environmental

SHIFTING THE ENERGY PARADIGM

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Despite increasing losses associated with catastrophic weather events, the insurance industry has not systematically incorporated global warming and climate change into its risk models. Insurers could reduce risks by investing in the renewable energy market.

In early June 2002, a little-known buoy 26 miles off the coast of Cape May, New Jersey registered a water temperature of 83.1 degrees. It was the highest ocean temperature ever recorded off the New Jersey coast (14 degrees above normal) and a level typically found only in the waters of the Gulf of Mexico. Four months later, in the span of just 12 hours, Hurricane Lili intensified over the Gulf of Mexico from a weak Category 2 hurricane to a strong Category 4 storm. Before mysteriously weakening and just before making landfall in Louisiana, Lili's winds, just above the ocean surface, were clocked at an astounding 226 miles per hour.

Ocean temperature—the fuel that drives hurricanes and cyclones in the Atlantic and Pacific Oceans—is rising in tandem with global temperatures. The Intergovernmental Panel on Climate Change (IPCC)—an international body of preeminent scientists empanelled by the World Meteorological Association (WMO) and the United Nations to assess the scientific validity of human-induced climate change—has concluded that global average temperature has increased more than 1 degree Fahrenheit since the start of the 20th century and is expected to increase another 2.5 degrees to 10.5 degrees Fahrenheit over 1990 levels by the end of this century.

Global temperature can have drastic impacts on the world's climate. For example, global temperature during the Ice Age was only 5 C below today's temperature. According to the WMO, 1998 and 2001 were the first and second-warmest years since systematic temperature measurements first began in 1840. The average temperature in each of the past 23 years has exceeded the 30-year average temperature from 1961 to 1990. There is now strong evidence that the 1-degree increase in global average temperature this past century has already caused major changes in the earth's physical and biological systems: glaciers have shrunk; the permafrost has thawed; and ice has frozen later and breaks up earlier on rivers and lakes.

The IPCC also finds that this increase in temperature will spawn more frequent and violent climate phenomena, like hurricanes. Hurricanes can only survive over water at temperatures of 80 degrees Fahrenheit or warmer. As the oceans warm, hurricanes will travel farther northward and cause greater damage in unprepared areas like the Mid- and North-Atlantic seaboard.

Additionally, development is occurring rapidly in coastal areas. For example, had Lili not weakened mysteriously just prior to landfall, it likely could have been the most catastrophic hurricane ever to hit the continental U.S. Such a storm has sustained winds in excess of 155 mph, which blows down all shrubs, trees, and signs in its path, rips off the roofs of many homes and buildings; completely destroys mobile homes and other smaller buildings, and causes a 15-foot to 20-foot storm surge that would inundate low-lying inland areas within 5 miles to 10 miles of shore.

The economic implications of a warmer world for the insurance industry are distressing, to say the least. Insurance industry profits declined nearly six-fold since 1990 as the costs of ordinary and extreme weather events increased precipitously. Over the past 50 years,

global economic losses in constant dollars from catastrophic events increased 10 times over, from $3.9 billion (U.S.) in the 1950s to $40 billion in the 1990s. The insured portion of these losses rose from a negligible level to $9.2 billion. According to the Department of Energy, insurance losses from natural disasters have increased 15-fold since 1960, even when corrected for inflation. Munich Re also claims that of the 31 natural disasters that have exceeded $1 billion in insurance losses, 29 involved weather-related catastrophes and 28 occurred after 1990. Case in point, Hurricane Andrew in 1992 inflicted losses of around $15 billion, by far the largest single loss in history. Allstate Insurance alone dispensed $500 million more than it had ever collected from all types of insurance in Florida. Seven other companies went bankrupt. Had Andrew inflicted a direct hit on Miami, the losses could have exceeded $40 billion.

Despite increasing losses associated with catastrophic weather events, the IPCC finds that the insurance sector has not systematically incorporated climate change into risk models that are the foundation of the actuarial process. Accordingly, the IPCC finds that there is great potential for major disruption in the insurance markets resulting from climate change-induced severe weather events.

The Kyoto Protocol

Shortly after taking office, the Bush Administration announced that the United States, which emits 36.1 percent of the world's carbon dioxide (CO_2) emissions, would not ratify the global treaty to reduce greenhouse gas emissions, The Kyoto Protocol (Kyoto). This could significantly delay the world's effort to create the necessary market forces to drive efficient reductions in CO_2 to combat global warming or lead to ratification of Kyoto without the U.S.'s participation.

