



## **The ACE Group – Environmental Report February 2009**

This is the second annual report ACE has published regarding its comprehensive environmental activities. Even in light of the dramatic global financial crisis and economic downturn over the past year, ACE believes just as strongly that all of us, as individuals and corporations, have a responsibility to the planet. The well-being of society depends on a healthy environment, which is the cornerstone of a strong global economy. More fundamentally, we believe that a proper ethic takes into account more than just human society and strives for a sustainable balance between development and preservation.

Climate change is an important and serious issue for the global property and casualty insurance industry because it is our business to provide security against many of the risks posed by such change. Natural catastrophes, for example, in the form of hurricanes, windstorms, flooding, drought and other weather-related events may be increasing in both frequency and severity due to climate change. There is also a developing recognition of the critical role played by certain economic sectors (e.g., energy, aviation, chemical) in the current and prospective health of the environment. As companies must respond and adapt to their changing responsibilities and opportunities, the exposure to casualty coverages such as general liability and directors and officers liability will increase. These increases in exposure may ultimately drive insurance costs higher. The company recognizes that climate change affects everyone – our customers, employees and shareholders. Therefore, ACE is currently focused on the implications of climate change for all areas of our business and taking action across the company – internally and externally – all with the goal of making a positive difference in the environment. These efforts run the gamut from underwriting insurance policies to getting a drink of water.

In our insurance businesses, ACE's risk management modeling and underwriting practices – which are sound but an imperfect and evolving science – continue to adapt to the developing risk exposures attributed to climate change. ACE offers insurance products and services that address a broad range of risks so that companies can develop new, renewable sources of energy and engage in sustainable business development activities around the world. On the other side of the spectrum, carbon reduction initiatives in our offices are addressing both direct and indirect sources of emissions, while employee environmental

programs range from recycling to energy conservation to the elimination of plastic water bottles. And our philanthropic activities target the environment as a core area of focus.

Responsibility for ACE's environmental action program is a shared commitment at the senior management level and involves a comprehensive, coordinated effort integrating activity across all areas of the organization.

### **Climate Change Risks: The Holistic View**

There is growing evidence that there is an increasing trend in extreme weather events such as floods, drought, heat waves and, possibly, hurricane intensity, and climate change may contribute to the trend. While cause remains open to debate, global surface temperatures have risen over the last century at an increasing rate, and the five warmest years since 1850 have all occurred in the last decade. The arctic ice cap is shrinking at approximately 2.7% per decade from 1979-2005, with implications for sea levels and coastal flooding. Heat waves (the 2003 European heat wave resulted in 35,000 deaths) and drought (Australia, Western U.S.) have become more prevalent.

There was a clear increase in severe hurricane activity in the Atlantic and Caribbean basins in the 1990s. Changes in sea surface temperature and atmospheric environment may potentially have a consequence on the severity of future hurricanes, although some climate models suggest that hurricane frequency in the Atlantic Basin may decrease in a warming climate. In addition, due to growth in exposures from increased coastal development, historical storms from the early and mid 1900s, if repeated today, would cause far greater insured losses than those from more recent major hurricanes such as Ike (2008), Katrina (2005) or Andrew (1992). For example, a repeat of the devastating 1926 hurricane that struck Miami directly would cause insured losses estimated at \$80 billion to \$100 billion or more – and even greater economic losses.

Destructive weather of all kinds accounted for nearly 90% of all property losses paid by insurers in the last 25 years. Over the past 40 years, seven of the 10 most expensive catastrophes for the property and casualty industry occurred between 2001 and 2008; six of those (Hurricanes Katrina, Ivan, Rita, Wilma, Charley and Ike) were weather events in the U.S. These events are impacting human environments that are both more densely populated and more vulnerable. Exposure growth is compounded by increases in population and economic wealth concentrated in high-risk areas such as the coastal regions of both the developed and developing world. Examples include the East Coast of the U.S., Florida in particular, in

