Climate Change & Re/Insurance

Mark Way/Nigel Baker
Insurance Initiative Side Event
COP 9 December 2003
Insurance relevant aspects

Impacts of climate change are manifold:

- increased precipitation and change of weather patterns: 
  *frequency and severity of floods and storms*

- rise in temperature: 
  *spread of tropical diseases, infrastructure failures*

- depletion of ozone layer: 
  *increase of skin cancer and eye affections*

- ambient air pollution: 
  *increase of respiratory diseases and allergies*
Over 40 emerging/re-emerging diseases (1996–2001)

Source: WHO 2001
### Health costs in Switzerland caused by traffic generated air pollution [ECOPLAN 1996]

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Estimated health effects in Switzerland (additional cases; 7 million inhabitants)</th>
<th>Yearly costs (million CHF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premature deaths</td>
<td>2,100 deaths per year</td>
<td>1,550</td>
</tr>
<tr>
<td>Invalidity caused by chronic bronchitis</td>
<td>10 cases per year</td>
<td>10</td>
</tr>
<tr>
<td>Acute bronchitis in children</td>
<td>31,000 cases per year</td>
<td>2</td>
</tr>
<tr>
<td>Chronic bronchitis</td>
<td>22,000 cases per year</td>
<td>10</td>
</tr>
<tr>
<td>Asthma</td>
<td>1,4 million days with asthma attacks per year</td>
<td>1</td>
</tr>
<tr>
<td>Symptoms of respiratory diseases</td>
<td>8 million days with symptoms of respiratory diseases per year</td>
<td>&lt; 1</td>
</tr>
<tr>
<td>Hospitalizations</td>
<td>12,100 days in hospital per year</td>
<td>15</td>
</tr>
<tr>
<td>Reduced activity</td>
<td>426,000 days with inability to work</td>
<td>49</td>
</tr>
<tr>
<td><strong>Total (rounded)</strong></td>
<td></td>
<td><strong>1,600</strong></td>
</tr>
</tbody>
</table>
What do the statistics tell us?

Since 1960

- The global GDP has increased by factor 3
- The economic loss attributable to weather related losses has increased by factor 7
- Insurered losses stemming from atmospheric causes have increased by factor 12

These increases are primarily due to economic, demographic and geographic changes

Climate change also impacts. But by how much?
What does claims data reveal?

**Storm damage 1970-2002** (in USD m, 2003 indexed)

- **Hurricane Andrew**
- **Lothar/Martin**

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Page 6
What does claims data reveal?

Flood damage 1970-2002 (in USD m, 2003 indexed)

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The inherent risks of climate change
Study*: UK November 1994 - Summer 1995

Temperature 1.5 - 3 degrees centigrade above average 1961-1990

- mortality rate +5% (July-August)
- mortality rate overall clearly reduced (mild winter)
- grain harvest regional variations
- cattle/fish farm suffer badly - agriculture total loss £180 million
- energy savings £355 million (provider -, society +)
- beverages industry turnover +£380 million
- clothing industry losses £350 million
- *insurance industry losses £350 million*

- Total economic loss £1.5 billion

*Source J. Pautikof, S. Subak & M. Agnew: Climate Monitor Vol 25 No. 3
Mitigation & adaptation to climate change

new needs: new products and applications

- demand for natural-perils covers

- insurance/finance solutions for direct methods of reduction, eg energy-efficient technologies

- Kyoto related traditional products

- demand for risk-transfer solutions for "indirect" reduction methods, eg emissions trading

Legend:
▷ increasing

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Greenhouse Gas Risk Solutions
Targeted Emission Reduction Business Activities

Asset Management
ECO Portfolio
Carbon Disclosure Project
3rd Party Asset Management - consumer products
Hedge Fund

Re/insurance
Risk Management - D&O and PD/BI
Delivery Guarantees
Professional Indemnity
Weather Derivatives
Credit Guarantees

Project Finance
Structured Finance
Revenue Stream Enhancement
Asset Management - “greenhouse neutral” products

Consumer Choice

Swiss Re as Independent Fund Manager

Emission Offset Fund

Projects to offset Consumers emissions

ECO Portfolio
Carbon Disclosure Project
3rd Party Asset Management - consumer products
Hedge Fund
A “greenhouse neutral” Swiss Re

The programme structure

- To reduce internal emissions by 15% over 10 years by implementation of energy efficiency measures at owned locations
- To invest in the World Bank Community Development Carbon Fund (CDCF), and retire generated credits
- Any deficit after 10 years to be made up from internal hedge fund
Insurance - the Value of Swiss Re’s Balance Sheet to a Delivery Guarantee

Re/insurance
Risk Management - D&O and PD/BI
Delivery Guarantees
Professional Indemnity

Biomass Energy Project
100 t

@ $3.5 t

= $350

SWISS RE
Nets $75
Plus 15 t for reserves

Without Swiss Re
50 t @ $4 = $200

Benefits from guaranteed delivery by SR

Benefits from higher cash flow

COMPLIANCE BUYER
85 t

@ $5 t

= $425
Insurance - Professional Indemnity for Certification/Verification

- Additional Risk to existing Professional Indemnity Insurance carried by Auditing Firms
- New Risks for New Entrants

- Reinsurance
  - Risk Management - D&O and PD/BI
  - Delivery Guarantees
  - Professional Indemnity

Flowchart:
- Validation
  - Verification
  - Certification
    - Emission Certificate
Application of structured project finance and carbon delivery guarantees to a new sector: emissions reductions / renewable projects

The benefits of extracting these risks from a project are:
- Raises the project investment rating
- Increases ROE
- Reduces financing costs
- Frees up capital for other investments

Swiss Re acts as a facilitator of projects by structuring out the risk elements and thus attracting the financing.