Managing Climate Change Liability Risks: 
Examples from the Insurance Sector

Munich Re Workshop
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Staff Scientist
U.S. Department of Energy
Lawrence Berkeley National Laboratory
## Top Concerns:
### Survey of 139 Insurance Executives in 21 Countries

<table>
<thead>
<tr>
<th>Rank</th>
<th>Concern</th>
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<th>Concern</th>
<th>Rank</th>
<th>Concern</th>
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<tbody>
<tr>
<td>1</td>
<td>Too much regulation</td>
<td>12</td>
<td>Managing technology</td>
<td>23</td>
<td>Corporate governance</td>
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<tr>
<td>2</td>
<td>Natural catastrophes</td>
<td>13</td>
<td>Equity markets</td>
<td>24</td>
<td>Demographic trends</td>
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<tr>
<td>3</td>
<td>Management quality</td>
<td>14</td>
<td>Risk-management techniques</td>
<td>25</td>
<td>Contract wording</td>
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<td>4</td>
<td>Climate change</td>
<td>15</td>
<td>Back office</td>
<td>26</td>
<td>Capital availability</td>
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<td>5</td>
<td>Managing the cycle</td>
<td>16</td>
<td>Political shocks and pressures</td>
<td>27</td>
<td>Security of reinsurance</td>
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<td>6</td>
<td>Distribution channels</td>
<td>17</td>
<td>Pricing new risks</td>
<td>28</td>
<td>Availability of reinsurance</td>
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<tr>
<td>7</td>
<td>Long-tail liabilities</td>
<td>18</td>
<td>Terrorism</td>
<td>29</td>
<td>Business continuation</td>
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<tr>
<td>8</td>
<td>Actuarial assumptions</td>
<td>19</td>
<td>Complex instruments</td>
<td>30</td>
<td>Fraud</td>
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<tr>
<td>9</td>
<td>Longevity assumptions</td>
<td>20</td>
<td>Retail-sales practices</td>
<td>31</td>
<td>Merger mania</td>
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<tr>
<td>10</td>
<td>New types of competitors</td>
<td>21</td>
<td>Pollution</td>
<td>32</td>
<td>Too little regulation</td>
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<tr>
<td>11</td>
<td>Investment performance</td>
<td>22</td>
<td>Interest rates</td>
<td>33</td>
<td>Asbestos</td>
</tr>
</tbody>
</table>

* = also influenced by climate change

Source: Centre for the Study of Financial Information and PricewaterhouseCoopers survey: 2007
Looking ahead five years, which of the following could give rise to a major new wave of liability claims?

<table>
<thead>
<tr>
<th>Issue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate technology security (e.g., exposure of confidential data)</td>
<td>45%</td>
</tr>
<tr>
<td>Environmental damage (e.g., pollution)</td>
<td>40%</td>
</tr>
<tr>
<td>Lack of transparency or disclosure in reporting</td>
<td>38%</td>
</tr>
<tr>
<td>Work-related stress</td>
<td>34%</td>
</tr>
<tr>
<td>Product liability issues (e.g., lead paint)</td>
<td>32%</td>
</tr>
<tr>
<td>Climate change</td>
<td>27%</td>
</tr>
<tr>
<td>Inadequate security (e.g., against terrorist attack)</td>
<td>20%</td>
</tr>
<tr>
<td>Electromagnetic fields (e.g., Wi-fi, mobile phones)</td>
<td>20%</td>
</tr>
<tr>
<td>Obesity</td>
<td>13%</td>
</tr>
<tr>
<td>Inadequate protection against pandemic</td>
<td>7%</td>
</tr>
<tr>
<td>Nanotechnologies</td>
<td>6%</td>
</tr>
<tr>
<td>Silica</td>
<td>1%</td>
</tr>
</tbody>
</table>