and around the Thames Estuary of the United Kingdom and along the East Coast of China around the Guangzhou and Shanghai economic zones. A 2007 Organisation for Economic Co-operation and Development report estimated that 5% of the world's GDP is exposed to coastal flooding – a threat that will increase as economic wealth, populations and sea levels rise together. While these concentrations grow, the probability of a “miss” from a major event declines and diversifying an insurance portfolio becomes challenging. Ironically, the pressure caused by population growth, and its economic footprint, has caused governments to contemplate and sanction economic development in places previously considered unsuitable: the Thames Estuary and Rotterdam are at or below sea level yet serve as European economic hubs for finance or shipping, respectively. Extreme precipitation events are likely to cause more river flooding. Flood events are likely to create more economic loss and apply pressure on risk transfer mechanisms, including the delicate balance between public and private sector provision.

Some experts also believe that changes in temperature and precipitation are likely to cause mutation and survival of viruses and bacteria with increased virulence, resistance to treatment and unpredictable infectious routes. While not linked to climate change, the outbreak of SARS in 2003 demonstrated the impact of viral outbreaks on travel, communication and economic activity with ensuing insured losses.

Obviously, a societal response is required – from legal and regulatory issues to corporate responsibility – to address both the liabilities and the opportunities presented by climate change. Climate change will also require a holistic or comprehensive risk management approach. As a leading insurer and reinsurer, ACE is exploring innovative ways to engage with its policyholders and other constituencies in managing climate change risk. These include:

- Advising policyholders in catastrophe-prone areas of the potential risk management benefits of transitioning away from such areas;
- Providing innovative risk-mitigating insurance solutions to companies that must operate with climate change risks;
- Working with governmental agencies on mutually beneficial insurance capacity solutions in catastrophe-prone areas; and
- Consulting with policyholders on a targeted basis regarding their own carbon footprint management.

## **Risk Management: Modeling, Pricing and Reinsurance**

With operations in more than 50 countries, ACE's business and operating models are exposed to the full impact of global climate change. While we welcome the opportunity to serve our clients, we also have an obligation to our shareholders to protect their capital and provide appropriate returns. Higher losses or higher volatility means higher insurance prices and may impact availability. This balance between policyholder and shareholder will be tested by climate change-driven events, particularly for risks and coverages where it is difficult to ascertain a fair loss cost and risk premium based on historical experience or scientific methods. For example, it is difficult today for insurance carriers to price and assume flood risk; this difficulty will likely increase as climate change makes flood perils more uncertain yet potentially more concerning to our clients. The pricing of casualty-related exposures will be made difficult by the unknown nature of some of the risks and the absence of historical precedent and data.

ACE has been a leading proponent and user of catastrophe models to quantify natural catastrophe risk for product pricing, risk management and capital allocation purposes. These models rely heavily upon scientific and engineering knowledge drawn from past historical events to generate a series of hypothetical, yet plausible, events that can be used to assess each client's risk on a probabilistic basis. ACE uses these models to aggregate and monitor its natural catastrophe exposures across its portfolio and ensure that its capital base is sufficiently strong to meet with regulatory, rating agency and policyholder expectations and provide shareholders with an appropriate risk-adjusted return.

On the other hand, the earth's climate appears to be changing in ways inconsistent with the historical record upon which catastrophe models draw data. We have adopted a more short-term view of event frequency that is higher than the long-term historical frequency. Concerning North Atlantic hurricanes, for example, this emphasis on short-term data is founded on the assumption that we are in a period of heightened severe hurricane activity arising from the multi-decadal cycle, an observable historical phenomenon, rather than changes directly attributable to climate change. While ACE has adopted this change in frequency, the catastrophe modeling industry faces a serious challenge to appropriately address the evolving impact of climate change risk.

There are other limitations with catastrophe models. While the research, calibration and use of models are relatively well advanced in the United States and Europe for wind and earthquake perils, this is not the case for areas of increasing wealth and demographic concentration such as Asia, which are also

catastrophe-prone. And in both developed and developing countries, modeling for secondary perils such as flood lags the science of wind and earthquake perils.

