

AIDA WORLD CONGRESS

PARIS 2010

CLIMATE CHANGE

**RESPONSE TO QUESTIONNAIRESUBMITTED ON BEHALF OF THE
BRITISH INSURANCE LAW ASSOCIATION**

Foreword

1. Climate change has been chosen as one of the topics for the AIDA World Congress to be held in Paris in 2010. Thank you for accepting to prepare a national report.

2. This subject is obviously one of great importance, and very much has already been written on it. For an AIDA World Congress, the focus should naturally be on the impact on the insurance sector, and more precisely on the impact on insurance law – a domain in which AIDA can make a significant contribution. When preparing your report, please stress the legal aspects (legislation, regulation, policies, clauses, legal nature of new products, etc...) – even though describing the context will always be necessary.

3. National reports will be particularly useful for such a subject where perceptions of the phenomenon may vary, and mainly, where the feared consequences of climate change can be widely different in the different regions of the world. Please see that your report gives the necessary information about the local context in which it is written (see part A of the questionnaire below).

4. The questionnaire is indicative. Try to cover all points you find relevant for your country, but do not hesitate to include additional information and comments in part C below.

A. Your local context

In your country:

1. What is the degree of awareness of climate change and its consequences:

- in the general public**
- in the business sector**
- in the insurance industry**
- in public authorities ?**

Awareness of climate change as a phenomenon and more specific awareness in an informed way of its consequences (and what may practically be done to avert them) are two very different concepts.

General awareness of climate change may now be described as being moderately high now across all sectors. It has certainly significantly risen in the last few years. Informed knowledge about its consequences and practical measures available to all is perhaps much less widespread beyond those personally involved with various initiatives or directives. A further issue again is the level of preparedness, whether governed by economic constraints or otherwise, for individuals, companies or other bodies to act upon such knowledge and opportunities provided.

While publicly supported political commitment levels are seen to be relatively high, much of the UK's housing stock, for example, remains quite poor in terms of energy conservation. Levels of investment in areas such as renewable energy and the pace of change in investment strategies have attracted criticism. At a personal level, it is unsurprising to learn that many express a ready willingness to effect personal lifestyle changes so far as they incur no or minimal additional cost, but also a reluctance to reduce the extent, if not necessarily their preferred mode, of travel.

In its February 2009 report the Chartered Insurance Institute¹ made reference to the results of a survey about climate change it conducted in October 2006 of 5,400 members of the insurance business. Over 86% believed that man-made climate change was occurring. One quarter believed that it would have a significant impact upon the insurance industry within five years. Three quarters of them thought this would occur by 2020. A very large majority was found already to be implementing personal energy-saving activities and were supportive of their employing companies saving energy, encouraging policyholders to reduce emissions and to invest in clean technologies among other initiatives. Other surveys conducted have found conflicting results being received. In 2007 research

¹ "Coping with Climate Change – risks and opportunities for insurers" CII London Market Faculty (February 2009)

conducted by AXA found that among SMEs many felt less immediately concerned by climate change issues than in the previous year despite a number having recently been affected by serious floods², (perhaps indicative of how keeping one's own business above water can preclude concern about the causative or wider issues!).

In the UK there is a government-led campaign, "*Act on CO2*" to encourage/help people to reduce carbon emissions. Building on that information campaign, the Government is also providing a range of support for individuals, communities and businesses, including a major programme of financial help for home insulation and energy efficiency.

A concerted Government programme in response to climate change is being led by the Department of Energy and Climate Change (DECC), established on 3 October 2008, which is responsible for all aspects of UK energy policy and for tackling global climate change, and the Department for Environment, Food and Rural Affairs (DEFRA), which is responsible for helping the country adapt for inevitable climate change.

The Office of Climate Change (OCC) was set up in September 2006 and works across Government to support analytical work on climate change and the development of climate change policy and strategy. Many government departments are involved in tackling climate change, or in helping the UK and other countries adapt to its possible future impacts. The OCC is a shared resource for all departments.

The OCC's role is to:

- Run policy focused projects on difficult cross-cutting issues
- Programme manage (at a high level) the UK's climate change commitments
- Consolidate analysis and co-ordinate between departments
- Act as an advocate for climate change issues within government

Since the creation of the Department for Energy and Climate Change (DECC) in October 2008 the role of the OCC has evolved. The OCC has become part of DECC, and will lead the development of the department's overall strategy. However, because of the complexity of the climate change and energy challenge it will continue to retain a distinctive role and cross-cutting way of working, with other departments having a role in the Office's funding and governance.

A number of local authorities, water companies and businesses are initiating schemes which are expressly designed to take into account the impact of climate change, (some of which are illustrated below).

Pressure groups within the environmental lobby and the media have continued to raise public awareness about many aspects of government policy in respect of carbon emissions, nuclear energy,

² Climate Change website – www.climatechange.gov.uk

major projects (such as the development of a third runway at London Heathrow Airport), transport policy etc. The UK Green Party attracts interest and influences the environmental policies of the major political parties, if it still as yet enjoys very limited direct electoral support.

Awareness of sustainability as a principle has grown. Since 2000 the Sustainable Development Commission (SDC) has been the government's independent advisory body on sustainable development and since 2006 has performed the role of sustainable development watchdog, applying the five principles outlined in the UK Framework for Sustainable Development adopted by the UK Government (including Northern Ireland), the Welsh Assembly and the Scottish Executive.

2. Which are locally the main expected consequences of climate change (please specify: "not applicable"/"medium risk"/"high risk"):

The "local" consequences in the UK can be considered in two parts: those identified as directly impacting upon the UK's climate; and those affecting the UK indirectly in terms of the secondary effects of changes felt in other parts of the world, including the economic effects of these, given especially the UK's role as a world trader and financial services hub.

(In the latter category one might see that the effect of climate change in some of the most vulnerable regions of the world, e.g. the megacities of China, South Asia and Africa may have a marked knock-on effect in the UK upon migration patterns, commodity prices, supply chain transactions and industrial and commercial dependency more generally.)

The UK Climate Projections (UKCP09) are findings which have been developed as part of a government-led initiative to help the UK to plan for a changing climate. The Projections contain information on observed and future climate change, based on the latest scientific understanding, but not the effects the climate has (for example, where specifically it might flood).

The key findings from UKCP09 suggest how the UK's climate might change.

- All areas of the UK get warmer, and the warming is greater in summer than in winter.
- There is little change in the amount of precipitation (rain, hail, snow etc) that falls annually, but it is likely that more of it will fall in the winter, with drier summers, for much of the UK.
- Sea levels rise, and are greater in the south of the UK than the north.

An important feature of the UKCP09 is to emphasise that there remains inevitably a high degree of uncertainty about the speed and level of "risk" of climate change actually impacting upon any particular region or sector. Accordingly in the Projections there is reference to a range of risk, rather than any "best estimate". The possible categorisations of likelihood of risk adopted in this Questionnaire are understood to be intentionally general in nature and are offered in answer as

merely a general commonsense guide without any adherence to the more careful analysis and principles adopted by the UK Government and others in assessing the respective risks.³

- **floods (including flash floods)** - **high risk** (likelihood of more intense summer downpours and greater winter precipitation - greatly increases prospect of coastal flooding through greater storm-surge heights, inland flooding through seasonal increases in rainfall and urban flash flooding). In 2005 the Association of British Insurers (the "ABI") reported that climate change could increase the annual costs of flooding almost fifteen-fold by 2080 under the high emissions scenario, leading to potential total losses from river, coastal and urban flooding of more than £22bn.⁴ The UK Government has more than doubled spending on flood protection since 1997. The UK Environment Agency is to announce investment priorities in flood protection up to 2035.).
- **rise of sea level** - **high risk** (UK has 7,500 miles of coastline so many new areas could be exposed to flooding; rises of 10cm since 1900 and between 20 and 80cm expected by 2100 and could be as high as 1.9m in worst possible cases).
- **melting of ice, of snow, avalanches** - **not applicable** (save perhaps in isolated areas of Scotland etc).
- **earthquakes** - **not (generally) applicable.**
- **storms** - **high risk** (more intense summer downpours are thought likely, upon a high emissions scenario, but the impact of climate change on European windstorm remains very uncertain. An expectation of a 20% increase in the formation of more extreme storms over the North Atlantic has become established, but again based upon a high emissions scenario, with some suggestion that less intense storms could also increase in frequency⁵; **tornadoes** - **not (generally) applicable**, but there is evidence of a greater tendency in the UK over recent years towards tornadoes occurring, as well as extreme hail, as has already occurred more than once in 2009.
- **heat waves, drought, fires** - **medium risk** The ten hottest years recorded globally have occurred since 1990 and in the UK the return period of extremely hot months has reduced from one a century to once every 12.5 years. The South and South East of England are short of water. The Government has developed a heatwave plan in the National Health Service addressing concerns regarding those most obviously at risk, including the elderly.)
- **spread of diseases** - **medium risk** (inc. to crops).
- **other adverse effects:**

³ Compare, for example, the methodology used in the ABI Report 2005 where probability rates in climate change context, attributed to Sigma, were 66%-90% = likely; 90%-99% = v likely.

