultural carbon sequestration credits, and promoting energy efficiency. By January 2007, twenty-eight states have completed comprehensive Climate Action Plans, which describe cost-effective steps that they can take to reduce their GHG emissions. Twenty-three states and the District of Columbia have established “renewable portfolio standards,” requiring electric utilities to generate a certain amount of electricity from renewable sources. Other state policies are aimed at conservation and air quality improvement, as well as economic development. California is by far the most advanced: On September 27, 2006, Governor Schwarzenegger signed the Global Warming Solutions Act, which caps California's greenhouse gas emissions at 1990 levels by 2020, and represents the first enforceable statewide program in the United States to cap all GHG emissions from major industries that includes penalties for noncompliance.¹⁵

In mid-January at a ceremony held at UMass Boston, Governor Deval Patrick signed a Memorandum of Understanding (MOU) bringing the Commonwealth back into the bipartisan Regional Greenhouse Gas Initiative (RGGI). RGGI is an emerging carbon trading system for northeastern and mid-Atlantic states designed to curb carbon dioxide emissions from electric power plants by 10 percent by 2019; it already had been signed by governors from Connecticut, Delaware, Maine, New Hampshire, New

Jersey, New York, and Vermont. In the future, RGGI may be extended to include other sources of greenhouse gas emissions, and greenhouse gases other than CO₂.¹⁶

Also in January, Massachusetts state representative Jim Marzilli filed the Energy, Climate, and Economic Security Act — a comprehensive proposal to eliminate barriers and create incentives for renewable energy and conservation—along with twenty-five separate but related energy bills. “We’re creating the political infrastructure for a 2009–2029/2030 RGGI agreement,” he says, referring to the time period during which annual carbon credit auctions will occur.

How do the auctions operate? “The auction system works with the notion that first, there’s a cap on the total amount of emission,” he explains.

Currently, it would be in the electric generating sector in the region. Every entity that generates more than a certain threshold of carbon dioxide in the production of electricity would have to have a sufficient number of permits in hand at the end of the year to cover their total emission load. The state is the entity that creates the permit. That’s part of the regional agreement: each state has an allocation of a total amount of tonnage that it can allow to be released, for which it can release permits. The state, essentially, prints up a piece of paper that says “This is a permission slip to generate one ton of CO₂.”

The state auctions those off to any bidder, but at the end of the year, the power plants have to have those permits in hand to cover their actual emissions.

A percentage of the permits — at least 25 percent, but up to 100 percent, should a state so choose — are auctioned off, Marzilli says, and the states can decide (within certain guidelines) what to do with the proceeds. If Massachusetts decides to auction off all of the twenty-three million tons of carbon that have been allocated under the RGGI agreement, which his legislation proposes to do, he estimates that \$100 to \$120 million can be generated each year.

Where should the money go? “Twenty-five percent of the money from my version of RGGI would go into a fund for energy efficiency and renewable energy projects that would be implemented by municipal governments in Massachusetts,” Marzilli says. In addition, some of the money generated through the carbon auction would be directed to low-income households hard hit by higher energy prices, and workers in the carbon fuel sector who may lose their jobs due to the shift from a high-carbon to a lower-carbon economy.¹⁷

Municipal Alliances

Despite U.S. withdrawal from the Kyoto protocol in 2001, as of February 8, 2007, roughly 398 mayors representing 57 million Americans have accepted

the challenge issued by Seattle Mayor Greg Nickels to adopt its goals. Back on February 16, 2005, the day the Kyoto treaty took effect, 141 countries had ratified it; that same day, Nickels launched an initiative to advance the goals of the Kyoto Protocol through leadership and action by at least 141 American cities. The result is the U.S. Mayors Climate Protection Agreement, which was endorsed by the U.S. Conference of Mayors in 2005. Participating cities commit to take the following three actions: (1) strive to meet or beat the Kyoto Protocol targets in their own communities, through actions ranging from anti-sprawl land-use policies to urban forest restoration projects to public information campaigns; (2) urge their state governments and the federal government to enact policies and programs to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol, which is a 7 percent reduction from 1990 levels by 2012; and (3) urge Congress to pass greenhouse gas reduction legislation that would establish a national emission trading system.¹⁸

Green is Good: Sustainable Prosperity

In addition to the actions of lawmakers and public interest groups, a multitude of major businesses have recognized that “green is good,” both to society and to their bottom line. A combination of external pressures — from shareholders, nongovernmental organizations, consumers, student groups, and eventually the federal government, should Congress act — have contributed to this recognition, along with an explosion in climate-related strategies offered by experts as solutions for companies to consider. Even business schools are going green: The *Financial Times* reports that courses on environmental policy and stewardship are cropping up in MBA curricula, under the heading of corporate social responsibility or environmental sustainability.¹⁹ Student activism, too, is increasing on campus, facilitated by groups such as the Sustainable Endowment Institute, which concentrates on higher education endowments, and Net Impact, a network of MBA students and young professionals dedicated to “changing the world through business.”²⁰

