From Risk to Opportunity: How Insurers Can Proactively and Profitably Manage Climate Change

Presented to Munich Re

May 15, 2007
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From Thunder to Underwriting

Natural Phenomenon
(e.g. temperature increase)

Variability/Uncertainty
(e.g. temperature extremes)

Change in Likelihood of Extremes
(e.g. return period of heat waves)

Impact / Insured Loss
(e.g. loss of life; business interruption, etc.)
Insurance-relevant Consequences

**Property Insurance**
- Property damage
- Mold/moisture
- Forest products
- Agricultural losses
- Business interruption
- Roadway

**Life/Health Insurance**
- Injury
- Infectious disease
- Heat stress
- Respiratory
- Pollutant releases
- Food poisoning
- Mental health
- Nutrition/water

**Liability Insurance**
- General
- Product
- Environmental
- Professional
- Political Risk
- Roadway
Climate Change Liability: A Rapidly Emerging Issue
New IPCC Report has reduced the uncertainties
The Changing (Business) Climate

**Business Valuation**
- Negative impacts on company value, reputation & brand caused by ignoring climate change

**Shareholder & Institutional Investor Demands for Action**

**Shifting Regulatory Environment**
- Energy prices
- Carbon caps, etc.
- Corporate governance
- Compliance cost

**Disclosure**
Increasing desire for full disclosure of company’s environmental liability

**Regulation**
Regulation and enforcement of shareholder laws

**Accounting**
Auditors assessing climate change risk

**Fiduciary Responsibility**
Ignoring climate-related risks carries potential for breach of fiduciary duty

**Company Risk Management**
Insurers: Reasons for Concern

• Actuarial - losses in all lines (core business)
  – increased variability
  – unexpected correlation
  – affordability/availability
  – potential for abrupt change
  – CAT model deficiencies
  – difficult to function post-loss
  – data “blind-spots”

• Contraction
• Competitive risk
• Regulatory risk
• Reputation risk
• Own liability
• Assets & share prices are weather-sensitive; Ratings
• Macroeconomic downturn
“The insurance sector has a key role to play in helping to mitigate the effects of climate change ... and by developing new products and solutions that can support emerging greenhouse-gas and renewable energy markets.”

- Marsh & McLennan
Range of Activities

- Australia
- Belgium
- Canada
- Switzerland
- China
- Germany
- France
- Italy
- Israel
- Japan
- Netherlands
- Norway
- South Africa
- Sweden
- Taiwan
- United Kingdom
- United States

Number of Insurers or Trade Allies:

- Carbon Offsets, Testing, or Risk Management
- Carbon Risk Disclosure
- In-house Energy Management
- Catastrophe Modeling & Climate Research
- Research, Development, & Demonstration
- Codes, Standards, & Policies
- Customer Services
- Direct Investments
- Innovative Policies & Products
- Customer Financial Incentives
- Information, Education, & Demonstration
Cutting U.S. Emissions in Half with Climate-Stabilization “Wedges”

After Pacala and Socolow (Science)
More Business!
Modeling Losses
Catastrophe Modeling & Climate Research for Risk Management

- Efforts underway:
  - AIG
  - Lloyds
  - Munich Re
  - Swiss Re
  - Willis
  - RMS

*Expected increase in annual loss in Europe*

Increase in annual expected loss for Europe (EUR), Denmark (DNK), Germany (DEU), Sweden (SWE), Belgium (BEL), France (FRA) and the UK (GBR) over the period 1975 to 2085 (in %). The broad bars represent the mean value of the climatic models, and the error bars show the spread of the results from all models.
Promoting Loss Prevention
Traditional Risk Management

- Meets **Institute for Business and Home Safety**: “Fortified… for safer living” stds.
  - Wind-resistant rigid foam panel walls and multi-glazed windows
  - Ice-dam resistant
  - Mold resistant
  - Water-resistant insulation

Some insurers are giving premium credits....
3 Thermographic inspections in the construction trade and water installations
Insulation faults, heat build-up, and excessive moisture in masonry and roof structures can be identified by means of a special application and this can contribute to energy savings.

Leakages in heating installations, water systems, and sanitary installations can be located quickly and accurately.

