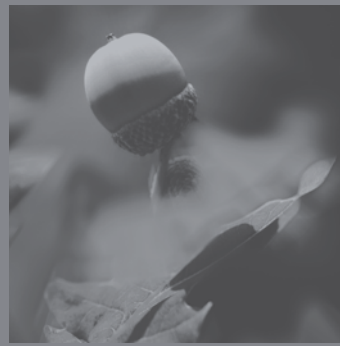
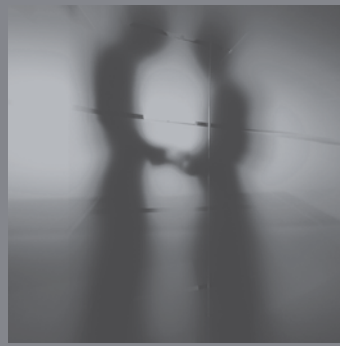


# In the front line: The insurance industry's response to climate change

reo® Research

September 2007



## In this report...

- How the insurance industry will be affected by climate change
- What companies should do – and the wider systemic changes that are needed

# Table of contents

<b>Foreword</b>	<b>3</b>
<b>Executive Summary</b>	<b>4</b>
<b>1. Introduction</b>	<b>4</b>
<b>2. About the insurance sector</b>	<b>5</b>
<b>3. How climate change affects insurers</b>	<b>6</b>
Underwriting, capital adequacy, pricing and risk research	6
Loss reduction, claims processes and repairs	8
New products and services	10
Investment portfolios	11
Participation in public policy	11
Companies' own operations	12
<b>4. Company strategies</b>	<b>13</b>
F&C correspondence	13
Publicly disclosed information	14
<b>5. Key findings</b>	<b>15</b>
<b>6. Recommendations</b>	<b>17</b>
<b>Appendix: ClimateWise Principles</b>	<b>18</b>

## Foreword

Insurance is a major global industry, and one that directly affects F&C as a major asset manager. Not only do we invest in insurance companies; every company we invest in requires insurance to run its business. We could say, then, that the impact of climate change on the insurance sector will have a ripple effect throughout the economy and across our investment portfolios.

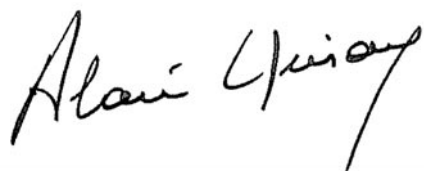
There is overwhelming scientific evidence that climate change is contributing to more frequent and severe extreme weather events, events that put insurers in the front line of the storm. Natural catastrophes such as hurricanes in the US, recent floods in the UK, and wildfires in Greece have been exacerbated by the changing climate and led to record claims across the insurance sector.

Beyond higher claims, though, climate change will affect the very foundations of the insurance industry, including how it is regulated, what kinds of capital requirements are in place, and how it evaluates and prices underlying risk. The sector needs to prepare itself for these fundamental changes.

The insurance sector also has the opportunity to be part of the solution to helping the global economy adapt to the future impacts of climate change. By working with peers, customers, and governments, insurers can help identify ways to protect society from the worst impacts of climate change. They can also play an important role in incentivising the technologies and behavioural changes that will both reduce greenhouse gas emissions that contribute to climate change, and avoid suffering the worst of its effects.

We note in this report some encouraging examples of good practice, where insurers are responding to climate-related risks and capitalising on opportunities. But across the industry as a whole, the response to climate change does not yet reflect the scale of the challenge. In part, this is because there is still a good deal of learning going on – climate science continues to evolve, and government regulation and customer preferences alike are shifting fast.

A further obstacle is that some aspects cannot be tackled by any one company acting alone. This is why the ClimateWise Principles – to which F&C is a founder signatory – are so important. These Principles will provide a solid foundation of best practice and allow the sector to adapt its business model to respond more effectively to the myriad and significant impacts of climate change across the industry.