Overall, however, many believe that the biggest incentive for corporate alignment with environmental principles is through recognition that doing so will produce positive financial results. The emergence of market-based incentives helps, too; what is now a cottage industry holds the promise of becoming one of the largest commodity markets in the world. Whether voluntary action (by the end of 2006, 225 companies were trading carbon credits on the Chicago Climate Exchange, with new companies joining every week²¹) or through a regulatory regime (which knowledgeable observers see as inevitable, perhaps as early as 2010), the opportunity to profit from trading credits to emit carbon poses an irresistible temptation, with financial services firms scrambling to develop new products and cash

in on the boom: in 2006, the year the carbon market came of age, more than one billion tons of carbon dioxide credits were traded on the European Climate Exchange, at a value of more than \$23 billion.

“The amount of money that has flowed into the market has been staggering,” says Guy Turner, of New Carbon Finance. “And it has not just been the ethical side of the market. These are red-blooded investment houses putting their cash in.”²²

“I think it’s the most viable approach,” says Whitman, when asked about the value of carbon trading. “Before I left the EPA, we took a look to see the effect of the acid rain trading program. We found that because of those incentives, there’s been almost one hundred percent compliance. The amount of sulfur dioxide had been reduced below what the regulation called for, it had happened faster than the regulation called for, and at about half the cost that had been anticipated.”²³

In addition to monetary windfalls, the movement for corporate responsibility and good governance has spawned yet another powerful force contributing to business awareness of the need to act quickly to mitigate risk. Indeed, the methods used in the 1980s by the antiapartheid movement have been adopted widely by environmental activists to encourage responsible corporate behavior, particularly with respect to reporting and transparency. The primary tool: shareholder engagement, manifest through corporate dialogue and the proxy resolution process.

“You’re seeing a lot more shareholder initiatives to corporations now, asking them to benchmark their greenhouse gas emissions or report on their environmental footprint,” says Whitman. “That’s something we never saw before, and they’re getting pretty decent votes. That’s good, because it’s forcing companies to take a harder look. Now many of them have already stepped up to the plate and adopted good environmental practices, but Wal-Mart wasn’t going to get there without some outside pressure. They got a lot of it, and they’ve got a great ability to influence others.”²⁴

Perhaps the most influential organization to guide shareholder advocacy, alliance building, sector research, and corporate action reporting is the Boston-based Coalition for Environmentally Responsive Economics, commonly known as Ceres.²⁵ Ceres was founded by socially responsible investing pioneer Joan Bavaria and her colleagues at the then-nascent Social Investment Forum in 1988, in response to the need for balanced information on the environmental activities of companies being considered for investment.²⁶ Now headed by Mindy S. Lubber, Ceres claims a membership of more than seventy “Ceres Companies,” including eighteen Fortune 500 companies. Meanwhile, its “Ceres Coalition” comprises more than eighty environmental and public interest groups, as well as institutional investors and foundations. In addition to its ongoing campaign urging companies, institutional investors, and public interest groups to join Ceres and voluntarily commit to the Ceres Principles, Ceres promotes the filing of proxy resolutions each year to a host of companies, seeking their formal corporate

adoption of the sustainability guidelines. Ceres also conducts numerous corporate consultations to identify how best to improve sustainability performance and practice.

Over the past few years, Ceres has grown significantly in scope and influence, far beyond its initial role as a vehicle for environmental corporate reporting and accountability. From 1999 to 2003, Ceres was the incubator for the Global Reporting Initiative (GRI), now considered the gold standard in corporate reporting. Initially led by Robert Kinloch Massie, former Ceres president and now a senior fellow, the GRI is a nonprofit organization that has developed and is continually improving a Sustainability Reporting Framework that benchmarks organizational economic, environmental, and social performance. In October 2006, the GRI released the most recent iteration of its guidelines for corporate social responsibility, the Sustainability Reporting Guidelines or “G3.” With a secretariat located in Amsterdam, the GRI conducts its work through a vast international network of collaborative stakeholders from business, civil society, labor, and professional institutions.²⁷

More recently, in January 2007, Ceres joined six other organizations in establishing a common framework for climate risk-related reporting for corporations.²⁸ Around the same time, Ceres released its analysis of the climate disclosure practices of the nation’s 500 largest publicly traded companies.²⁹ Over the years, Ceres has created the world’s largest network of investors, environmentalists, and corporate leaders in service to the shared mission of “sustainable prosperity”; commissioned cutting-edge research reports; leveraged the interests of its \$3.7 trillion Investor Network on Climate Risk; held briefings for Wall Street analysts in the auto, electric power, and oil sectors; catalyzed \$1 billion in new clean technology investments; convened gatherings such as the climate risk summit held at the United Nations in 2005 for hundreds of financial, investor, and Wall Street leaders, which culminated in a ten-point investor action plan; and pressed for climate action in the insurance sector. Late last year, Ceres announced an executive education program involving insurance giant Marsh and Yale University for independent corporate board members about climate change liabilities and opportunities.