- A leak in the warm water system in the sanitary area of a commercial firm would have necessitated opening up large areas of the floor in order to find the leak if it had not been for thermography. An infrared inspection showed up the leak as a “warm spot” in a bend. All that had to be done was open up a floor slab measuring 60 by 60 cm in order to gain access to the place where the water was coming out and repair the leak.

This example shows that once leaks have been located using thermography, pinpointed repairs can be carried out, thus avoiding the high cost of tearing open and replacing expensive floor coverings.

4 Closing remarks
Thermography can be used to draw the thermal profile of technical objects while they are in service. Proper analysis of the data gathered in the inspection reveals thermal faults before they can cause a loss. Infrared thermography should therefore be viewed both by insurers and by their clients as a valuable part of the toolkit for non-destructive loss prevention.

Thermogram of a leak in a warm water pipe laid in the floor.

Leak after opening up the floor.
Energy-Efficiency --> Fire Safety

- Arkwright Mutual *(now part of FM Global)*: replaced fire-hazardous halogen “torchieres” with compact fluorescent alternatives at Northeastern University student housing + seminars for risk managers
Better Management of Forestry, Agriculture, and Wetlands

- **Tokio Marine & Nichido**: reforested 7,500 acres of mangroves in Indonesia, Thailand, Philippines, Myanmar and Vietnam. 5,000 more in progress

Source: http://www.tokiomarine-nichido.co.jp/english/index.html
“Rebuilding Right” Following Losses

• **Fireman’s Fund**: first-ever “Green-Buildings Insurance”
  – Rebuild green after loss

  **Very popular:**
  > $5,000,000 of new business in first 6 months;
  > Instrumental in renewals;
  > Wall Street Journal

http://www.firemansfund.com/servlet/dcms?c=business&rkey=437
Crafting Innovative Insurance Products and Services
New Products for Energy Service Providers

- **Lockton Risk Services**: group liability coverage for home energy auditors, if members of RESNET

Source: http://www.locktonaffinity.com/RESNET/
Energy Savings Insurance

• **Lloyds**, and various others....

• Owner-advocate

• Enhances “bankability”

• Small step to extend from energy to carbon warranty

## Renewable Energy Project Insurance

Cumulative availability (e.g. 77% of insurers offer property damage for onshore wind projects). Full penetration of all forms of insurance would correspond to 800% on the x-axis.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Construction/Erection All Risks</th>
<th>Start-Up Delay/Advanced Loss of Profits</th>
<th>Property Damage</th>
<th>Business Interruption (BI)/Contingent BI</th>
<th>Machinery Breakdown</th>
<th>Operators Extra Expense (OEE)</th>
<th>Marine Transits</th>
<th>Political Risks</th>
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<tbody>
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<td>Small scale hydro</td>
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**Figure 6. Availability of insurance products for different renewable energy technologies**

Green Buildings Insurance

- **Lloyds of London (Naturesave):** personal lines; commercial lines
  - 10 percent of premiums donated to environmental projects
  - environmental performance surveys offered to policyholders

- **Fireman’s Fund:**
  commercial lines - premium credits for “LEED-certified” buildings
Pay-As-You-Drive Insurance

- Insurance discounts of up to 40% for low mileage:
  - GMAC
  - Progressive
  - Norwich Union
  - Polis Direct
  - Rheinland Versicherungen
  - Aioi
  - Pay-per-K
  - Hollard
  - Gerling
  - Unigard

Some use GPS --> avoids reporting fraud
Climate Change Insurance

- **Munich Re:**
  Climate insurance Initiative (MCII) for under-served markets in developing countries
  - New products
  - Loss reduction measures
Offering Transactional and Risk-Management Services for Carbon Markets
Climate Risk-management Services

- **Solomon Associates, subsidiary of HSB (AIG):** Greenhouse Gas Services

- **AON:** Climate Change Solutions Group
Facilitating Carbon Trading

• **Swiss Re:**
  - Contingent-Cap Forward for Emissions Reduction Trades (cost risk hedge)
  - Carbon credit price volatility product
  - Carbon-delivery insurance
Managing Risk for Clean-Development Mechanism (CDM) & Carbon-Trading Projects