⁴ But in early 2009 the ABI announced that many of its 2005 report projections were likely to have been seriously understated (see Section B below).

⁵ Third Assessment Report – Climate Change, Intergovernmental Panel on Climate Change, 2001, <http://www.ipcc.ch>

coastal erosion – high risk (The UK Government is currently helping communities affected by coastal erosion. DEFRA has recently announced a coastal management consultation programme.)

- any favourable consequences ?

In the main, any more favourable consequences simply reflect the flipside of some of the anticipated changes in the climate: potentially milder winters (so fewer deaths to be expected from cold among the elderly/infirm); and warmer summers (affording potentially better growing conditions for some crops and benefits to tourism). More widely, if Northern Europe is set to face less extreme conditions than other parts of the world/Europe, migration and economic benefits may also ensue.

3. Which economic sectors, critical for your country, could be particularly affected:

The UK Government recognises that there is a large amount of research has now been conducted about the likely impact of climate change on different regions and sectors of the UK. The UK Climate Projections provide data of what the likely and plausible changes in climate could be to help inform what this means and how best different people and entities should respond.

A three-part project is in place to help to prioritise any spending best to match need:

- UK Climate Change Risk Assessment
- Adaptation Economic Analysis
- Conducting the risk assessment including scoping study

“Adaptation” is the term used for the changing of behaviour to respond to the impact of climate change.

The Climate Change Act 2008 (see Section 4 below) commits the UK Government to carry out an assessment of the risks to the UK of climate change every five years. The first cycle is required to report to Parliament by end of January 2012.

UK Climate Change Risk Assessment (CCRA)

The Climate Change Risk Assessment will provide evidence and analysis which will enable all UK Administrations to:

- Understand the level of risks (threats and opportunities) posed by climate change (likelihood and scale of impact)
- Compare the risks of a changing climate with other pressures on the Government
- Prioritise adaptation policy geographically and by sector
- Assess the costs and benefits of adaptation actions and support the case for resources for these

Adaptation Economic Analysis (AEA)

The Stern Review on the Economics of Climate Change highlighted that whilst adaptation was a "crucial" part of a strategy to tackle the impact of climate change, *"More quantitative information on the costs and benefits of economy-wide adaptation is required"*.

Whilst the Climate Change Act only prescribes an assessment of the risks, the Government is conducting an additional Adaptation Economic Analysis as a component of the CCRA.

This is to serve two broad purposes:

- estimate a "price-tag" of adaptation. This will give information on the overall costs of adapting to the UK economy, as well as the benefits that the costs of adapting would bring.
- identify areas where action is most beneficial.

Conducting the risk assessment

The ACC Programme undertook a six-month scoping period to explore options for the project and identify which of these are critical to producing a successful risk assessment.

A stakeholder steering group has been established to oversee the development of the project.

The steering group includes representatives from UKCIP, central and local government, the devolved administrations and other expert bodies.

The Adaptation Sub-Committee will be involved throughout to provide expert scrutiny to the project; they will also be involved with a peer review of the final risk assessment prior to submission to Parliament.

The CCRA will interpret how future climate change will impact the UK and assess the interactions between these impacts, looking at both risks and opportunities.

To help address the uncertainties about respective areas of priority, a number of areas or sectors are being specifically consulted by the Government as part of the adaptation process: the Projections in Practice programme. Consultation is taking place with those responsible for the natural environment, national parks, water, energy, health, transport, electronic communications, emergency services, local authorities, planning and regional development, schools, housing, food and finance.

Meetings are being held with a number of identified sectors over the course of 2009 and beyond, starting in July with meetings with the water, engineering, risk management and energy sectors, followed by others with the "third" sector and the insurance sector. Future meetings are planned for the emergency planning and natural environment sectors, farming, marine, health and trade unions sectors. What is evident is that with a tightening of the public purse in light of the recent major downturn in the economy, many plans and projections are being reviewed with a more cautious and sceptical eye.

In response to the specific sectors prompted by the questionnaire, the following may fairly safely be said in general terms.

- agriculture

Crop yields are thought to be particularly vulnerable to extreme weather (storms/floods or heatwave) and affected growing conditions and restrictions on water supplies/irrigation (esp. Eastern parts of UK). Warmer winters may allow diseases/pests to survive and attack crops. (Conversely, some new crops might flourish in warmer temperatures.) Sector, along with forestry, seen as a major source of and “sink” for greenhouse gases (GHGs).

- fisheries

Any coastal (and sea-bound) activity is obviously vulnerable to the identified climate change risks of a rise in sea levels, coastal erosion, flooding and storms etc.

- forestry

Longer growing season with milder winters will lead to increased growth rates of many trees, offset by threat of more extreme weather/floods and potential increased exposure to pest and disease. Initiatives are being encouraged to have woodlands adapted to provide for greater diversity of species and increased resilience against threat of climate change, moving away from single-aged, single species plantations (e.g. the recent Welsh Assembly Government's strategy – *Woodlands for Wales*, provides direction for the work of Forestry Commission Wales (FCW).)

- energy

UK's energy infrastructure is at risk from extreme weather such as flooding and, to a lesser extent, heatwaves. Drought could impact upon demand, supply and quality of water and affect dependence of power stations upon reduced supplies of water in rivers to cool turbines (see *Anglia Water* illustration below). Many power stations are situated by the coast and so at risk from coastal erosion/raised sea levels. Higher temperatures may impose greater energy demands on air conditioning in summer (but less energy in winter) and increased maintenance of power cables. Greater activity in areas of water supply, treatment and drainage may also add buoyancy to that economic sector.

Anglia Water: In recognition of the potential impact of climate change upon the supply of water services, especially in the Eastern part of the UK, one of the driest regions with one of the longest coastlines and lowest-lying land, the local water company, Anglia Water initiated an Adaptation Strategy programme in 2005 involving flood protection for water sites, wastewater sites and pumping stations etc.

- industry (which ?)

construction:

Increased costs may stem from need for flood/storm-resistant or -resilient sites/methods of construction/drainage; deeper/more expensive foundations to find secure soil; susceptibility to greater subsidence/movement and need for more frequent repair; potential imposition of required reflective roof coverings/light-coloured materials to reduce over-heating in cities.

Evidence that new construction is planned in hazardous zones, e.g. flood plains and drought-prone regions (both in case of the Thames Gateway), sometimes on sufficient scale that regarded as causing “construction climate change” or “3C”, such as may affect local water table levels.

Use of construction materials to reduce carbon footprint can in turn expose buildings for example to greater risk of fire, so co-ordinated planning required (and insurer input).

Greater activity in call for new and improved construction methods/activity may conversely improve the economic prospects for the construction sector more generally.

transport:

Increased subsidence/repair costs for road and rail (and other weather-related exposures in coastal regions); greater demand for fast-speed rail-links (to reduce air/road traffic) does in turn involve increased construction/emissions posing new challenges/opportunities; greater demand for air-conditioning or alternative provisions possible for acceptable comfort levels in all forms of private/public transport.