To ensure that ACE is part of a broad climate change solution with its policyholders and private- and public-sector constituencies, the company is undertaking and supporting scientific-based research to enhance a modeling response to climate change as well as participating in a number of leading environmental information forums. Specific activities include:

- Participating in ACORD (<http://www.acord.org>), an industry body dedicated to developing industry standards around the structure and transfer of data;
- Monitoring climate change-related scientific research through the use of scientific consultants and academicians;
- Supporting the research and use of catastrophe models in developing regions of the world and risk assessment of flood;
- Sponsoring research-based initiatives such as the Catastrophe Modeling Forum, conducted in 2007 and 2008 by the Center for Health and the Global Environment at Harvard Medical School and the Insurance Information Institute;
- Working with modeling service providers and academicians to identify and implement climate change parameters in catastrophe models;
- Participating in ClimateWise (<http://www.climatewise.org.uk/>), a U.K.-based organization of insurance companies committed to taking action on climate change and to reporting publicly on their performance;
- Participating in ClimateResolve (<http://www.businessroundtable.org/climateresolve>), the United States Business Roundtable's initiative that seeks to have every company in every sector of the U.S. economy undertake voluntary actions to control greenhouse gas emissions; and
- Completing the Carbon Disclosure Project's annual survey (<http://www.cdproject.net>). The CDP is an independent not-for-profit organization aiming to create a lasting relationship between shareholders and corporations regarding the implications for shareholder value and commercial operations presented by climate change.

The use of models is but one part of the underwriting of catastrophe-exposed products (e.g., property, energy, marine or disaster mortgage protection), which also includes risk mitigation services through our risk management and site surveys, specification of terms and conditions in policies and the development of sound underwriting guidelines. The exposure approach afforded by our modeling and underwriting

allows risk differentiation – and hence price differentiation – across existing and prospective clients. Clients that have been active in risk mitigation – through the use of tools such as retrofitting buildings to comply with updated building codes, installation of hurricane shutters and relocating exposures away from coastlines and flood plains – will have lower insurance costs than those clients not taking such measures. We also make use of terms and conditions such as sub-limits, coverage restrictions and deductibles to ensure appropriate risk selection and potentially reward certain policyholder behavior. Importantly, these pricing mechanisms signal to the market incentives for improved risk mitigation behavior and differentiate risks accordingly.

ACE is also actively engaged with regulators to ensure that pricing is actuarially sound and can be adapted to meet new and emerging climate change risks such as long-tailed casualty exposures and the capital implications of these risks. For ACE to continue to offer coverage under climate change conditions, pricing must always be set at sound actuarial rates that cover loss costs, expenses and risk margins on exposed capital. Thus, pricing must be flexible over time and by geography. Unfortunately, many regulatory regimes impose the functional equivalent of price controls that are not built to react to developments, and encourage increased, rather than reduced, exposures.

Beyond modeling and pricing mechanisms, ACE also mitigates its exposure to climate change risk by actively hedging its portfolio of catastrophe risk in both the reinsurance and capital markets. Such hedging increases the amount of protection ACE can make available to its clients and forms a valuable part of the firm's overall risk management strategy. We are also committed to the development of the capital markets, with a broader capital base, as an alternative or complementary mechanism to hedge risks. Insurers can play a key role in the origination and underwriting of risk and its placement into the capital markets. Such a partnership, in conjunction with the public sector, will help transfer and spread the risks posed by climate change. We have demonstrated this commitment with the issuance of our own catastrophe bond, which provides ACE with fully-collateralized protection against earthquake and hurricane losses for its U.S. exposures. We will pursue additional instruments and risk transfer mechanisms as opportunities arise.

Successful risk transfer from the policyholder to the insurance and capital markets also requires industry standards around exposure data. We are committed to helping the industry develop improved standards that will ultimately help increase risk transfer capacity and provide additional incentive for risk mitigation behavior by policyholders.