- **Marsh** risk management service

Enabling Customers to Purchase Carbon Offsets

- **Insurance Australia Group**: on-line automobile carbon-offset service for customers

Aligning Terms and Conditions with Risk-Reducing Behavior
Assigning Directors & Officers Liability

- **Swiss Re**: added climate change to its primary insurance D&O underwriting process
  - Reviews CDP response (if available)
  - May request completion of questionnaire

Questionnaire
- Countries/jurisdiction of company operations
- GHG accounting/reporting system
- Gases assessed
- Outline of company intentions to address regulation-related potential liabilities
- If available, report of data: (1) Gross emissions; (2) GHGs/$ gross revenues; (3) GHGs/$ EBITDA; (4) GHGs/$ current assets; (5) GHGs/$ long-term debt; and (6) GHGs/$ market cap
Recognizing and rewarding correlations between sustainable practices and a low risk profile

- **Travelers**: 10% auto premium discount to drivers of hybrids
Investing in Climate Change Solutions
Equity Investments

- **Swiss Re:** participated in an $18.4 million round of financing in Evergreen Solar
- **Gerling:** Sustainable Development Project operates a $100 million initiative including venture capital for new technologies to help address climate change risks
- **Allianz:**
  - has invested 10 million euros in the European Carbon Fund; plans to increase investments in renewable energy by 300 to 500 million euros
  - will invest between $350 and $600 million in renewable energy
Sustainable Asset Management

- **Munich Re**: membership in sustainable investment indices; screens its own investments

- **Allianz**: endorsed the Ceres/INCR “Call to Action”

- **Gerling**: Select 21 Fund includes energy and environmental criteria in the selection of securities.
Building Awareness
Educating Fellow Insurers

- **Swiss Re:** has run *regular* full-page adds on climate change in major U.S. insurance trade journals for several years.
Participating in the Formulation of Public Policy
Having a Voice in Public Policy Discussions on Climate Change

- **Association of British Insurers**: advising City of London on land-use planning and flood defenses
- **Allianz**: endorsed the CERES/INCR “Call to Action” 50 companies; $4T invested
- **UNEP Initiative**
Endorsing Voluntary Energy-Saving Policies

• **American Insurance Association**: Endorsing public transportation; reduced speed limits; telecommuting based on win-win benefits
Promoting Energy-Efficiency Codes and Standards

- IBHS
- Building Code Assistance Project

The Building Codes Assistance Project is dedicated to assisting states in the adoption and implementation of statewide building energy codes. The value of energy efficiency in properly implemented construction standards is universally recognized as the easiest and most cost-effective way to help consumers save energy and money, make housing more affordable, and reduce air pollution. All of these benefits are difficult or impossible to capture if not taken into consideration at the time of construction.

BCAP was established in 1994, as a joint initiative of the Alliance to Save Energy, the American Council for an Energy-Efficient Economy, and the Natural Resources Defense Council. Support for this website and for BCAP's advocacy and technical assistance work comes from the US Department of Energy.

"Reducing the Nation's energy consumption through the adoption, implementation, and utilization of building energy codes and standards."

Committee formed for development of green building standard.

The U.S. Green Building Council (USGBC), American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and the Illuminating Engineering Society of North America (IESNA) have completed formation of the committee charged with the development of Standard 189.1, the ASHRAE/USGBC/IESNA minimum standard for high-performance green building. The proposed green building standard is being developed by the three organizations to help drive green building into mainstream building practices and is scheduled for completion in 2007.

ICC proposed changes online. View the proposed changes by clicking here.


2006 IECC is Printed and Available for Purchase. Read more or purchase the code.

Leading by Example
In-House Energy/Carbon Management

- **Swiss Re**: “Gherkin” building (London)

- **Rutherfoord**: first insurance broker to go “carbon neutral”

- **West Bend Mutual Insurance Company**: reported a 7% increase in productivity following energy-efficiency upgrades
Disclosing Climate Vulnerabilities & Liabilities

Insurers responding to the Carbon Disclosure Project survey:
AIG, Aon, Marsh & McLennan, MBIA, Safeco, St. Paul Travelers, Unum Provident, Munich Re, others...

Source: http://www.cdproject.net/