-tourism:

Turnover in UK tourism business is naturally directly affected by weather conditions here (with potential downturn in foreign holiday business to Southern Mediterranean destinations, if becoming uncomfortably warmer). Drier, warmer summers may see greater activity levels in leisure pursuits. Water shortages/droughts could in turn affect and involve disruption/cancellation of tourism / certain leisure sector activities, e.g. golf, gardens etc.

- others?:

More widely, any major losses suffered in the above business sectors and in turn the insurance industry, particularly from extreme storms and floods in any of the above classes of business, could inevitably raise the cost of capital and in turn increase the vulnerability of those businesses and the volatility of the insurance market itself, unless adequately anticipated and provided for.

4. Have some concrete measures already been taken or envisaged (other than in insurance sector – see B below):

- legislation, regulation

- The **Climate Change Act 2008** made the UK the first country in the world to have a legally binding long-term framework to cut carbon emissions. It also creates a framework for building the UK's ability to adapt to climate change.

The Climate Change Bill finished its passage through parliament on 18 November 2008, and was enacted by Royal Assent on 26 November 2008.

By adopting binding “carbon budgets” the aim is to cut UK emissions steadily: by 34% by 2020 and at least 80% by 2050 through investment in energy efficiency and clean energy technologies such as renewables, nuclear and carbon capture and storage.

The first carbon budget runs from 2008-12. Future budgets are to be set 12 years in advance, consulting with the Committee on Climate Change, as well as taking into account all other relevant factors. (The Committee is an independent non-statutory body which provided the first of its annual reports in December 2008.)

The UK Government published the **UK Low Carbon Transition Plan** White Paper on 15 July 2009, setting out how it will meet those carbon budgets while maintaining energy security, creating jobs and economic opportunities for UK firms, and protecting the most vulnerable sectors of society.

Emissions from international aviation and shipping are not included in carbon budgets for the moment. By the end of 2012 the government must decide how to address these or give reasons why it has failed to do so.

The Climate Change Act creates the framework for the government to establish trading schemes through secondary legislation. Its direct legal impact may be questionable, but it represents a significant step in a commitment towards long-term emission reduction and climate change adaptation.

- initiatives of economic agents/ - others ?

Discussed elsewhere are some of the activities and initiatives pursued by non-governmental, non-insurance entities, often in collaboration with both sectors⁶.

The interface between government policies regarding climate change and the initiatives and activities of private companies and others in connection with emissions and renewable energy is seldom far from the headlines. By way of example, as this questionnaire is being completed, prominently featured in news headlines are stories concerning numerous challenges being made by local residents to the granting of permission for the erection of wind turbines at various sites within the UK and the occupation by dismissed workers of a wind turbine factory in the Isle of Wight, Southern England (owned by Danish company, Vesta) following its announced closure (and the relocation of its business elsewhere).

5. How much is your country involved in international efforts and initiatives related to climate change :

- Kyoto Protocol**
- International Strategy for Disaster reduction, Hyogo Framework**
- National Platforms**
- Emission trading systems**
- others ?**

The UK plays a leading role at the international level. It is working through the **European Union**, the **G8** and **UN Framework Convention on Climate Change (UNFCCC)** processes to find ways to reach global agreement on action to avert dangerous climate change.

The UK Government's goal is said to be to stabilise atmospheric greenhouse gas levels so that dangerous climate change may be avoided, and to adapt to the climate change that is unavoidable. The UK Government and the EU consider that global warming must be limited to no more than 2°C temperature rise above pre-industrial times to avoid dangerous impacts.

Crucial to achieving this goal is securing a global agreement to a realistic, robust, durable and fair framework for the post-2012 period, when the first set of targets under the Kyoto Protocol expires. The UK Government is therefore aiming to reach an ambitious agreement at UNFCCC Conference of Parties at Copenhagen in December 2009, supported by effective domestic action (under the Climate Change Act) and through the EU (under the 2020 package).

⁶ There are too many to mention individually, but initiatives include the creation of boutique investment houses, such as Climate Change Capital, formed in 2005, which specialises in the raising of capital and advising of low carbon and renewable energy projects, both within the UK and abroad. – see www.climatechange-capital.com

Efforts are being made to ensure global emissions start to fall within the next decade and be at least 50% below 1990 levels by 2050. In the summer of 2009 the UK Government set out its aims for the Copenhagen deal (see "*The Road to Copenhagen*" below).

Emissions trading

Emissions trading is a key instrument in the drive to reduce greenhouse gas emissions. The underlying principle is to ensure that the emissions are reduced where the cost of the reduction is lowest, thus lowering the overall costs of combating climate change.

It allows an organisation to decide how and where they will reduce emissions by trading their emissions allowances. This ensures emissions are reduced where the cost of the reduction is lowest. The cost of emissions allowances is determined by the carbon market, and by the demand for, or availability of, allowances.

It is particularly suited to greenhouse gases, as these have the same effect wherever they are emitted. It means we can provide certainty about the amount of emissions by setting an overall cap, and without adding to the regulatory burden, and it encourages investment in low carbon technologies.

The EU Emissions Trading System (EU ETS) is the world's first functioning emissions trading system.

20 July 2009: Global Carbon Trading report published

A report commissioned by the Prime Minister, Gordon Brown, concluded that a global carbon trading network is vital to preventing dangerous climate change. (see next section, also.)

Climate Change Agreements

Climate Change Agreements (CCAs) allow eligible energy-intensive businesses to receive up to an 80 percent discount from the [Climate Change Levy \(CCL\)](#) in return for meeting energy efficiency or carbon-saving targets.

These pages provide information on the levy and agreements, the eligibility criteria for CCAs, and how to join an agreement.

Latest news

- [Climate Change Agreements - Results of Fourth Target Period Assessment \(TP4\)](#) - 15 July 2009
- [DECC consultation on form and content of new Climate Change Agreements \(12 March 2009\)](#)

The Carbon Reduction Commitment is one of a number of carbon reduction measures that the UK government has also been introducing. Scheduled to begin in January 2010, the CRC is designed to

subject about 5,000 organisations in the large-business and public sectors to report all their UK-based CO2 emissions, from both fixed point energy sources and transport emissions, among other provisions. The CRC is designed so that it does not overlap with other carbon reduction devices such as the EU Emissions Trading Scheme and Climate Change Agreements (see above).

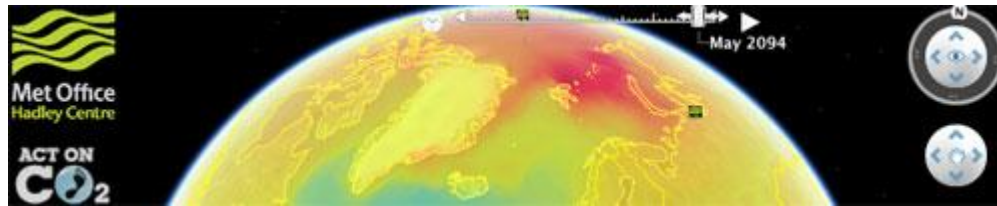
6. Please provide references to literature on climate change concerning your country.