## **Products and Services: Anticipating the Future**

ACE has made a commitment to developing insurance products and risk management services that facilitate market-based solutions to current and pending environmental and climate-related issues.

In 2008, ACE introduced ACE Green ([www.acegreen.com](http://www.acegreen.com)), an Internet-based platform that highlights the full range of environmental and sustainability products and services available in every region in which ACE operates around the world.

These specialized products and services fall primarily in three areas: 1) Environmental Risk, 2) Renewable Energy, and 3) “Green” initiatives. However, these issues touch on virtually all lines of coverage worldwide, including traditional property and casualty business.

Specialized environmental risks present a unique combination of scientific, political and financial factors that require specific technical expertise as well as local knowledge. ACE is among the largest and most advanced global underwriters of environmental liabilities and pollution risk, with ACE Environmental Risk units in North America, Europe and Asia. ACE has developed targeted environmental risk products for every segment of the commercial market – from small business to global multinationals. Typical coverages include premises-based exposures, contractors and project pollution liability, professional liability, risks associated with biodiversity and natural resource protection, and an array of coverages for environmental clean-up projects.

As regulation and awareness increase, these coverages are growing in demand, not only from traditional “polluting” industries such as energy and chemical companies, but also from other organizations that own land or have potential liability – including governments, real estate owners and developers, agricultural entities and global consumer brands.

Another major ACE product area addressing these risks, particularly in light of the increased global attention to climate change, is the renewable energy sector. The urgent desire to develop clean, efficient alternative sources of energy is leading to the planning and construction of renewable energy projects all around the world. These projects take many different forms: biomass/biofuel, biogas, energy from waste, fuel cell, as well as solar, wind and hydro energy. Combining the product and risk management expertise from a number of ACE industry groups, including Construction, Energy and Marine, ACE addresses the risks that occur in the two main phases of a typical renewable energy project – construction and operation.

Construction risks range from delay in start-up to public or employer liability, whereas operation risks range from business interruption to premises pollution.

ACE is also working with public and private stakeholders worldwide to develop risk transfer and risk management services that allow for innovative responses to the additional risks associated with implementing green initiatives. For example, ACE has a stand-alone property policy that provides coverage for commercial businesses that desire to rebuild to a “greener” standard in the event of a loss to an existing building. The company is also well positioned, through its third-party administrator ESIS, to provide environmental engineering and consulting services to clients, including a new practice area concerning energy efficiency and green buildings in the U.S. For example, in 2008 ESIS introduced its Leadership in Energy and Environmental Design (LEED) consulting capability. The LEED Green Building Rating System, administered by the U.S. Green Building Council, is a recognized benchmark for the design, construction and operation of high-performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings’ performance. LEED promotes a “whole-building” approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality. For more information, visit [www.usgbc.org/LEED](http://www.usgbc.org/LEED).

ACE’s unique combination of risk appetite, expertise and financial strength will allow us to assume a leadership position in the developing areas of: 1) regulated carbon dioxide (CO<sub>2</sub>) emissions; 2) political and trade-credit risks associated with the international trading of carbon credits generated from Clean Development Mechanism (CDM) projects under the Kyoto protocols and its multilateral successor agreements; 3) the potential for increased global regulation of greenhouse gases regardless of whether they require enhancements to existing products or an entirely new product line approach; and 4) emerging casualty exposures such as Directors and Officers (D&O).

### **Internal Operations: Doing Our Part**

The global ACE network now encompasses approximately 15,000 employees working from nearly 250 offices in more than 50 countries. Although as an insurance company our “carbon footprint” is modest, we seek to reduce it even further. Climate change responsibility at ACE involves the participation of all of our employees in a global effort to reduce the environmental impact of our own internal operations. This includes the reduction, reuse or recycling of resources, as well as efforts to reduce both the direct and

indirect emissions generated from heating, cooling and lighting our offices and from company owned or leased vehicles.