2007 Shareholder Activism

Since 1995, investor concern about global warming and climate change has been directed to companies primarily through active engagement, involving corporate dialogue as well as the submission of proxy resolutions. Since then, the number of shareholder resolutions on climate change has more than tripled. Many of the nation’s largest pension funds, including TIAA-CREF and several public funds such as the New York City pension funds and the California state employees and teachers’ funds, have thrown their support behind these resolutions, which receive increased support each year.

According to Meg Voorhes and Carolyn Mathiasen, longtime chroniclers of social responsibility proxy activism who are now with Institutional Shareholder Services, seventy-five environmental proposals were filed in 2006, with forty-four coming to a vote.³⁰ This upcoming proxy season promises to be livelier than ever. As of February 12, 2007, thirty-four resolutions have been filed with corporations on sustainability and energy efficiency issues, and twelve have been withdrawn (usually a sign of corporate willingness to work on shareholders' concerns), according to Institutional Shareholder Services.³¹ "I think there's a lot of focus on renewables, and on the need for oil companies to redefine themselves as energy companies, as BP and others have begun to do," says Andy Logan, director of oil and insurance programs at Ceres, when asked what lies ahead for shareholder activists.³²

Climate Risk Reporting Frameworks

Corporate disclosure on climate-related risks and opportunities is currently a voluntary and sporadic process, largely due to the efforts of the Carbon Disclosure Project. Launched in 2000, the Carbon Disclosure Project now includes more than 284 investment houses with assets of more than \$41 trillion — including Morgan Stanley, Goldman Sachs, and American International Group.³³

In January a more universal, formalized approach to climate risk disclosure was advanced by a new partnership announced at the World Economic Forum in Davos, Switzerland. (There were seventeen panels on global warming at this year's Davos gathering.) The goal of the Climate Disclosure Standards Board (CDSB) is to create a generally accepted framework for corporate climate risk-related reporting so as to facilitate better comparative analysis by investors, corporate managers, policymakers, and the public. According to Jim Rogers, Chairman and CEO of Duke Energy Corporation, "It's time to raise the bar on corporate disclosure of carbon emissions reporting. Adopting this standard is key to addressing the climate issue." Among the climate issues the group wants to see included in company annual reports are total emissions; an assessment of the physical risks of climate change; an assessment of the regulatory risks of climate change; and a strategic analysis of climate risk and emissions management.³⁴

Corporate Alliances

We need to move forward with federal legislation to address climate change. The science of climate warming is clear. We know enough to act now, we must act now. We also must be prepared for a sustained, intense effort over many future decades. Despite the challenges, and there'll be

many, our businesses and the national economy can grow, prosper, and compete successfully in a greenhouse gas constrained world.

—James Rogers, Chairman and CEO, Duke Energy Corporation³⁵

Corporate enterprise's evolving stance on sustainability was exhibited most recently by the United States Climate Action Partnership (US-CAP), unveiled on January 22, 2007. This diverse coalition of CEOs from ten major corporations representing utility, manufacturing, petroleum, chemical, and financial services industries joined with leading environmental groups to support the creation of a national policy on carbon emissions that would lead to reductions of 10 to 30 percent over the next fifteen years. Its report *A Call to Action* provides an integrated set of principles and policy recommendations for legislative deliberation about both climate change and energy security; it also calls for the creation of a "cap-and-trade" market.

Corporate members of US-CAP include General Electric; DuPont; Alcoa; BP; Caterpillar; Lehman Brothers; Duke Energy of North Carolina; Pacific Gas and Electric; Florida Power & Light Company; and PNM Resources of New Mexico. Environmental members include the World Resources Institute; Environmental Defense; the Natural Resources Defense Council; and the Pew Center on Global Climate Change.³⁶ "We're a diverse group," said Jeffrey R. Immelt, General Electric's chairman and CEO, at the press conference announcing the partnership. "We all care about the world, but we all work for investors. . . . Ultimately we believe that business can speak with one voice, and it's important in a case like this to get ahead of where the world is, and have a seat at the table in deciding what takes place."

Meanwhile, for several years the insurance industry has been examining risks associated with climate change and implications for its bottom line. More recently, insurance giant Swiss Reinsurance (Swiss Re) was singled out by *Scientific American* in its "50 for 2006" compilation, citing Swiss Re's "history of sensitivity to climate change concerns" and its 2003 announcement of a ten-year plan to become greenhouse "neutral," meaning it would reduce or offset carbon emissions caused by its employees to zero.³⁷ The devastation caused by catastrophic weather-related events such as Hurricane Katrina have resulted in a dramatic increase in insured and uninsured losses, which in many cases have outstripped premium increases, inflation, and population growth over the same time period.³⁸ Lloyd's of London put matters succinctly in 2006 with its report, *Climate Change: Adapt or Bust* in which it urged insurers to face up to the growing threat. This means better research to help the industry come up with workable risk models and taking a new approach to underwriting, with pricing and capital allocation models regularly being updated to reflect the latest scientific evidence.³⁹

Within the investment banking world, last year Goldman Sachs once again demonstrated its leadership regarding business ethics and corporate citizenship by announcing its commitment to reducing greenhouse gas

emissions while increasing investments in renewable energy. The firm's Environmental Policy Framework, issued in 2006, pointedly affirms the interdependent reality of business and government, in service to social and environmental well-being.⁴⁰

Business Strategies

What are the constructive roles available to business? They are many and varied, running the gamut from external communication to internal operations. Options include raising public and consumer awareness, participating in market-based schemes such as carbon trading, and engaging in company-based efforts to reduce emissions and increase sustainability.