- “*The Road to Copenhagen : Taking International Action on Climate Change*” (H M Government, 2009 and www.actioncopenhagen.gov.uk)
- Further information from DEFRA website
 - [UK Climate Projections](#)
 - [Adaptation in the Climate Change Act](#)
 - [Research](#)
 - [Scoping Study and Literature Review](#)
- Further information about different categorisations of UK Government adaptation, tools for planning adaptation, and further case studies can be found on the UKCIP website: www.ukcip.org.uk and [Case studies](#)
- See the [Stern Report](#) ([links to HM Treasury website](#))

More information:

- [European Union and climate change](#)
- [The UN and the Kyoto Protocol](#)
- [Working with developing countries](#)
- [The G8 and Major Economies](#)
- [Intergovernmental Panel on Climate Change](#)
- ["Making the right choices for our future: An economic framework for designing policies to reduce carbon emissions"](#) (16 March 2009)
- [Climate change in Our World](#) - collaboration between Google, UK Government, the Met Office Hadley Centre and the British Antarctic Survey to develop animations for Google Earth (19

May 2008)



Science and statistics of climate change

- [How is Defra tackling climate change? \(Science briefing note\)](#)
- [Defra statistics pages - climate change](#)

Economics of climate change

- [Information about assessments of costs and non-fiscal measures](#)

The Government's research programme

- [Research to support the development of the policy response to man-made climate change.](#)
- **Publication of the UK's fifth national communication to the UNFCCC**

This reports in detail the action the UK is taking to fulfil its commitments under the United Nations Framework Convention on Climate Change and the Kyoto Protocol:

[The UK's fifth national communication under the United Nations Framework Convention On Climate Change](#)

Size: [3.75 MB] File Type: [.pdf]

20 July 2009: Global Carbon Trading report commissioned by the Prime Minister, Gordon Brown:

[Global Carbon Trading: a Framework for Reducing Emissions](#) Size: [3.51 MB] File Type: [.pdf]

A series of supporting documents is available along with the main report:

[Linking Developing Countries to Carbon Markets: Cost Assessment of Capacity Building Requirements - Ecofys UK](#) Size: [1.49 MB] File Type: [.pdf]

[Global Carbon Market Institutions: An Assessment of Governance Challenges and Functions in the Carbon Market - Michael Mehling, Climate Strategies](#) Size: [2.36 MB] File Type: [.pdf]

[An Assessment of the Impact of Banking and Borrowing Rules on Linking - Office of Climate Change / New Carbon Finance](#) Size: [1.50 MB] File Type: [.pdf]

[Carbon Markets in Space and Time - OCC / Vivid Economics](#) Size: [878 KB] File Type: [.pdf]

For details of the main findings of the Climate Change Working Party of various members of the UK Institute of Actuaries see : <http://climatechange.pbwiki.com> and their report entitled: "*The Impact of Climate Change on Non-Life Insurance*" – Climate Change Working Party – GIRO 2007.

- Climate Change legislation

<http://www.statutelaw.gov.uk/SearchResults.aspx?TYPE=QS&Title=climate+change&Year=&Number=&LegType=All+Legislation>

In September 2007 British insurers launched **ClimateWise**, a project designed to promote greener policies, lobby government and to address issues arising in emerging markets. Initially some 30 or so (of the total of 400 or so) insurance and reinsurance entities in the UK signed up, including Lloyd's, AIG, Axa, Swiss Re and a number of brokers, as of late June 2009 it had 40 members, including also ACE and Allianz, with membership very recently extending also to Europe, North America and South Africa.

The following documents and publications are drawn principally from ClimateWise members, with some exceptions, to showcase their work against the ClimateWise Principles.

- **All Principles**

- "From risk to opportunity: insurer responses to climate change"

Evan Mills / Ceres (April 2009)

- "Insuring for sustainability: why and how the leaders are doing it"

United Nations Environment Programme Finance Initiative (May 2007)

- **Principle 1: Lead in Climate Risk Analysis**

- "Coping with Climate Change: Risks and Opportunities for Insurers"

CII (February 2009)

- "Flood houses of the future"

Aviva (November 2008)

- **Principle 2: Inform public policy making**

- "Climate Adaptation: guidance on insurance issues for new developments"

ABI (January 2009)

- ClimateWise Public Statement on UNFCCC Copenhagen negotiations

Hand-delivered to Yvo de Boer, Exec Secretary, UNFCCC (November 2008)

- "Insurance instruments for adapting to climate risks: a proposal for the Bail Action Plan"

Munich Climate Insurance Initiative (September 2008)

- "Revised Statement of Principles on the Provision of Flood Insurance"

ABI (July 2008)

- "Coastal Flood Risk - Thinking for Tomorrow, Acting Today"

ABI (November 2006)

- "A Future for the Floodplains"

ABI (July 2006)

- "Statement of Principles on the Provision of Flood Insurance"

ABI (November 2005)

- "Financial Risks of Climate Change"

ABI (June 2005)

- "Safe as Houses. The ABI Flood Manifesto"

ABI (April 2005)

- **Principle 3: Support climate awareness amongst customers**

- "You can be a flood tsar: new online game explores risk of flooding in UK"

Aviva (August, 2008)

- "Adapting to our changing climate"

ABI (June 2007)

- "Repairing your home or business after a flood - how to limit damage and disruption in the future"

ABI (March 2006)

- **Principle 4: Incorporate climate change into our investment strategies**

- "A Changing Climate for Property Investment: a trustee's guide"

F&C REIT and PRUPIM (published by IIGCC, March 2009)

- "Managing the unavoidable: understanding the investment implications of adapting to climate change"

Henderson Global Investment, Insight Investment, RAILPEN and USS (2008)

- "Guide to climate change investment"

Holden & Partners (Autumn 2008)

- "In the Front line: The Insurance industry's response to climate change"

F&C Asset Management (September 2007)

- "A legal framework for the integration of environmental, social and governance issues into institutional investment"

Freshfields / UNEP FI (October 2005)

- "Unlocking future value in commercial real estate"

Watson Wyatt (October 2008)

- **Principle 6: Report and be accountable**

- Guidance for Reporting

ClimateWise (February 2009)

B. Climate change and insurance *(please stress legal aspects)*

Introduction

It is of background interest to note the principal conclusions of a Dutch academic reached in a paper⁷ published over ten years ago upon the effects of climate change upon the insurance sector. These were that there were very limited bases upon which climate change itself could be insured (because the effects were easy neither to quantify, nor diversify). Second, that the impact of climate change upon the profitability of the commercial insurance sector was unlikely to be severe as the market was capable of shifting the financial risks to insureds provided it was informed in a proper and timely manner of its consequences.

In the UK there has been much activity since then with a number of insuring initiatives being pursued by individual companies against a background of a number of studies and reports being conducted into the possible effects of climate change upon insurance.

Most prominent among the latter have been the reports of the Association of British Insurers (ABI), following extensive commissioning of research into the area of flood risk and the effects of climate change. In June 2004 a report was produced entitled, "*A Changing Climate for Insurance*" – a summary ABI report for Chief Executives and Policymakers". This was prepared for the ABI by Dr Andrew Dlugolecki, an authority on the impact of climate change on the insurance industry and a visiting research fellow at the University of East Anglia's Climatic Research Unit. This helped lead to the publication in June 2005 of the further 40-page report, "*Financial Risks of Climate Change*".

Each report addressed many of the specific questions posed in this section of the Questionnaire and links to each are to be found for more detailed reference.

While many of the findings made in those reports remain of value it is important to note that in early 2009 it was reported that findings gathered more recently by the ABI and to be reported later in 2009 reflected a growing belief within the insurance industry that the consequences of changes in weather patterns had previously been underestimated.

Insurance companies were therefore set to raise their estimates for future premiums because of the effects of climate change.

Firms that operate in areas where floods and storms cause a growing amount of damage are likely to see the cost of cover rise by as much as 100% in the next 10 years.

The ABI now suggest that previous predictions of climate-change damage made in 2005 on which the industry has relied, are too low⁸. "*We are concerned that our estimates in our [last] report were too conservative,*" said Swenja Surminski at the ABI. "*Climate change is likely to have a more severe impact on the future price, affordability and availability of insurance coverage.*"

There is a growing sense among scientists that climate-change predictions have been too cautious and that the world faces threats of a different order than was thought even a year ago.

2008 was one of the costliest catastrophe years in history. Globally, large-scale events including floods, storms and hurricanes as well as man-made disasters such as explosions

⁷ "Climate Change and Insurance– a critical appraisal", Richard S J Tol, 1998, Energy Policy, Elsevier Science Ltd.

⁸ These included the predictions that under a high emissions scenario the aggregate risk premium for US hurricane and Japanese typhoon-type losses could rise in the order of 80% by 2080 and for European windstorm markets in the order of 15%.

or oil and chemical spill-ages, led to economic losses of \$269 billion (£186 billion), representing more than a threefold increase from 2007, when losses were \$70 billion, and more than five times the losses in 2006, according to a report by Swiss Re, the reinsurer.

The resulting cost to property insurers in 2008 totalled \$52 billion. The bulk of this, some \$44 billion, was due to natural catastrophes, with storm damage causing the greatest number of claims.