In 2007, ACE joined the United States Environmental Protection Agency (EPA)-sponsored Climate Leaders program, an industry-government partnership that works with companies to develop long-term, comprehensive climate-change strategies. Partners set a companywide GHG reduction goal and inventory their emissions to measure progress. By reporting annual inventory data to the EPA, partners create a lasting record of their accomplishments, identify themselves as corporate environmental leaders, and strategically position themselves as climate change continues to unfold. For more information, please visit [www.epa.gov/climateleaders](http://www.epa.gov/climateleaders).

As the first step in this program in 2007, ACE reported its GHG emissions for the 2006 base year. This base year inventory was obtained via a web-based questionnaire that enabled office managers in each location to efficiently gather and return the proper data needed to quantify ACE's GHG emissions. The data-gathering effort focused on the following areas: direct and indirect emissions of energy consumption at ACE-owned properties and ACE-leased properties where specific energy usage data is available; direct emissions from company-owned vehicles and aircraft; and indirect emissions generated from corporate business travel, an optional measure not required by the program. The inventory identified a total of 64,451 metric tons of carbon dioxide equivalents (CO<sub>2</sub>e) emitted globally in 2006. Of that total, 45,468 metric tons of carbon equivalents were within the company's control, so that amount was established as the baseline for reduction targets. Areas that accounted for the difference between baseline and total estimated emissions were multi-tenant leased properties, where energy usage was not metered and could only be estimated, and corporate business travel by employees outside of the U.S. and Bermuda, where data was not yet at an acceptable level of reliability. ACE plans to include emissions from international business travel in the future if reliable methods of data collection are made available.

For the 2007 inventory, ACE expanded its reporting boundaries by including direct and indirect emissions from all office locations, even those that do not have specific energy use data. For such locations, ACE used emissions per square foot regional averages to calculate their contribution to ACE's total emissions. ACE believes the inclusion of these properties is necessary in order to fully report the magnitude of our carbon footprint. In addition, the method of estimation was made uniform across offices, resulting in better overall data quality.

As a result of changing the inventory boundaries, ACE recalculated its 2006 base year emissions, which are shown, along with the 2007 emissions totals, in the following table.

<b>ACE Global GHG Inventory</b>		
<b>Emissions Source</b>	<b>2006 Recalculated Emissions (metric tons CO<sub>2</sub>e)</b>	<b>2007 Emissions (metric tons CO<sub>2</sub>e)</b>
Stationary combustion	3,595	4,782
Mobile sources	8,755	7,439
Refrigerant	319	319
Electricity	32,828	32,691
<b>Global Emission Total</b>	<b>45,497</b>	<b>45,231</b>
U.S. & Bermuda Business Travel	7,643	8,085
<b>Global Emission Total with U.S. &amp; Bermuda Business Travel</b>	<b>53,140</b>	<b>53,316</b>

In 2008, ACE acquired three companies, adding substantially to its employee population and real estate portfolio. The offices and fleet associated with these acquisitions are expected to increase our 2006 base year emissions by approximately 13,000 metric tons of CO<sub>2</sub>e. As a result, the company will include these operations in its next emissions inventory, and will adjust and report the totals accordingly.

As ACE's carbon footprint grows with its businesses, so does the company's commitment to taking meaningful reduction measures. In 2008, in addition to completing the second annual inventory, ACE also formally announced its Climate Leaders global GHG emissions reduction goal of eight percent per employee from 2006 to 2012. To meet this goal, ACE plans to initially concentrate on areas and activities in which it has direct control—specifically, energy reductions in owned buildings. Some of the actions ACE has identified include:

- Lighting upgrades and heating/ventilation/air conditioning improvements in our largest owned facilities;
- Improving the fuel efficiency fleet average for ACE owned/leased vehicles in select regions;
- Encouraging virtual meetings to reduce commercial airline business travel; and
- Reducing real estate square footage by vacating underutilized locations and optimizing other spaces.