Andrew Hoffman, a professor at the University of Michigan, at the request of the Pew Center for Global Climate Change, has written a comprehensive, practical primer for business, based on a thirty-one-company survey of large corporations that have developed and implemented climate change strategies. *Getting Ahead of the Curve: Corporate Strategies That Address Climate Change* recommends that firms take eight specific steps, clustered in three stages: assess emissions and climate-related risks; gauge risks and opportunities; evaluate action options; set goals and targets; develop financial mechanisms; engage the organization; formulate policy strategy; and manage external relationships. Also important: well-timed development and implementation of a climate-related strategy; appropriate levels of commitment; the need to influence policy development; and the importance of creating business opportunities.⁴¹

In its October 2006 report *A Three-Pronged Approach to Corporate Climate Strategy*, published by the nonprofit group Business for Social Responsibility (BSR), the authors identify components of a "smart corporate strategy for companies that are serious about climate change," including a comprehensive picture of the efforts companies will have to undertake across the organization and its operations, as well as throughout the lifecycle of products and services. The BSR report offers a primer on how companies can begin to achieve energy efficiencies; explore the voluntary carbon market option; engage with carbon offset projects; and utilize less carbon-intensive and increasingly renewable-based energy.⁴²

You don't have to be a large multinational corporation, however, to adopt green energy practices. Closer to home, one notable local example of creative energy sourcing is Watertown, Massachusetts' Deluxe Town Diner, which recycles cooking oil for heating purposes. Don and Daryl Levy, the Deluxe Town Diner's owners, use one hundred percent vegetable oil in a specially designed burner to heat the eatery and save hundreds of dollars. The Levys combine used oil, which has been strained by a special filter to remove micronic particles, with additional gallons of fresh oil. Their biofuel system needs constant maintenance, but it gets the job done. "Anything and

everything needs to be tweaked,” Don Levy says. “Because the oil is not brand spanking new, each batch could be and is different. The filtering is always done, but some small amount of water, animal fat, etcetera always gets into the system. That is why we need to clean it monthly.” Renowned for its mouth-watering pancakes, Kobe burgers, and other tasty fare — “the art of fine dining,” as Levy calls it — the diner’s reliance on sustainable energy fits in with its business philosophy. “I’m saving money, and saving the planet, too,” Levy says. “Customers accept and appreciate that.”⁴³

Levy’s approach to climate change might be placed under the industrial category of “little oil.” But what about big oil? How do oil companies stack up with respect to sustainability and climate change?

What about Big Oil?

Within the carbon-intensive industries such as oil and gas, the business response has been three-pronged: (1) *develop new technologies*, including hybrids running on alternative power sources such as gasoline-electric, diesel, biofuels, and eventually hydrogen fuel cells (considered by experts to be decades away); (2) *develop new fuels*, which means an intermediate shift away from petroleum to renewable biofuels: corn-based, sugar-based, and cellulosic ethanol. These biofuels are liquid fuels obtained from various forms of biomass, including grain crops, grasses, oilseeds, plant wastes, wood residues, and animal wastes; and (3) *enact new standards*, including those related to new laws, regulations, and policies that assure carbon reduction and fuel economy; and those related to reporting and transparency concerning climate risks and opportunities.

But according to a special report commissioned by Ceres on the readiness of one hundred of the world’s largest corporations to compete in a carbon-constrained world, American oil companies are slowly beginning to factor climate change into their governance practices and strategic planning, but they still have a long way to go to catch up with their European counterparts. Ceres graded companies according to a one hundred-point system covering board oversight; management execution; public disclosure; emissions accounting; and emissions management and strategic opportunities.