In Europe, the costliest natural catastrophe was Emma, a winter storm that crossed large parts of Europe with wind speeds of up to 95mph, causing insured losses of \$1.5 billion and overall losses of \$2 billion.

Businesses that have outsourced their production to developing nations such as China and India to save on labour costs may be the hardest hit by worsening weather because these regions are among the highest-risk locations. It is estimated that by 2050, 80% of China's GDP will emanate from areas that are at some risk of flooding.

"If you are in a high-risk area, you could see premiums double," has said Andrew Dlugolecki. *"This depends on the severity and frequency of bad weather and how well protected properties are from the increased risks."*

As the impact of climate change on weather patterns becomes clearer, many companies could start to feel the effects. Matthew Grimwade of Aon, an insurance broker and risk-assessment firm, said: *"We are already seeing rates for natural disasters increasing by about 10%, and prices will probably increase more than that by the end of this year."*

The inability to afford or secure an insurance policy for a particular property – be it an office building on the coast of Britain or a manufacturing plant in Asia – poses a number of problems for businesses. It could result in companies shifting their assets to safer locations that are less prone to climatic disasters and it could lead to shifts of employment and economic growth.

There are also likely to be financial implications for governments. A forthcoming report by the International Institute for Applied Systems Analysis, funded by the European Commission, will show that the EU Solidarity Fund, which is worth €1 billion and is supposed to cover "uninsurable risk" for government-owned infrastructure such as roads and bridges, is not enough to cover the damage caused by the more frequent storms and flooding that are expected.

According to Reinhard Mechler, one of the report's researchers, annual losses from floods alone could rise to as much as €1.2 billion by 2030. *"With a worsening climate an increase in fund resources is needed,"* said Mechler.⁹

Both average (expected) annual losses in many classes of business as well as extreme (estimated maximum probable) losses are expected to rise as a result of climate change, imposing upon insurers the need to find additional levels of risk capital required to satisfy both the risk appetite of insurers and the requirements of regulators as claims demands are likely to rise. European-based risks may require lower increases than in some more volatile parts of the world, but will be expected primarily on account of the combined effect of increased flooding and windstorm exposures.

⁹ Tricia Holly Davis, Sunday Times report, 22 March 2009

1. Which are the lines of insurance that could be affected?

- Property

Weather damage has typically over the years accounted for approximately one quarter of all property claims in the UK, rising to one third or even one half in major event years (e.g. 1990 and 2000).¹⁰ Flooding represents far and away the greatest risk to property covers from climate change in the UK with increases of almost fifteen fold by the end of the century predicted under a high emissions scenario. Potential total losses from river, coastal and urban flooding were reported to be estimated at more than £22bn in the ABI Report of 2005 and are thought now to be in need of serious upwards revision.

Agriculture (crops, forestry, livestock) – Yes (to some degree)

The cost of cover could rise if the severity of extreme weather events, particularly from heatwaves, storms and floods takes its toll. In UK, as elsewhere in Northern Europe, the risk of water shortages and/or bushfires is less likely than elsewhere. Some crop production may even be enhanced by better growing conditions. Some greater prevalence of crop and other diseases is forecast.

Buildings – Yes

Buildings are most naturally directly imperilled by the impact of more extreme weather conditions. Property is also said to be responsible, (in its construction, use and demolition) for around half of all CO2 emissions¹¹ and so there is considerable potential scope for insurers in this sector to encourage climate-friendly practices/safeguards. The EU Directive on the Energy Performance of Buildings¹² had a significant effect on the market in this sector, requiring information to be provided about the energy efficiency of

¹⁰ p 30 ABI Report, June 2005

¹¹ Association of the Conservation of Energy figures

¹² which all member states were required to implement by January 2009

buildings, leading to a higher awareness about the lettability and saleability of properties and therefore their values.

Increased severe weather events affecting security of electricity supplies, coupled with the de-commissioning of ageing nuclear generators are seen as likely to stimulate premium demand for on-site generation. Energy efficiency and emissions regulations thought therefore as likely to see taking up of renewables to meet this trend, with an increasing demand evident for building comfort (in view of hotter summers) based upon more thermally efficient properties rather than greater dependence upon air conditioning.¹³

Business interruption - Yes

Others (specify):

- **Motor and Mobile home/caravans:** in the UK losses could well increase significantly over time if severe hailstorm events and/or coastal flooding where many mobile homes are commonly situated. Milder winters may offset level of claims from severe ice/freezing etc. (**Motor third party liability:** carbon emissions claims could conceivably be founded (see below).)

- Liability – Yes (across whole range of liability policies and circumstances)

Over and above the more obvious first-party property insurance claims likely to be generated by climate change, an even greater potential effect may be felt in liability coverage. The anticipated huge economic and social impact is highly likely to lead to allegations, claims and law suits over the attribution of causation.

Potential exists for claimants to pursue actions for failure to foresee increased likelihood of direct weather-related damage and/or liability for release of GHGs into atmosphere. Most of the world's producers of GHGs are not public bodies, but private companies especially those involved in the transport, energy and manufacturing sectors. Indeed, 80% of the world's CO2 emissions are alleged to be caused by no more than 122 corporations in total.

¹³ ABI Report June 2004, p16

Proceedings in the US have been seen already. In California the state has sued six automobile manufacturers allegedly responsible for 30% of GHGs emitted in the state, said to have caused a reduction in the size of the snow pack in Sierra Nevada, rising sea levels, with flooding and contamination and a reduction of the state's water supply in prospect. Considerable expenditure on the part of the state is envisaged to create flood defences and secure water supplies etc.

Liability and causation issues will abound¹⁴, not least in circumstances where legislation controlling emission levels has only been tightened in more recent years. Arguments are bound to be aired about the contributory effect of the acts of others, within and beyond the state, which may include not only the automobile drivers, but a whole range of other employers, as well even as allegations of contributory negligence on the part also of the legislators themselves.

Actions have also been commenced in the US against chemical and utility companies by Mississippi homeowners in the wake of Hurricane Katrina losses to the effect that GHGs emitted by those companies' activities in the state had led to global warming and so intensifying the effects of the hurricane by way of lost property, business and income.

Litigation against corporate entities in similar vein has already manifested itself around the globe in countries as diverse as New Zealand and Nigeria. In the latter case, Shell and ExxonMobil were joined as defendants with the Nigerian government in connection with the effects over the past 40 years of gas flaring, which is more widespread there than anywhere else in the world.

To be successful, litigation of such a kind, which could manifest itself more widely in the form of multiple class actions around the world, will have to overcome a large number of legal hurdles. Even if liability for climate change or resulting damage in many cases may be very hard to establish, in an era of

¹⁴ A case presently generating interest in the English courts and due to go before the new Supreme Court in October 2009 (*Corby Group Litigation –v- Corby Borough Council* [2008] EWCA (Civ) 463 concerns the liability of a local authority to class action litigants (representing children born locally suffering abnormalities) following the alleged improper management of toxic waste by way of their reclamation and decontamination of a former steelworks – in particular the issue of whether damages for personal injury may or may not be recoverable for an alleged public nuisance.

heightened awareness at all levels, even among their own employees, many directors and officers will have to be on their guard against potential suits for failing to address the risk of their company being liable for causing, or exacerbating the effects of, climate change in some form or other. There are now many more tangible benchmarks against which the performance of companies and their directors and officers may be measured: e.g. the FTSE4Good index and the Carbon Disclosure Project. (Disclosure of corporate practices is being called for regularly by an increasing body of interested parties, including to D&O and other insurers themselves.) If a company suffered financially from climate change exposures, particularly if it failed to disclose these to shareholders or investors, then actions against them might be considered.

Certainly in some higher risk areas of work, e.g. construction industry professions, prospects of expensive suits to be defended positively need to be anticipated. Bad planning or design may endanger both any project work as well as the environment itself.

Those who may face increased exposure makes a very long list, ranging beyond architects, engineers, surveyors and designers to contractors and sub-contractors, manufacturers, retailers and suppliers, to freight forwarders, shippers, hauliers, as well as brokers, risk managers and other consultants and professional advisers.