**Alain Grisay**

**Chief Executive Officer, F&C Management**

## Executive Summary

- **Insurers are in the front line in feeling the impacts of climate change.** Since insurance enables capital investment throughout the global economy, these impacts will have a multiplier effect across all sectors.
- **Climate change is impacting the insurance business from all angles;** risk pricing, claim and loss rates, invested assets, and the regulatory regimes that underpin the sector are all affected. All parts of the insurance sector will be affected, from large reinsurers to small direct insurers. While property insurers have experienced the brunt of these impacts to date, other insurance lines including liability, business interruption, and life and health look likely to be hit down the line as well.
- **While a growing number of insurers are recognising these risks and are developing strategies in response, many more remain behind the curve** and have yet to consider fully how climate change will affect their businesses. European insurers are, on average, ahead of their US counterparts in their response to climate change.
- **A particular area of weakness is in understanding the impacts on insurance company investment portfolios.** Many insurers have yet to understand the impacts of climate-related risks on valuations, and are therefore not incorporating these into the investment decision-making process.
- **Insurance companies should develop comprehensive climate change strategies, and disclose the actions they are taking.** Disclosure is improving, but investors need better information about the materiality of the risks insurers face, as well as the impact insurance pricing and terms have on capital investment decisions across the wider economy.
- **But this is not enough; system-wide changes are also needed.** Regulators need to tackle the climate issue head-on and remove obstacles to more accurate risk pricing. Governments need to work with insurers to make society more resilient to climatic changes. And joint industry initiatives are important in establishing best practice and providing a forum for co-operation.
- **The process of change will not be easy,** and for some it will be painful. But the earlier the sector responds to the changes that climate change will inevitably bring, the lower the costs will be, both to the insurance industry and to society as a whole.

## 1. Introduction

A stable and efficient insurance sector provides a vital underpinning to society and to economic growth. It enables individuals and businesses to take economically beneficial decisions that they would otherwise refrain from taking because of the fear of extreme financial losses arising from relatively low probability events. If priced correctly, insurance not only provides a social “safety net”, but induces individuals and business to take more intelligent risks, while lessening the burden on government to intervene in the event of severe financial hardship.

The insurance industry also has a major influence on the way business works. Whether managing day-to-day risks, or deciding on major new investment projects, the pricing and availability of insurance is a key factor in decision making. Insurance plays a pivotal role in directing capital investment to its optimal use, enabling businesses to adapt to changing circumstances by correctly integrating risk into their development and investment strategy.

Essential to the business model of insurance is the ability to measure and assess risk. If climate change results in changes to patterns of risk, then insurers who fail to spot

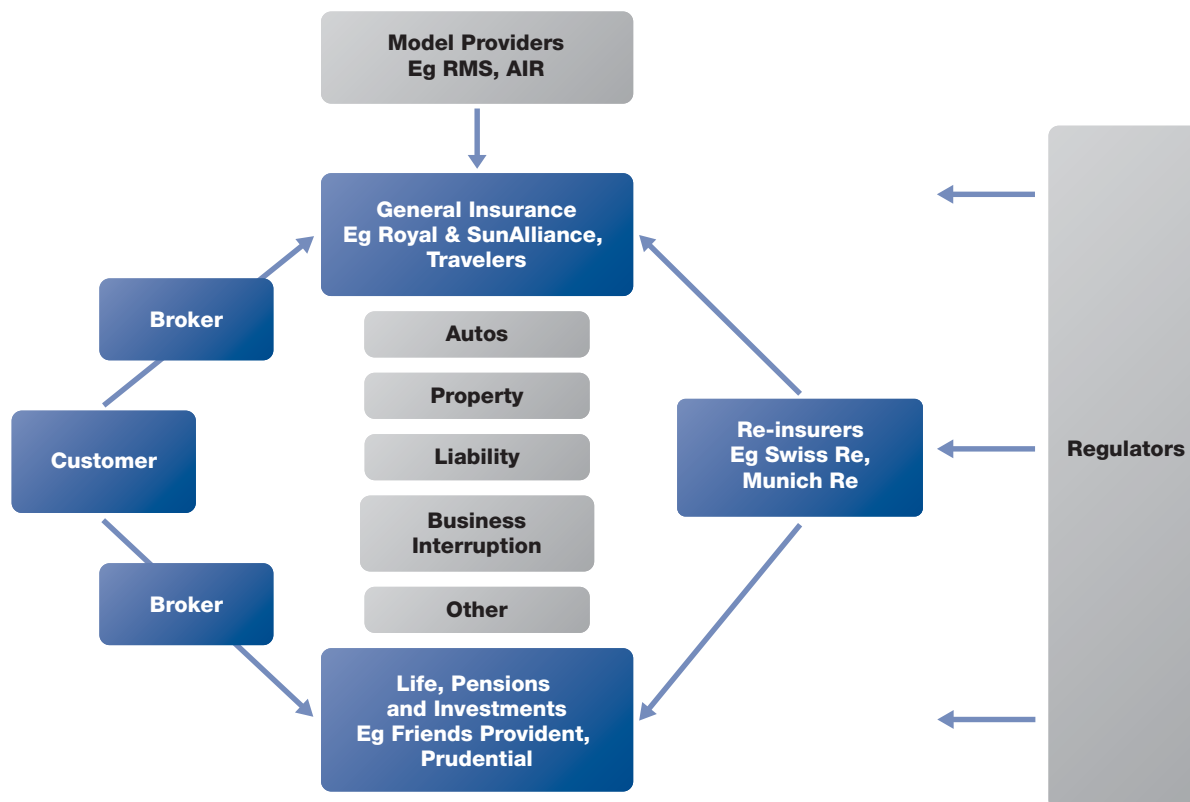
and adjust to those changes may find that they have mis-priced policies or have insufficient capital reserves to cover their losses— threatening the viability of the sector.