According to the “Climate Change Governance Checklist,” American oil companies such as Anadarko, Sunoco, AmeradaHess, ExxonMobil, ConocoPhillips, Marathon, Occidental, and Valero were underachievers. The only American oil company to receive higher marks was Chevron, largely due to its annual investment of over \$100 million in low-carbon technologies. At the top of the list: BP, RoyalDutch/Shell, Statoil, and Total.⁴⁴

Another rating scheme is the “Climate Leadership Index” prepared by the Carbon Disclosure Project, which is based upon corporate surveys and “best in class” determination; BP leads the pack, followed by Repsol YPF;

Suncor Energy; Total; Royal Dutch/Shell; and Chevron.⁴⁵ In 2004, Goldman Sachs conducted an analysis using thirty environmental and social metrics occupying eight categories for its Energy Environmental and Social (GSEES) Index, and found that BP and Royal Dutch/Shell were pace setters, followed by Statoil and ExxonMobil, which were 10 percent above Norsk Hydro, Total, ChevronTexaco, BG and ENI.⁴⁶

Andy Logan of Ceres believes that oil companies should be evaluated not just on the basis of reducing their carbon emissions, but also on the basis of their commitment to renewable energy and their contribution to public policy deliberations. “The real role that oil companies can and should play is in encouraging this transformation to a whole new energy economy,” he says. “You’ll certainly want to see them reduce emissions, but there are also two other areas. One is, are they investing in new and creative clean technologies? Are they putting significant amounts of money into renewables and clean tech? Two, what is their involvement in the public policy process and the public conversation about climate change? If you take that perspective, the companies really do sort out pretty easily.” He continues by citing BP, followed by Royal Dutch/Shell, then Total, as exemplary; Chevron and ConocoPhillips occupy middle ground; and Exxon falls at the other end of the scale, although recent moves by Exxon may improve its standing.⁴⁷

BP, which anchors its core business strategy on sustainability and ethical values, was the first major company to state publicly that climate change posed serious risks that should be addressed immediately. BP has cut its greenhouse gas emissions by 10 percent below 1990 levels and, in 2002, established an alternative energy business unit that plans to invest \$8 billion over the next ten years in solar, wind, hydrogen, and combined cycle power generation. In late January, BP announced that it would award half a billion dollars over ten years for bio-energy research to a consortium led by the University of California at Berkeley.⁴⁸

Meanwhile, despite its astonishing financial performance — last year, Exxon reported \$39.5 billion in profits, far beyond those generated by, say, Wal-Mart or Microsoft — Exxon continues to be, as the *New York Times* puts it, “the energy company all right-thinking people love to hate.”⁴⁹ Long a target of the environmental lobby, Exxon has been vocal in its skepticism that climate change poses an immediate and urgent threat, and until recently had provided funding to think tanks and advocacy groups that challenged the scientific evidence that global warming was taking place. But in January, following criticism of this practice by the Union of Concerned Scientists and other groups, Exxon announced that it would cut off funding to outside groups that have undermined the scientific validity of climate change and that it would meet in Washington with officials of other companies to discuss what form possible U.S. carbon regulation should take.⁵⁰

Perhaps in recognition of the inevitability of a federal plan, Exxon’s decision to move from opposition to considered discussion is a seismic shift from its long-held position that climate change concerns were rooted in bad

science and that the federal government should play a minimal role, if any. Unlike BP, Exxon continues its reliance on fossil fuels and has no investments in wind, solar, or nuclear energy, but has not ruled them out. But Exxon has committed \$100 million to Stanford's Global Climate and Energy Project (GCEP), whose mission is to accelerate the development of commercially viable energy technologies that can lower greenhouse gas emissions on a global scale. GCEP's focus includes hydrogen production, storage, and use; biomass and solar energy; carbon dioxide capture and storage; and advanced transportation and coal technologies. Exxon also has joined the European Union's CO₂ ReMoVe program, an innovative research initiative to establish scientific monitoring systems and determine the viability of capturing and storing carbon dioxide emissions underground.⁵¹

Scrubbing the Sky: The Search for the Productive Center

Tackling climate change offers an unprecedented opportunity for thoughtful and systemic cross-sector, cross-disciplinary collaboration to forge linkages, focus attention, and engage the world. "The politics of the productive center," as Whitman calls it, evoking an earlier era when Republicans and Democrats came together to establish a foundation for environmental protection.

As for the global carbon market, there needs to be a stronger connection between market trading and CO₂ producing entities, and a better fit between market success and investment in low-carbon infrastructure to keep it from becoming simply a way of getting somebody else to pay for the damage you are doing. Attention must be paid as well to the potential for fraud and self-dealing, to keep carbon trading from becoming a bonanza for lobbyists, lawyers, and consultants. Finally, we need to consider, as Marzilli has, what we do with the public money raised from the public auctions. A good start: fixing our aging water infrastructure, which faces a funding shortfall of \$500 billion by 2020.

We also should turn our attention to a more robust program of research and development to focus on new approaches to traditional energy sources, as well, expanding renewable power and developing new ones. Already we are hearing about nuclear power, which has a zero CO₂ footprint, and carbon capture and storage (CCS), as applied to coal plants. Solar, wind, hydro, biomass, tide, geothermal — these accounted for 13.1 percent of the world's primary energy supplies, according to the International Energy Agency.⁵² We need to raise that percentage, and surely our entrepreneurial spirit can identify other sources as yet unknown.

But these are the strategies of institutions, not individuals. At a time when most of us feel relatively powerless over the forces that affect the world in which we live, what are we to do? Can we make a difference, one by one?