All those involved with basing security for loans and personal finance upon property valuations need to be concerned with the sustainability of such valuations/practices in light of increased exposures to physical risk posed by extreme weather patterns etc.

Quality of disaster recovery and business resilience plans of insured companies and their trading partners needs to be more closely scrutinised.

Employer's, occupiers' and public liability exposures could all be affected by greater risk of accidents, injury or disruption arising from more extreme weather.

- Transport, marine – Yes

It has already been noted in discussion of liability issues that those involved with transport are attributed with creating a major part of the world's GHG emissions. Carbon constraints have been in place for some time and increasingly influence vehicle design. The development of alternative drive technologies (diesel, hybrid and fuel-cell) by some automobile manufacturers has seen alleged advancements in market shares for some, while manufacturers of traditionally fuel-thirsty cars (Ford, GM) have suffered. Consumer preferences remain hard to predict. Investment in and take-up of greater rail, rather than air or car use, brings further changes in the sector for policyholders and sector insurers alike.

Aviation hull claims could conceivably rise owing to increased incidence of hailstorm and storm/lightning strikes. Airline, airport operators and various product manufacturers all have potential increased exposure to liability claims based on alleged damage caused by harmful emissions (see above).

In **marine** insurance one interesting potential implication identified in this context is that the decreasing Arctic ice may lead to an opening up of the Northwest Passage¹⁵. More generally, potential change of risks abound arising from raised sea levels, storms, floods and other potential severe weather disruptions.

In the context of **trade, credit and political risk insurance**, there is discussion below of opportunities created in connection with the carbon credit and trade markets. Many political commentators have speculated disruption caused by climate change to the availability and provision of resources around the world over the coming 20 to 30 years may lead to an increase in violence, political disputes and/or armed conflicts.

- Life, health – Yes

Temperature-related effects of climate change on health and life expectancy in the UK may involve a mixture of advantages and disadvantages. Reduced winter deaths in milder winters may be offset by increased heat stress deaths

¹⁵ See "*The Impact of Climate Change on Non-Life Insurance*" – Climate Change Working Party – GIRO 2007 at p 11.

during hotter summers. Extreme temperatures may impact disproportionately upon those with certain pre-existing heart or lung conditions. The elderly and the overweight are exposed to greater risk of ill-health and all are exposed to the damaging effects of dehydration or fatigue¹⁶. Vector-borne diseases may become more prevalent. The extent of such adverse effects will be dependent upon the success of health surveillance and intervention, general healthcare programmes and other preventative measures, such as heating and air-conditioning provision in offices, transport and public housing.

-Travel - Yes.

Need for travel insurers to keep abreast of challenges presented by new destinations and changing weather patterns, needing to review both product terms and reinsurance protections accordingly. Could be increase in tourism to UK. Potential downturn may occur in holiday travel to Southern Mediterranean. Greater susceptibility exists to disruption/cancellation by more extreme, unpredictable weather events.

It follows from what is said here and elsewhere that reinsurance programmes of many of these classes will also be impacted, most obviously by claims involving catastrophic losses attributable to extreme weather events.

2. How are the risks linked to climate change to be defined?

**- Problems of interference of human and natural causes
(e.g. building in an area prone to being flooded)**

As stated above, (see Construction) there is evidence that new construction has been planned in hazardous zones¹⁷, e.g. flood plains and drought-prone regions (both in case of Thames Gateway), sometimes on sufficient scale that regarded as causing “construction climate change” or “3C”, such as may affect local water table levels. On smaller scale, the practice over many years of paving over domestic

¹⁶ The heatwave in Europe in 2003 alone brought about 22,000 premature deaths (p34 ABI Report June 2005 – Kovats & Koppe)

¹⁷ In the UK between 1980 and 2000, over 350,000 residential properties were built on floodplains, with 20,000 being built in the last three of those years alone (United Kingdom Floods, Guy Carpenter, 2000 – <http://www.guycarp.com/portal/extranet/pdf/ukflood.pdf?vid=1>)

gardens for car parking has caused localised problems in (sub)urban areas of rain and flood water being more dependent on inadequate channels and drains to avoid flooding than natural absorption into the soil.

- Problems of causal links

(e.g. increase of losses often due to a combination of factors

– natural, but also demographic and economic)

In most general terms domestically, until recently steady rises in living standards, the cost of living and in property values in the UK and in the wealth of individuals (and the amount and value of possessions they own) will have had the effect of increasing the exposures to risk from climate change, especially of many of those situated in vulnerable, particularly coastal, areas.

A further paradox recognised is that the greater wealth generation made possible in times of high economic growth which may involve a higher emissions scenario may provide the funds for adaptive, preventative measures to be implemented, so as to produce a more effective response than may be possible in economic conditions prevailing under a low emissions scenario. This founds the need to conduct carefully the best cost-benefit analysis in the context of adaptation and mitigation paths to be followed¹⁸.

UK insurance losses attributable to impact of climate change are not confined strictly to UK exposures. In global age, dependency of a UK operation upon overseas call centres, supply chains etc situated (in climate terms) more fragile or vulnerable (and potentially consequently also more economically and politically unstable) territories may increase risk of loss/failure. Also, potential for claims contagion and even increased insurance market failure.

In energy sector oil and gas exposures may be located in ever more hostile environments increasing risk exposure upon individual installations and at portfolio level.

¹⁸ For more detail of cost-benefit projections in context of UK flood risks see pp 31-2 ABI Report 2005

3. Insurers' measures of protection against excessive exposures

- Improvement of statistics

Cartography of risks

UK Climate Projections, described above, illustrate potential benefit of identifying regions or more specific locales considered especially prone to significant impact of climate change. Areas subject to coastal erosion or serious flood risk to merit separate provision, especially with withdrawal (from 2013) of "flood-for-all" cover.

- Raising risk awareness (communication campaigns, lobbying, ...)

The activities of the UK insurance market participating in groups such as ClimateWise and other associations are testimony to the attempts to raise awareness among policyholders of the virtues of climate-friendly measures, as well as encouraging increased take-up in many lines of insurance, from household and SME covers to those more specifically geared to commercial activities and the newer, greener technologies.

- Prevention

Prevention of further damage to the climate can take two many forms. Elsewhere we have identified instances of insurers encouraging policyholders to adopt more environmentally-friendly practices.

Provisions for the mitigation of the consequences may also take the form, for example, of conditions or safeguards being imposed upon policyholders by insurers to help prevent flood damage or water ingress itself, (making properties more resistant or resilient) from the fitting of one-way valves to drains to prevent surges, to the replacement of wooden windows or ground floor carpeting by more water-resistant materials.

Additionally, as noted, insurers themselves seek to take the lead in their own everyday business and investment practices.

In mid-2009 Lloyd's, following the lead taken by many other leading UK insurance providers, such as RSA and Aviva, has announced water, cycling

and paper reduction policies at its own headquarters, upgrading management systems and cooling plant at its City HQ, reducing energy consumption and bills, while cutting emissions. A new print management system is expected to use up to 55% less energy and up to 99% less when devices are on standby. Lloyd's also switched to a renewable energy supply for its offices in London and Chatham and undertook to disclose the GHG emissions of its UK operations.

- Limits of indemnity/ - Deductibles/ - Exclusions

Adjustments to limits, deductibles and the imposition of exclusions, particularly directed to the exclusion of environmental impairment liabilities, are all obvious tools, short of withdrawal of cover, which are available to insurers concerned by the adverse impact upon particular classes of business, especially where the profile or scale of a particular exposure may be dramatically altered by the impact of climate change. A number of instances have already been cited in these answers where insurers are reacting to the modified risk in their shaping of cover and their purchasing of reinsurance protection.

- Premium increases

Buildings and motor insurance premiums both recorded in 2009 as having increased by more than 10% on account of higher than usual losses attributed to unprecedented rise in flash floods, storms, hail losses, often in areas where such occurrences rare at best.

- Cancellations / - Withdrawals from markets

Cancellation and withdrawal of cover are the most potent weapons at insurers' disposal. There is always a natural tendency for some carriers to withdraw or restrict cover (with risks of anti-selection to be considered).