In addition to these corporate efforts, local initiatives are being developed and implemented around the world as part of the ACE Green global employee participation program, which calls for a commitment from all employees to raise environmental awareness and improve environmental efficiency in their local offices. Under this program, the manager of every ACE office has formed a local environmental committee that engages employee volunteers in the selection and tracking of environmental activities that impact ACE's internal operations. Efforts include plastic water bottle elimination in Bermuda, removal of Styrofoam from all U.S offices, cell phone and battery recycling in several offices, and broad recycling programs around the world.

One common initiative started by most committees involved the switch from pure copy paper to copy paper with recycled content. This action sparked the development of ACE's U.S. Sustainable Purchasing Policy, which seeks to balance fiscal and environmental responsibilities by looking at the entire lifecycle cost of an item in addition to the environmental impact caused by production, transportation, use and disposal of a product.

Beyond its GHG reduction efforts, ACE is pursuing "green" building certification for its North American headquarters building in Philadelphia through the LEED program (for more on the LEED program, see the "Products and Services" section of this report). In addition to the Philadelphia location, ACE is performing LEED feasibility studies for several office locations, including Hamilton, Bermuda. However, because LEED certification may not be feasible at all ACE office locations, we have committed to reduce the environmental impact of our real estate portfolio by choosing "greener" leases, utilizing sustainable materials, and reducing office space when it aligns with our business needs.

### **Philanthropy: Making a Difference in the Community**

As the charitable arm of the ACE Group of Companies, the ACE Foundations support a mission to assist the communities in which our employees live and work. With the environment designated as one of three areas of focus, the ACE Foundations are committed to promoting a healthy and sustainable environment.

One environmental funding area is conservation – supporting efforts such as reforestation projects and the conservation of land, water and wildlife. For the past four years, ACE has championed land conservation projects through the ACE Land Legacy Fund, managed by the Conservation Fund. Backed by grants totaling \$550,000, recent projects include funding to help secure the protection of 40 acres along the

Delaware Bay's Prime Hook National Wildlife Refuge and 71 acres that will connect the Arabia Mountain Heritage Area with Panola Mountain State Park near Atlanta, Georgia.

In 2007, the ACE Land Legacy Fund via the Conservation Fund contributed to a broad collaborative effort to protect 257,000 acres within the boundaries of Adirondack Park, marking the completion of one of the largest land conservation projects in New York State's history. The Fund directly supported the Conservation Fund's North Coast Forestland Conservation Initiative, which preserved 16,000 acres in California's Mendocino County that comprise substantial portions of watersheds and that join with public lands to link 97,000 acres of protected land. Recently, more than 2,500 acres in Glatfelter Forest, near Gettysburg, Pennsylvania, an area targeted for conservation by the state due to its ecological and recreational significance, were protected through the Fund.

ACE also encourages employees to participate in environmentally-focused volunteer projects. For example, in Philadelphia, ACE has maintained a significant partnership with the Fairmount Park Conservancy's Growing the Neighborhood Program. Fairmount Park is one of the largest and oldest municipally-operated park systems in the United States, encompassing 9,200 acres and including 63 neighborhood and regional parks. In addition to financial assistance over the past five years, ACE employees have worked with local neighborhood groups to support projects in local parks, significantly improving various aspects, from cleanliness and aesthetics to neighborhood safety.

ACE employees in Bermuda have volunteered their time to several environmental projects on the island including the Keep Bermuda Beautiful charity, which combines clean-up and education activities, and Save Open Spaces, which involves the general maintenance of an active endemic plant and tree nursery. ACE employees in North America also participated in special Habitat for Humanity projects building low-income housing units that exemplify principles of green building. Green homes use non-toxic building materials and energy efficient systems to minimize environmental impact.

While these examples represent some of ACE's more significant environmentally-focused funding and volunteer projects, there are numerous other ongoing and pending projects around the world that represent ACE's community and philanthropic dedication to critical environmental issues.