* = also influenced by climate change

<table>
<thead>
<tr>
<th>Risk Area</th>
<th>Yes we have discussed</th>
<th>No, but we should discuss</th>
<th>No, and little likelihood of discussion</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate change</td>
<td>33%</td>
<td>17%</td>
<td>22%</td>
<td>28%</td>
</tr>
<tr>
<td>Nanotechnologies</td>
<td>12%</td>
<td>14%</td>
<td>28%</td>
<td>45%</td>
</tr>
<tr>
<td>Inadequate security (e.g. against terrorist attack)</td>
<td>32%</td>
<td>19%</td>
<td>28%</td>
<td>21%</td>
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<td>17%</td>
<td>25%</td>
<td>30%</td>
<td>29%</td>
</tr>
<tr>
<td>Obesity</td>
<td>11%</td>
<td>14%</td>
<td>33%</td>
<td>42%</td>
</tr>
<tr>
<td>Electromagnetic fields (e.g. Wi-fi, mobile phones)</td>
<td>17%</td>
<td>21%</td>
<td>38%</td>
<td>25%</td>
</tr>
<tr>
<td>Inadequate technology security (e.g. exposure of confidential data)</td>
<td>52%</td>
<td>29%</td>
<td>14%</td>
<td>5%</td>
</tr>
<tr>
<td>Work-related Stress</td>
<td>37%</td>
<td>38%</td>
<td>19%</td>
<td>6%</td>
</tr>
<tr>
<td>Silica</td>
<td>4%</td>
<td>12%</td>
<td>34%</td>
<td>49%</td>
</tr>
<tr>
<td>Environmental damage (e.g. pollution)</td>
<td>36%</td>
<td>22%</td>
<td>20%</td>
<td>22%</td>
</tr>
<tr>
<td>Product liability issues (e.g. lead paint)</td>
<td>37%</td>
<td>19%</td>
<td>18%</td>
<td>26%</td>
</tr>
<tr>
<td>Lack of transparency or disclosure in reporting</td>
<td>54%</td>
<td>22%</td>
<td>16%</td>
<td>8%</td>
</tr>
</tbody>
</table>

U.N. climate report stirs liability fears

Scientific testimony may fuel lawsuits on global warming

BY ROBERTO CENCiERS

The publication of a U.N. report last week linking human activity to global warming could increase the chances of more climate-related liability lawsuits. As a result, global warming risks are likely to pressure insurance companies, and the industry to insurers to increase their efforts to mitigate these risks.

The report, which looks at the long-term effects of climate change on commercial property, could increase the likelihood that commercial property owners and their insurers will have to deal with more climate-related claims.
Global Warming Puts The Heat On Directors & Officers

See Page 12

D&O Heats Up

Climate change—a rapidly emerging insurance risk—has reached the world’s boardrooms.

PAGE 24

A.M. Best’s Exclusive Rankings:
Reinsurers, Reinsurance Brokers—2006

Leading U.S. Property/Casualty Writers by Lisa—2006

PAGE 31
What Insurers Should Do About Climate Change

Insurers are likely to soon take a leadership role in reducing the risks of climate change as companies become more liable for damage related to it. The authors of a study jointly published by the Stanford Environmental Law Journal and the Stanford Journal of International Law sketch out several ways that companies who disproportionately contribute to global warming could be held responsible for its damage as the science of global warming becomes clearer.

The most common example is owners of property damaged by a warmer world’s extreme weather suing companies that disproportionately emitted greenhouse gases. As well as paying out on insurance covering such liability claims, insurers will have to pay for several kinds of damage related to global warming, the authors say. They’ll have to pay for car crashes on wet roads and ski resorts that insure themselves against warm winters short on snow.

“The insurance industry, perhaps more than any other institution, has the power to set the stage for enduring and significant contributions to solving the problem of global climate change,” say environmental consultant Christina Ross, government scientist Evan Mills and environmental-law expert Sean B. Hecht.
Liability Risks Are Also Associated with Responses to Climate Change

• Green buildings
• Nuclear power
• Renewable energy
• Hydrogen
• Carbon capture & storage
• Carbon offsets/trading
• Geo-engineering
• Adaptation projects

Comparative risk assessments needed
Risks & Responses

Impacts of climate change
Failure to adapt
Poor governance
Contract performance
Disinformation/fraud
Fiduciary
Political actions/disruptions
Public policy procrastination
Energy/carbon credit non-delivery

Risk transfer
Terms & conditions
Carbon management
Advisory services
Improved governance
Good citizenship
Green investments
Reducing Impacts ("Adaptation")

**Loss prevention**

- **Tokio Marine Nichido:**
  - mangrove restoration

- **IBHS:** improved construction practices

- **ABI:** improved land-use planning

BASF Home - Patterson NJ
Risk Transfer; Terms & Conditions

Directors & Officers insurance

Swiss Re: “The Letter”