How we answer that question reveals much about our philosophy of life, our world view and sense of agency. I prefer to side with those who believe that we have a God-given power and moral obligation to save God's creation, and that it begins with a process of commitment and education.

But first, we need to join the conversation, and encourage others to do so, about how to hold these inconvenient truths to be self-evident. Then let us make a public promise to heal the planet, before it's too late.

Let the covenant begin.

Notes

1. Carbon dioxide (CO₂) is the most prevalent form of greenhouse gas, but it is not the only one. Five other global warming culprits are covered under climate change policies and trading programs. They include: methane (CH₄); nitrous oxide (N₂O); sulfur hexafluoride (SF₆); perfluorocarbons (PFCs); and hydrofluorocarbons (HFCs).
2. International Panel on Climate Change, *Climate Change 2007: The Physical Science Basis, Summary for Policymakers* (Paris: February, 2007). The PDF version of the report can be downloaded at <http://www.ipcc.ch/> The IPCC was created in 1988 by two UN agencies, the World Meteorological Organization and the United Nations Environment Programme. The IPCC does not conduct research, but rather convenes climate experts from around the world every five to seven years in order to synthesize the latest climate research findings in peer reviewed and published scientific/technical literature. Previous reports were issued in 1990, 1996, and 2001; its Fourth Assessment Report (AR4) is being released in installments during 2007.
3. E. O. Wilson, *The Creation: An Appeal to Save Life on Earth* (New York: W. W. Norton & Company, 2006).
4. Tim Wirth, remarks delivered to audience convened by Ceres (Boston, Mass., November 21, 2006).
5. Kevin Sullivan, "Billionaire Offers \$25M Prize to Fight 'Warming'," *The Washington Post* (February 9, 2007). Further information on the Branson challenge can be obtained by visiting www.virginearth.com
6. Christine Todd Whitman, "The Politics of the Environment," a public address delivered at the John F. Kennedy Jr. Forum, Institute of Politics, Kennedy School of Government, Harvard University (Cambridge, Mass., December 5, 2006).
7. Interview with State Rep. J. James Marzilli (D-Arlington), January 19, 2007.
8. According to published reports in the *Boston Globe* and the *San Francisco Chronicle*, Pelosi's plan riled up some powerful Democratic chairmen who traditionally have enjoyed unfettered discretion in pursuing their favorite legislative agendas. One such disgruntled congressman is Michigan Democrat John Dingell, chair of the House Energy and Policy Committee, who has been a staunch ally of the automotive industry and its resistance to climate change legislation. See Rick Klein, "Markey Caught in Wrangling on Global Warming," the *Boston Globe* (January 19, 2007) and "Pelosi Creates Committee to Deal with Global Warming," *San Francisco Chronicle* (January 19, 2007), A1.
9. "Pelosi Announces the Creation of Select Committee on Energy Independence and Global Warming," Press Release, U.S. House Speaker's Office (Washington, D.C.: January 18, 2007). <http://speaker.house.gov/newsroom/pressreleases?id=0038>.
10. *Climate Stewardship and Innovation Act*, 110th Congress, 1st sess., Cong. Rec., (January 12, 2007): S.280. As in 2005, Senators Olympia Snowe (R-ME) and Barack