In addition to protecting against loss and driving the investment decisions of its customers, the sector also controls large sums of capital through the assets that underpin its policies and through the provision of financial products including pensions and investment products. Climate change has a significant impact here too, as it will impact different companies and sectors disproportionately, affecting investment returns.

This research piece sets out how the insurance sector is affected by climate change. It highlights the fact that the response so far has been patchy, with some companies seeing climate change as core to their future strategy and others hardly aware of it. It examines why this has been the case, and makes recommendations on how individual companies, and the industry as a whole, can take action to ensure that they are prepared for the inevitable changes they will face as the impacts of climate change hit home.

## 2. About the insurance sector

Figure 1



The insurance sector is a diverse one. Figure 1 gives a schematic overview.

The sector is split into two main types of activity: life and non-life insurance. Life insurers provide a range of insurance and investment products such as pensions, life, health and disability insurance, and annuities which pay out over the lifetime of the policy-holder. Non-life insurers, also known as “general” insurers, insure against all other kinds of risk or loss ranging from liability insurance to property and auto insurance. Many companies, such as **AIG** in the US and **Allianz** in Europe, span both categories.

The sector is also split between primary insurers – who are directly responsible for paying claims to customers – and re-insurers – who provide a secondary financial backstop

against major losses. Major re-insurance companies such as **Swiss Re**, **Munich Re**, and several **Lloyds of London** syndicates also provide specialist insurance of large or complex risks such as major construction projects, oil rigs, or shipping.

Also key to the overall insurance sector are service providers such as insurance brokers and risk modellers. Most insurers rely on risk models from specialist model providers such as **RMS** or **AIR**. Meanwhile, brokers such as **Benfield** and **Marsh McLennan** act as intermediaries between re-insurers, primary insurers and end customers and ensure that insurance markets operate efficiently.

### 3. How climate change affects insurers

The impact of climate change on insurers will vary depending on the activities, and also the region of operation, of each company<sup>1</sup>. The following sections set out the various ways in which the sector could be affected, and analyses how companies have responded to date.

#### Underwriting, capital adequacy, pricing and risk research

##### How is the sector affected?

For non-life insurers, the most significant potential impact of climate change is likely to be its effect on risk costs and risk pricing, which drives underwriting decisions.