Zurich: D&O Side A coverage extension

Liberty Mutual: D&O Side A coverage extension

- Pollution defense-cost coverage
- Defense-cost coverage for global warming-related misrepresentations; and
- Defense-cost coverage associated with formal administrative or regulatory investigative proceedings

E.g. Native Village of Kivalina v. ExxonMobil Corp.
Risk Transfer

**Political risk insurance for carbon credits**

Zurich: coverage extension for carbon-credit projects, covering:

- Political risks and, in certain cases, the credit risks associated with operating in emerging markets
- Risk of a host government's actions that prevent an investor from receiving benefits associated with emission credits
- Political violence events, incl. war and terrorism, that disrupt operations
Risk Transfer

Green buildings insurance

- **AIG Environmental:** Sustain-a-Build environmental liability premium credit for green commercial buildings

- **Allianz:** Environmental liability provisions for architects, manufacturers, builders, auditors

- **FFIC:** Builders Risk coverage extension

- **Lockton Risk Services:** Liability insurance for home energy inspectors
Risk Transfer

Carbon offset delivery securitization

• **Zurich**: CER/VER delivery securitization - Target buyer is a multi-lateral or multi-national bank

• **Swiss Re**: Kyoto-CDM risk insurance

• **Munich Re**: similar
Allianz/FFIC Premium reductions of up to 5% via pricing credits or dividends on Workers Compensation, Property and General Liability coverages for manufacturers with sustainable processes or products, e.g.:

- **Lean manufacturing** - reducing material use and energy costs while also improving housekeeping reduces slips and fall injuries.

- **Reductions in the use of flammable liquids** - reduces carbon footprint since most flammables are petroleum based - also improves property safety and public/employee safety

- **Newer, more energy efficient machinery** - runs cooler (fewer fires) and has superior machine guarding (fewer injuries)
AIG, Marsh, Zurich, others: offering carbon project risk-management consulting services; benchmarking, and insurance

Advisory Services

Climate regulation & liability advising

CLIMATE CHANGE REGULATIONS: WHAT'S YOUR UPSIDE?

While climate change presents a daunting array of potential liabilities, there are also significant opportunities. If you know how to look, you can help your business and mitigate your climate-related exposures, and even turn the way you just may shift new regulations to your advantage. The upside? A cleaner reputation, a cleaner business sheet, and possibly, a cleaner world. To learn more, visit findtheupside.com
Insurers’ Own Vulnerabilities

- Protecting shareholder value
  - Underwriting
  - Asset management
- Fostering mal-adaptation
  - e.g. Comer v. Murphy Oil USA claim
- Enabling carbon-intensive industries
- Emerging technologies
- Conflict of interest with insureds
- Emissions from own operations
Improved Governance

Carbon-risk disclosure

**Carbon Disclosure Project:** Annual Global Survey by Institutional Investors ($57 Trillion under management)

110 Insurers surveyed: 2003-2008:
- AIG, Allstate, Aon, Chubb, Marsh, MBIA, Safeco, St. Paul Travelers, Unum Provident, Munich Re, many others...

AIG Investments is among the sponsors

Source: [http://www.cdproject.net/](http://www.cdproject.net/)
Improved Governance

**Climate-friendly investments**

- **Allianz**: $15 million in the European Carbon Fund; plans to invest between $400 and $650 million in renewable energy

- **Gerling**: Sustainable Development Project operates a $100 million venture capital fund

- **ING**: Green finance - $1.16 billion

- **Sompo Japan**: $100 million green fund

- **Swiss Re**: $429 million “clean energy” venture fund; $320 million in individual investments
Improved Governance

**Carbon-neutrality**

- AIG
- Aviva
- Bradford & Bingley
- Folksam
- Fortis
- FP Marine
- HSBC
- Independent Insurance Services
- ING
- Insurance Australia Group
- Munich Re
- Royal & Sun Alliance
- Rutherfoord
- Solar Group
- Specialized Broking Associates
- Storebrand
- Swiss Re
- Tokio Marine Nichido
- Xelector
Good Citizenship

**Engagement in public policy**

- U.S. Climate Action Partnership
- ClimateWise
- UNEP-FI
Take-aways

• Climate-liability risks can be managed

• Climate responses will bring new liability risks

• Loss prevention benefits could be better conveyed to customers; coverage gaps remain

• Insurers have *own* liabilities