In 2008 the UK insurance industry announced in its statement of principles that "flood-for-all" cover would remain in place at least until 2013, but upon the critical understanding that the Government was committed to the

investment of money into flood defences and other measures. This commitment was of course made before the recession bit and the Government has since announced that any earlier spending pledges (to the tune of £1.5bn) will now hold only until 2011, raising critical questions about the position from that date.

What have added to insurers' concerns are Environment Agency figures to the effect that five million people are presently living in flood-risk areas across England & Wales, with eleven areas subject to flood warnings.

- Adaptation of reinsurance agreements (or develop under point 4 below)

See below.

**- Cover or climate risks on the financial market
(or develop under point 5 below)**

See below.

- Others

Insurers have recognised their capacity to help mitigate the effects of climate change in a number of ways: in guiding their clients/customers towards climate-friendly products and processes through pricing and other means (but progress remains limited while Government policy and rules upon such issues remains ill-defined); in helping to develop clean energy programmes with innovative risk transfer solutions (provided there is capital and capacity to support these); by procurement practices in using their bulk-buying power to influence manufacturers and retailers towards climate-friendly products; as investors by working collectively in initiatives such as the Carbon Disclosure Project to help influence corporate entities to conduct business in climate-friendly fashion, encourage property developers towards sustainable design and by following the alternative investment paths afforded by carbon funds and catastrophe bonds.¹⁹

¹⁹ In partnership with the National Flood Forum UK insurers have made available to policyholders details of how they may rebuild sustainably, after a flood has occurred, often at little further cost. The ABI and the Council of Mortgage Lenders have collaborated to arrange loans for such work if increased costs are involved.

3. Insurers' initiatives to develop « new products »

N.B. Climate change is seen as opening new opportunities by a growing number of insurers. Some examples are listed below, but they are far from exhaustive and new products keep appearing. Please investigate the situation in your country and provide as much information as possible (obtaining models of clauses and policies would be extremely valuable).

- New policies to cover the consequences of climate change

Coverage for producers of new energies (e.g. wind-mills)

Lloyd's, along with other leading London Market carriers, is providing a major share of the world's insurance of new technology, e.g. waste-to-energy plants and wind farms.

As mentioned elsewhere, projects which are intended to generate green or carbon credits, involve important credit values which require new forms of insurance protection against potential disruption, delay or forfeiture.

Liability of architects

Not only the architects, but all other designers, contractors and others involved with new, green technology activities, face both new challenges and responsibilities, which merit insurance protection being tailored for their respective needs, especially where levels of innovation on methods and process will often be more marked than in more traditional areas.

D & O environmental liability

Mention has been made already above of the need for all directors and officers to take particular care that they are protected against alleged failures in their discharge of company obligations in this area, often of a novel kind. D&O, like PI policies may often contain exclusions of any form of environmental liability, meaning that standalone or supplementary covers may be necessary and needing to be put in place successfully alongside other covers.

Micro-insurance products for developing countries

Insurance sector in the UK has recognised the potential value of micro-insurance products and index-related products to assist highly vulnerable developing countries, but a call has been made for the public sector to provide risk data and appropriate regulatory frameworks for the weak financial sector in those nations.

Climate models forecast that droughts, floods, heatwaves and severe storms are destined to become more frequent, so what can poor farmers do? US and European farmers buy crop insurance to cope with extreme weather. But the cost of checking claims from smallholder farmers in developing countries is prohibitive, and so insurance companies have tended to steer clear of them.

A different type of insurance scheme has been created for use in Adi Ha in Ethiopia and many other places in Africa, Latin America and Asia, backed by corporate giants such as **Swiss Re** and **Munich Re**. Instead of insuring against lost crops, "index insurance" (see also *weather derivatives*) protects farmers against the vagaries of the weather. For example, if rain gauges at local weather stations drop below a certain level, insurance companies can automatically transfer a payout to farmers without having to visit them.

Cover is tailored to each region. In Adi Ha, where farmers need the rains to start before a certain date, those who are insured will receive a payment if rains fail to come before an agreed cut-off date. In the hurricane-prone Caribbean, hotel owners can buy insurance that pays out if winds exceed a certain speed. The premiums can cost as little as a few dollars a year.²⁰

- Climate risk management services, expertise

Better communications technology has improved possibilities of insuring growing assets in context of farming and forestry when combined with index-based insurance products like weather derivatives and catastrophe bonds.

- New policies as incentives to reduce greenhouse gas emissions

²⁰ ClimateWise website, 2009

“Pay as you drive” motor insurance (and variants)

Aviva and RSA were among the first UK companies to consider new pricing structures for “pay as you drive” motor insurance to reward motorists for driving less, using Global Positioning Systems (GPS) in cars providing data about mileage and fuel-efficient driving. There are now a number of UK motor insurers offering a range of short-term, “pay-as-you-drive” or other variants of such motor cover. Commercial issues arising include the extent to which it is desirable for premiums to be so closely tailor-made, offending the “pool/spread risk” principles of insurance, but mileage remains but one factor in any premium calculation. Some clear benefits for younger, infrequent drivers.

Several companies offer premium discounts to hybrid car drivers.²¹ Up to 7 out of 10 motorists recently surveyed in the UK have said that they would drive hybrid cars if they were as cheap to purchase or run as conventional cars.

Other forms of car insurance available include carbon neutral car insurance.

Insurers have the means directly to encourage “greener” practices by motorists, but an issue remaining to be resolved is whether such investment by insurers will be rewarded on actuarial grounds (because those practices actually reduce a motorist’s risk profile) or whether this represents merely a marketing or educational expense.

“Energy saving”, “Green-building” insurance

Many UK home insurers now provide discounts for residential buildings constructed or modified with improved energy efficiency, such as with loft insulation, solar panels or cavity wall insulation. A few permit upgrades by a provision that standard appliances will be replaced with environmentally-friendly appliances in the event of a loss which is covered by a policy. This “green” addendum involves a slightly higher premium, but affords a significant upgrade in the event of a claim. Rebuilding provisions will also be on the basis that sustainable, toxin-free resources will be used in the rebuilding process.

²¹ Climate Wise website, 2009

UK insurer Fortis, is one of a number of companies which offers preferential mortgage rates for energy-efficient home upgrades.²²

- Initiatives in the carbon market

Carbon credit insurance (covering failure to deliver emission rights)

Following Kyoto and the implementation of the EU Emissions Trading Scheme (the “ETS”), the regime by which emissions are capped in signatory states and measures introduced designed to reduce emissions by offering incentives in the form of green or carbon credits, is not only well-established and involving very sizeable values, but is also affording important business opportunities for insurers in the UK, as in other leading insurance jurisdictions.

Both Clean Development Mechanism (“CDM”) and Joint Implementation (“JI”) projects, designed to reduce emission targets in developing countries by the use of green technology, serve as sources of credits for both offset and trading purposes. Insurers of such projects now provide insurance against not only traditional loss or interruption, whether from natural, political or other perils, but also against the loss of a second income stream, in the form of expected green or carbon credits. Failures in capped installations can involve new green liabilities having to be insured against.

Products now available in the UK and elsewhere take the form of specialist emission reduction insurance products for both cap and trade and green risks. Swiss Re and RNK Capital have collaborated upon the provision of one such product to protect policyholders against the threatened failure to deliver a reduction where a credit has already been sold.

To take account of the new carbon obligations and opportunities being imposed and presented, insurers are at the same time revising the forms of their coverage of D&O, credit and political risk, PI and financial lines and institutions covers.

²² Climate Wise website, 2009

Options to buy carbon credits to offset emissions (vehicles)

Benefits offered to motorists (and also home owners) by some new specialist carriers who have entered the market, such as The Green Car Insurance Company UK, include the setting off of 100% of a motorist's carbon emissions.

- Others

UK insurance industry has recognised that the most vulnerable segments of society often lack access to insurance. Insurers are encouraging the development of new, more simplified products, e.g. to private and commercial landlords to distribute with "pay-with-rent" schemes and are encouraging Government to recognise that the vulnerable need to budget for insurance in light of increased exposures brought about by climate change.