- Obama (D-IL) added their names to the 2007 measure, alongside other co-sponsors Senators Blanche Lincoln (D-AZ); Susan Collins (D-ME); and Majority Whip Richard Durbin (D-IL). The McCain-Lieberman bill was generally applauded by environmental activist groups, although the Natural Resources Defense Council objected to its provision granting subsidies to the nuclear power industry. See "New Global Warming Bill Signals Momentum Growing for Effective Reductions," Press release, Natural Resources Defense Council (Washington, D.C.: January 12, 2007). <http://www.nrdc.org/media/2007/070112.asp>.
11. According to the Union of Concerned Scientists, the Global Warming Pollution Reduction Act takes an incremental approach to reaching this goal: U.S. emissions would decrease approximately 2 percent each year from 2010-2020 to reach 1990 levels. Emissions would be cut 26 percent below 1990 levels by 2030, 53 percent below 1990 levels by 2040 and fully 80 percent below 1990 levels by 2050. The bill's nine other sponsors are Patrick Leahy (D-VT); Edward Kennedy (D-MA); Robert Menendez (D-NJ); Frank Lautenberg (D-NJ); Jack Reed (D-RI); Daniel Akaka (D-HI); Daniel Inouye (D-HI); Russ Feingold (D-OR); and Sheldon Whitehouse (D-RI).
 12. "Snowe, Kerry Climate Bill Would Reduce Emissions 65 Percent by 2050," Press Release, Office of U.S. Senator Olympia J. Snowe. Originally introduced in September 2006, the targets contained in the Global Warming Reduction Act are considered too modest by the Union of Concerned Scientists, who believe that an 80 percent reduction in GHG emissions by 2050 is needed to avoid the worst effects of global warming. See http://www.ucsusa.org/global_warming/solutions/climate-policy-update-01-2007.html.
 13. Interview with Christine Todd Whitman, January 10, 2007.
 14. J. James Marzilli, "Getting Smarter on Energy," *Boston Globe* (January 12, 2007).
 15. Comprehensive information on California's new law, as well as other state initiatives throughout the country, can be obtained by visiting the Pew Center for Global Climate Change's website at www.pewclimate.org.
 16. Legislation was signed in April, 2006, that requires Maryland to become a full participant in the process by June 30, 2007. In addition, the District of Columbia, Pennsylvania, Rhode Island, the Eastern Canadian Provinces, and New Brunswick are observers in the process. On December 20, 2005, seven states announced an agreement to implement the Regional Greenhouse Gas Initiative, as outlined in a Memorandum of Understanding (MOU) signed by the Governors of the participating states. The MOU outlines the program in detail, including the framework for a Model Rule. On August 15, 2006, after extensive and lengthy consultation with stakeholders, the participating states issued a Model Rule for the RGGI program. The model set of regulations details the proposed program, as outlined in the Memorandum of Understanding. The model rule will form the basis of individual state regulatory and/or statutory proposals to implement the program. The action plan also establishes guiding principles for the program design, including: emphasizing uniformity across the participating states; building on existing successful cap-and-trade programs; ensuring that the program is expandable and flexible; allowing other states or jurisdictions to join in the initiative; starting the program simply by focusing on a core cap-and-trade program for power plants; and focusing on reliable offset protocols (i.e., credits for reductions outside of the power sector) in a subsequent design phase. For more, visit the RGGI website at www.rggi.org.
 17. Marzilli interview.
 18. Further information on the grassroots efforts of the mayors can be viewed at <http://www.seattle.gov/mayor/climate/default.htm>.
 19. Rebecca Knight, "Global Warming has Become a Hot Topic," *Financial Times* (January 29, 2007).

20. Founded in 2005 by Williams College alum Mark Orlowski, the Sustainable Endowments Institute engages in research and education on the sustainability of higher education endowments. A special project fund of Rockefeller Philanthropy Advisors and based in Cambridge, Massachusetts, on January 24, 2007. SEI released the *College Sustainability Report Card*, which examines policies and programs at colleges and universities in the United States and Canada constituting the 100 largest endowments. Its website is www.endowmentinstitute.org. Founded by business students in 1993, Net Impact is a network of 7,000 MBAs, graduate students, and young professionals. Its mission is to improve the world by growing and strengthening a network of leaders who can use the power of business to make a positive net social, environmental, and economic impact. The organization now has more than 125 chapters on four continents in 75 cities and 80 graduate schools. See www.netimpact.org.
21. Claudia H. Deutsch, "U.S. Companies Explore Ways to Profit from Trading Credits to Emit Carbon," *New York Times* (December 28, 2006). The Chicago Climate Exchange (CCX) is the world's first and North America's only greenhouse gas (GHG) emission registry, reduction and trading system for all six greenhouse gases. CCX is a self-regulatory, rules-based exchange designed and governed by CCX members who make a voluntary but legally binding commitment to reduce GHG emissions by 6 percent by 2010. See www.chicagoclimatex.com. Meanwhile, the European Climate Exchange (ECX), a wholly-owned subsidiary of the Chicago Climate Exchange, manages sales and marketing for European environmental products. See www.europeanclimateexchange.com.
22. As reported in Mike Scott, "Emissions Trading Market is Hotting Up," *Financial Times* (January 29, 2007).
23. Whitman interview.
24. Whitman interview.
25. After an oil spill off the coast of Alaska made by the Exxon oil tanker *Valdez*, the so-called Valdez Principles were formulated in 1989. The Valdez Principles were patterned after the Sullivan Principles, named after civil rights leader Rev. Leon Sullivan and used to evaluate corporate behavior in South Africa. The Valdez Principles were later renamed the Ceres Principles, with shareholder engagement as a primary means of achieving measurable commitment and progress. Ceres began as a partnership between leading environmental groups and institutional investors seeking ways to align investment dollars with social and environmental responsibility, primarily through a framework initially called the Valdez Principles. The ten guidelines include provisions for transparency and governance measures for protection of the biosphere; sustainable use of natural resources; reduction and disposal of wastes; energy conservation; risk reduction; safe products and services; environmental restoration; informing the public; management commitment; and audit and reports.
26. In 1981, Bavaria co-founded the Social Investment Forum, a member association of research, advisory, banking, and community loan fund organizations engaged in socially responsible investing; in addition, she was the founding chair of Ceres from 1989 to 2001. Joan Bavaria continues to serve as the President and CEO of Trillium Investment Management, a company she founded in 1982, and remains an influential voice in socially responsible investment and the sustainability movement, receiving numerous honors from worldwide organizations. See www.trilliuminvest.com
27. Further information on the Global Reporting Initiative can be viewed at www.globalreporting.org
28. World Economic Forum, "New Consortium Created to Develop Standard Framework for Company Reporting of Climate Risks" (Davos: Switzerland, January 26, 2007).