Kyoto only becomes effective when 55 countries and a sufficient number of developed countries (Annex I countries) accounting for at least 55 percent of the total CO_2 emissions for the base 1990 year ratify it. With the U.S. absent from Kyoto, nearly all the remaining developed countries will have to ratify the treaty for it to become effective. As of September 27, 2002, 95 countries have ratified Kyoto, representing only 35 percent of the total emissions from Annex I countries. Under Kyoto, developing nations are considered non-Annex I countries.

Kyoto creates legally binding emission reduction targets for developed countries and general commitments for all parties and creates three market-based mechanisms to increase the cost-effectiveness of achieving reduction goals, namely "joint implementation," "clean development mechanism" (CDM), and "emissions trading."

Joint implementation allows Annex I countries to implement and gain credit for emission reduction projects in other Annex I countries so long as the aggregate emissions reduction achieves the targets for all jointly operating countries. The CDM allows Annex I countries to implement emission reduction projects in non-Annex I countries and to get credit for the resulting reductions. Finally, emissions trading allows Annex I countries to acquire emission credits from other Annex I countries to help meet their emission targets. The credits can be from, among other things, joint implementation projects or CDMs, effectively including emission reductions from developing countries to be traded by developed nations. Kyoto creates an opportunity for savvy companies to increase profits while reducing greenhouse gas emissions.

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The Insurance Industry

As a result of the U.S.'s withdrawal from Kyoto, global efforts to create a market-based trading system to drive CO_2 reductions are more complicated. Without a clear commitment from the U.S., the domestic insurance industry largely has remained on the sidelines of the global industry's collective effort to combat global warming.

For example, in 1995, a group of leading insurance and reinsurance companies from around the world developed a "Statement of Environmental Commitment for the Insurance Industry." In this voluntary commitment, insurance companies pledged to balance economic development, the welfare of people, and a sound environment. The statement called upon insurers to incorporate environmental considerations into their internal and external business activities. In 1997, the most active members formed the "Insurance Industry Initiative for the Environment, in Association with the United Nations Environment Program" to fund research activities and sponsor awareness meetings and workshops. This association endorsed The Kyoto Protocol. Noticeably absent from these efforts, however, were U.S. insurance companies. To date, out of the 89 insurance companies that have signed the statement, only two are American: Employers Reinsurance Corp. and HSB Group Inc.

But with assets of more than $4 trillion, there is little question that the domestic insurance industry plays a major and central role in the U.S. economy. According to the American Council of Life Insurance, insurers were responsible for about 15 percent of all contributions to U.S. money and capital markets in 1996. The collective financial power of the insurance industry can also drive the advancement and deployment of technologies that reduce losses for the industry. Air bags, anti-lock brakes, and fire suppression devices, are just a few examples. The same potential applies to global warming.

With economic resources that dwarf the energy sector, the insurance and risk management sector has the potential to catalyze a rapid paradigm shift toward renewable energies, vaulting the U.S. into a clear leadership position on CO_2 emission reductions and renewable energy technology. Through a massive investment in renewable energy technologies, the insurance industry could literally change the course of global climate change to reduce catastrophic losses and maximize returns. According to at least one expert, Evan Mills of the Lawrence Berkeley National Laboratory, "the prospect for (insurance sector) involvement in the development and promotion of energy efficient technologies stands as an immense opportunity for accelerating the rate of energy-related market transformation." Moreover, the "distributed" nature of many renewable energy technologies, such as photovoltaics and biomass, make them less susceptible to failure and less likely to cause insurer losses.

The benefits of renewable energy are clear. The Union of Concerned Scientists (UCS) recently published a report, *Clean Energy Blueprint*, which concluded that the United States could achieve at least 20 percent of its electricity from wind, solar, geothermal, and biomass energy sources by 2020, which would save consumers $440 billion by 2020, with annual savings reaching $105 billion per year or $350 per typical family. This level of renewable energy investment, among numerous other benefits, would reduce CO_2 emissions by two-thirds from business-as-usual by 2020, reducing the risk to the insurance industry. The cost of renewable energies is also competitive with traditional CO_2-emitting energy sources. The UCS finds that the cost of producing electricity from wind to be between 3 cents and 6 cents per kilowatt-hour, making it competitive with the cost of electricity from a new coal-fired power plant. Additional investment in wind power research and development is expected to further reduce the price to 2.5 cents a kilowatt hour within the next few years.

States Address Issue

Individual states in the U.S. have begun to fill the void created by the U.S.'s pull-out from Kyoto by enacting state laws establishing mandatory renewable energy goals for energy suppliers. These state efforts provide a perfect opportunity for the insurance sector to play an important role in creating a market for CO_2 reductions. California's recent renewable energy law is a good example. Following the lead of a dozen other states, in September 2002, California enacted its own renewable portfolio program establishing a renewable portfolio standard (RPS) for energy production. The RPS requires utilities to increase their renewable power procurement by at least 1 percent each year so that 20 percent of the electricity sold to California customers must come from renewable resources by 2015.