4. Reinsurance

In your country, what is the role of reinsurance companies with respect to the above problems?

Affordable appropriate levels of reinsurance naturally have an essential bearing upon the capacity of direct carriers to bear risk both in traditional areas affected by climate change or those new risks/products spawned by the phenomenon.

For example, recommendations made both to and by the CII and the ABI include those that insurers with flood exposures should include in their calculations an allowance for a steady "climate change" of between 2 and 4 per cent each year and load their storm and flood exposure by a significant "super-catastrophe" factor of around 30 per cent for storm and 50 per cent for flood. Subsidence risk should be considered likely to be much more "peaky" and so merit being reinsured. Treaties for flood and storm should further contain aggregate provisions to cope with expected frequency in the number of events.

In the research and production and sharing of data, in addition to that which has more publicly gathered, the leading reinsurance companies, with designated specialist teams, such as Munich Re and Swiss Re, play a significant role and are represented upon every

major industry and cross-sector committee or panel at work in the UK, including ClimateWise, mentioned above, which is active in co-ordinating research and modelling, pricing and product development, as well as lobbying.

Swiss Re, an industry leader on climate change, was among the first to offer insurance services tailored to carbon trading and the clean technology industry. Munich Re's Climate Insurance Initiative, set up in 2005, was an early example of government/industry analysis-sharing, seeking to develop insurance solutions in developing countries.

Reinsurance brokers, Benfield (now Aon Benfield), a member of ClimateWise, developed some years back what is now known as the Aon Benfield UCL Hazard Research Centre, the director of which is Professor Bill McGuire, an internationally-respected authority on, inter alia, the hazard implications of climate change.

Familiar problem areas when it comes to ceding companies looking to recover from their reinsurers, beyond those of more obvious legal liability and the causation of quantified loss issues, will be those of the allocation and aggregation of losses, particularly if extended over a very long period, (such as has been the source of so much dispute in the context of earlier asbestos, tobacco and other environmental claims). Problems of interpretation of the nature and form of the reinsurance cover actually provided, and whether and if so in what respect this is to be regarded as "back to back", such as was manifested in the *Wasa-v-Lexington* (2007) case, (where the underlying claims involved liability for the clean-up in the US of 40 years' worth of aluminium production contamination), will doubtless be the fore in many cases.

5. ART (Alternative Risk Transfer)

Have any of the following techniques developed in your country in connection with climate change:

Derivatives, swaps, catastrophe bonds, others?

Most climate-related risk hedging innovations developed have centred on weather derivatives (swaps, futures, options), catastrophe protection (bonds and swaps) and Industry Loss Warranties (ILWs), each of which allows insurers to reduce capital requirements and/or may increase their ability to write new business.

- Derivatives

Weather derivatives have been developed to afford a hedge for traditional insurers and reinsurers against large-scale weather-related losses. They pay out upon the triggering of a specified event, e.g. the reaching of a specified temperature, rather than upon the proving of identified losses. The investor charges a premium for the access to capital afforded. In the event of no payment out a large profit is enjoyed. The sellers are most commonly energy companies; buyers being insurers or pension or mutual funds.

- Swaps

In general terms, while swap structures are in theory easier and cheaper to implement, they have not proved particularly popular.

- Cat bonds

Funds raised through high-yield debt instruments in case of an extreme event such as a hurricane similarly involve a payment mechanism triggered by the happening of specific conditions e.g. a category 4 hurricane hitting mainland USA. A superior interest rate is enjoyed by investors in return for availing the capital. Sellers are most commonly insurers selling to pension or mutual funds.

- Others?

While such techniques afford valued access to capital, pre-supposing in these post-credit crunch days such capital is in fact available, there are obvious disincentives/disadvantages. Most notably, transaction costs can be very high (for example, a special purpose vehicle is required for a cat bond) and investors of weather derivatives, for example, who are unfamiliar with such insurance risks can often charge unattractively high premiums.

Better communications technology has improved possibilities of insuring growing assets in context of farming and forestry when combined with index-based insurance products like weather derivatives and catastrophe bonds.

Potential recognised for risks of impaired turnover potentially impacted in tourism and leisure sectors being transferred by products like weather derivatives.

Conclusion

Compared with the US there has been much more modest activity in the UK, as in many other parts of Europe, in the reliance upon ART techniques being adopted on any major scale. Prior to the capital crunch, growth in this area has been hindered by uncertainties about the reliability of data, modelling and the significance of past records, as well as the costs to be charged. Concerns have also arisen about some of the legal and regulatory characterisations of some of the techniques.

What is the legal nature of these different products? Can they qualify as “insurance”?

Hard to summarise succinctly and accurately, but often the subject of, as yet unresolved, uncertainty. A critical factor in English law is commonly whether there has been any genuine transfer of risk such as to characterise the transaction as “insurance”.

Derivatives and similar products are essentially contracts for “differences”, not contracts of “insurance”. Absent are insurance duties of disclosure, the need to establish insurable interest or insured loss. Insurers or reinsurers are therefore prevented from engaging in the provision of such products themselves, when precluded by the regulators from engaging in any business other than insurance. They may invest their insurance funds in such products, but not co-invest with those providing them. They may generally insure against losses arising from such investments, provided any loss sustained is the result of an extraneous contingency and *is* a loss, not merely a failure to make a profit and involves more than a mere wager or sham.

6. Co-operation or competition with public sector

What is the state of co-operation (or competition) between public authorities and the insurance sector in your country in issues related to climate change ?

Within the insurance sector in the UK the ABI has been active in co-ordinating insurers' own activity in respect of underwriting practices in response to awareness of climate change. The UNEP Financial Initiative (UNEP FI) – an alliance between the UN Environment Programme and over 200 financial institutions, including major UK insurers and banks - has seen co-operation on adaption and mitigation issues at a global level.

More co-operation is being encouraged on both sides. Mention has been made above of calls for the public sector to assist with regulatory frameworks in developing countries and with the raising of awareness and provision for insurance among the most vulnerable domestically. Insurers are further calling for the release to insurers of public information, presently regarded as difficult and expensive to access, about climactic hazards and exposures.

The Corporate Leaders Group on Climate Change in the UK (and its EU counterpart, the EU Corporate Leaders Group – the EUCLG) were early examples of bodies formed by the likes of AXA and F&C Management, designed to co-ordinate government and industry initiatives.

The London Climate Change Partnership (LCCP) is one example of many so-called “stakeholder groups” currently operating in the UK. This is co-ordinated by the Greater London Authority, comprising over 30 organisations with representation from government, climate scientists, developers, finance, health and communication sectors. These include the ABI, Lloyd's and UKCIP (the UK Climate Impacts Programme, funded by the government department, DEFRA), a body which, since its establishment in 1997, has worked with the public, private and voluntary sectors to assess and adapt to climate change in various sectors. The LCCP forms part of the United Kingdom Inter-regional Climate Change Group (UKIRCCG) which is made up of similar regional groups.

Are there specific public schemes concerning some of the risks involved ?

To date in the UK private insurance arrangements have remained the primary means deployed for the covering of property damage owing to severe weather. For flood, storm damage and subsidence (which risks comprise 90% of the costs of extreme weather each year²³) there is more than a 90% take-up of such cover²⁴, required as a condition of a mortgage, although the prospect of single event losses of such a magnitude as to exceed the capacity limits of most insurers, even with the backing of reinsurers, means that government-backed compensation schemes, (funded by the taxpayer, rather than by policyholders in accordance with perceived exposures to risk), become more likely.

UK insurers are presently pressing the government to manage the growing flood risk; in exchange they have agreed – as mentioned above- to continue to provide flood insurance to households and small businesses.²⁵

C. Any additional information or comments

Further comments will be provided as and when others have had an opportunity to review the contents of these answers and/or should we receive requests for further elaboration or expansion in any areas, with which we should be happy to deal.

Tim Hardy

Vice President

For and on behalf of the British Insurance Law Association

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²³ Sigma database, Swiss Re (per ABI Report June 2005)

²⁴ ABI Report, June 2005

²⁵ ClimateWise website, 2009