29. "S&P 500 Companies Faulted for Poor Climate Disclosure," a press release of Ceres and Calvert Group (Boston, Mass.: January 31, 2007). An executive summary and full report can be obtained at www.ceres.org and www.calvert.com.
30. Meg Voorhes and Carolyn Mathiasen, "Social Proposals Receive Greater Support," *2006 Postseason Report* (Rockville, MD: Institutional Shareholder Services, 2007). The report can be viewed and downloaded by visiting <http://www.issproxy.com/pdf/2006PostSeasonReportFINAL.pdf>
31. Founded in 1985 by corporate governance pioneers Robert A. G. Monks and Nell Minow, Institutional Shareholder Services (ISS) has become the world's leading provider of proxy voting and corporate governance solutions to the institutional marketplace. In January 2007, RiskMetrics Group, a financial risk management firm, completed its acquisition of ISS. Further information about the 2007 proxy season and Institutional Shareholder Services can be viewed at www.issproxy.com.
32. Interview with Andy Logan, January 11, 2007.
33. The Carbon Disclosure Project (CDP) provides a secretariat for the world's largest institutional investor collaboration on the business implications of climate change. CDP represents an efficient process whereby many institutional investors collectively sign a single global request for disclosure of information on greenhouse gas emissions. More than 1,000 large corporations report on their emissions through this website. On February 1, 2007 this request was sent to over 2,400 companies. Further information can be obtained by visiting the website www.cdproject.net.
34. World Economic Forum, "New Consortium Created to Develop Standard Framework."
35. Statement made at press conference announcing the formation of the US Climate Action Partnership, Washington, D.C. on January 22, 2007. A full video of the proceedings along with a .pdf copy of its report, *A Call to Action*, can be viewed at www.us-cap.org.
36. Further information on the Climate Action Partnership, including access to the *Call to Action* report, can be obtained at its website, www.us-cap.org.
37. As reported in Paul Brown, "New 'Best Of' Lists for 2006," *New York Times* (December 16, 2006).
38. See two important reports commissioned by Ceres, including the pre-Katrina 2005 examination, *Availability and Affordability of Insurance Under Climate Change: A Growing Challenge to the U.S.* (Boston: Ceres, December 2005), and, in 2006, *From Risk to Opportunity: How Insurers Can Proactively and Profitably Manage Climate Change* (Boston: Ceres, August 2006).
39. *Climate Change: Adapt or Bust* can be retrieved at Lloyd's of London website, www.lloyds.com.
40. *Goldman Sachs Environmental Policy Framework* (December 2005). Goldman Sachs became the first global investment bank to develop a comprehensive environmental policy, which can be viewed at http://www2.goldmansachs.com/our_firm/our_culture/corporate_citizenship/environmental_policy_framework/docs/EnvironmentalPolicyFramework.pdf.
41. Andrew J. Hoffman, *Getting Ahead of the Curve: Corporate Strategies That Address Climate Change* (Washington, D.C.: Pew Center on Climate Change, October 2006).
42. Sissal Waage and Emma Stewart, *A Three-Pronged Approach to Corporate Climate Strategy* (Washington, D.C.: Business for Social Responsibility, October 2006). A copy of this report and other information can be obtained at www.bsr.org.
43. Email from Don Levy to author (January 25, 2007). See also Peter J. Howe, "From Tasty to Toasty: Used Cooking Oil Heats a Diner," *Boston Globe* (January 21, 2006), A1.
44. Cogan, *Corporate Governance and Climate Change: Making the Connection*.
45. The Climate Leaders Index 2006 can be downloaded from the Carbon Disclosure Project's website at <http://www.cdproject.net/climateleaders2006.asp>.
46. See Goldman Sachs "Global Energy: Introducing the Goldman Sachs Energy, Environ-

- mental and Social Index" (February 24, 2004). It can be viewed at <http://www.pewclimate.org/docUploads/Goldman%20EESI%20Index.pdf>.
47. Logan interview.
 48. Rick DelVecchio and Mark Martin, "Cal to be Hub for Study of Alternate Fuel," *San Francisco Chronicle* (February 1, 2007), A1.
 49. Joe Nocera, "ExxonMobil Just Wants to Be Loved," *New York Times* (February 10, 2007).
 50. Jeffrey Ball, "Exxon Softens Climate-Change Stance," *Wall Street Journal* (January 11, 2007).
 51. Information taken from "Assessing the Risks of Climate Change: ExxonMobil's Views and Actions," appearing on ExxonMobil's website at http://www.exxonmobil.com/Europe-English/Citizen/Eu_VP_climate.asp. See also Ed Crooks and Fiona Harvey, "ExxonMobil Seeks to Take its Business to Greener Pastures," *Financial Times* (January 31, 2007).
 52. Figures on renewable energy sources reported in Rebecca Smith, "The New Math of Alternative Energy," *The Wall Street Journal* (February 12, 2007), R1.