The RPS requires retail sellers to purchase a specified minimum percentage of electricity generated by eligible renewable energy resources in any given year as a specified percentage of total kilowatt-hours sold to retail end-use customers. If an electrical corporation fails to procure sufficient eligible renewable energy resources in a given year to meet its annual target, it would be required to procure additional eligible renewable resources in subsequent years to compensate for the shortfall. Conversely, an electrical corporation exceeding its RPS target would not be required to increase its procurement in the following year. Importantly, the bill also establishes a verification and enforcement program by requiring the Energy Commission to certify eligible renewable energy resources, to design and implement an accounting system to verify compliance, and to impose criminal sanctions for violations.

The concept of mandatory RPSs creates opportunities for market-based approaches that allow for efficient trading of credits between electric supply companies and has been successful in combating other air emission problems such as sulfur dioxide and nitrogen oxide emission that contribute to acid rain. This program works by allotting unit-value credits to entities that reduce emissions below the target level. These "excess reductions" can then be sold to other entities who have not met their own emission target usually because they could not afford to make the necessary changes to achieve the emission reduction themselves.

In the case of renewable energy, electric suppliers that generate excess kilowatt-hours above their target RPS level would be able to sell these excess amounts, called "renewable energy credits," to other electric suppliers who have not been able to achieve the RPS. To generate a renewable energy credit, the entity would have to prove to the energy regulatory agency that it generated kilowatts from renewable energy sources beyond its RPS. A renewable energy credit could then be sold or exchanged by the entity to whom it is issued or by any other entity who acquires the credit. A renewable energy credit for any year that is not used to satisfy the minimum renewable generation requirement for that year might be carried forward, or banked, for future use or sale by the entity.

Venture Capital

While a few European insurers have demonstrated an interest in venture capital investment in sustainable energy technologies, such as Swiss Re and Gerling, there appears to be very little direct investment in renewable energy by U.S. insurers. The precedent, however, exists. Reportedly, U.S. life insurance companies were the largest investors in independent power projects during the 1980s.

In addition, Kyoto does not necessarily preclude private entities from non-ratifying countries, such as the United States, from participating in the emissions trading market. Thus, there is a real possibil-

ity that domestic renewable energy projects will generate valuable emissions reduction credits on the Kyoto emissions trading market. Venture capital investment in domestic renewable energy production can be modeled after European renewable energy venture capital funds that are preparing to take advantage of the eventual ratification and implementation of Kyoto.

Reducing greenhouse gas emissions will reduce the negative impacts of climate change, saving the insurance industry billions of dollars from natural disasters avoided and health impacts reduced.

For example, Gerling has created a $100 million venture capital fund to finance carbon offset financial products under the Clean Development Mechanism or Emissions Trading provisions of the Kyoto Protocol. The fund, Sustainability Investment Partners (SIP), was created with Norway's Storebrand, Swiss Re, and Victoria/Ergo of Germany, ING Group of the Netherlands, and Sustainable Asset Management (SAM) of Switzerland. Among SIP's projects are investment in companies likely to become key players in enabling sustainable growth, including greenhouse gas-reducing projects, such as geothermal plants.

So long as the renewable energy investments are connected to a reduction in greenhouse gas emissions, the reduction will have a value under the implementation mechanism of Kyoto. The indirect benefits of reduction in greenhouse gases resulting from renewable energy venture capital projects may dwarf the direct benefit earned from trading emissions on the global market. Ultimately, reducing greenhouse gas emissions will reduce the negative impacts associated with climate change potentially saving the insurance industry untold billions of dollars from natural disasters avoided and health impacts reduced.

Without support from the current Presidential administration, the domestic insurance industry can take steps to ensure that its perspective and position is fully represented and its interests protected in the national and international debate and eventual implementation of Kyoto. One way to accomplish this is to form a nongovernmental organization (NGO) to participate in the negotiations and to play an active role in the ratification and implementation of Kyoto. The NGO can advocate for policy and implementation mechanisms that emphasize renewable energy resources as a substitution for increasing reliance on fossil fuels. It can also push for increased funding to study the costs of climate change to the insurance industry and the increased cost of doing business in a less certain business environment.

The world is on the cusp of enormous challenges and fantastic opportunities due to global climate change. The domestic insurance industry will only benefit from reductions in greenhouse gas emissions and the resulting stabilization of the global climate. The industry should consider massive investment in renewable energy production in the U.S. and formation of its own NGO to promote affirmative measures to control carbon emissions. While the direct benefit of such a policy is the creation of emissions trading credits that will become valuable commodities on the future global market, the indirect reward is a massive reduction in the losses associated with natural disasters that are exacerbated by climate change.

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