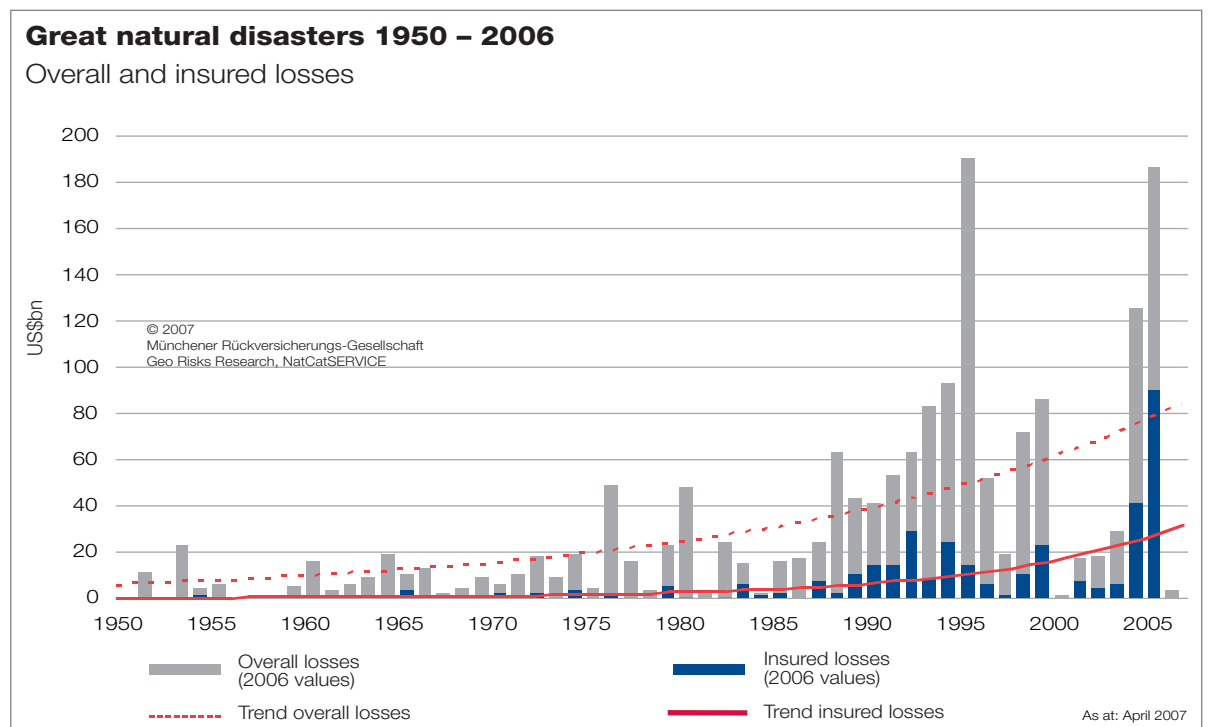
The scientific evidence strongly suggests that climate change will change patterns of extreme weather events such as storms, floods, and droughts. According to the latest report from the Intergovernmental Panel on Climate Change, “future tropical cyclones could become more severe, with greater wind speeds and more intense precipitation”, and “an increase in the likelihood of very wet winters is projected over much of central and northern Europe... suggesting an increased chance of flooding”<sup>2</sup>. Even one major natural catastrophe will have a significant impact on insurers as the number of claims swells and capital reserves decline. The geography of certain weather hazards is also likely to change as higher temperatures cause winter storm tracks to shift by several degrees of latitude, raising the risk that winter windstorms may hit

areas that have never experienced them before and are unprepared.

This means that the magnitude and frequency of weather hazards in the future may not be the same as in the past, and that simple extrapolations of the average activity calculated from the historical record may not be the best guide to the future. If weather hazards rise, and no effort is made to reduce vulnerabilities and exposures, then the risk to human populations will increase.

This trend will be superimposed on an already-rising toll of losses from extreme weather. Figure 2 shows **Munich Re’s** analysis of total and insured losses from extreme weather events over the past half-century. Here, the increase in total losses primarily reflects social phenomena, such as a build-up of property assets near coasts, inflation of insured assets, and the rise in overall insured assets. Figure 3, though, demonstrates that there has also been a long-term upward trend in the number of actual extreme weather events. While there is disagreement regarding exactly how much each of these two factors has contributed to the total increase, when combined, they go a long way to explain the overall explosion in insured losses over the last several decades, and the corresponding rise in insurance premiums. Looking forward, **Munich Re’s** view is that “the main driver of future loss developments will be climate change”.

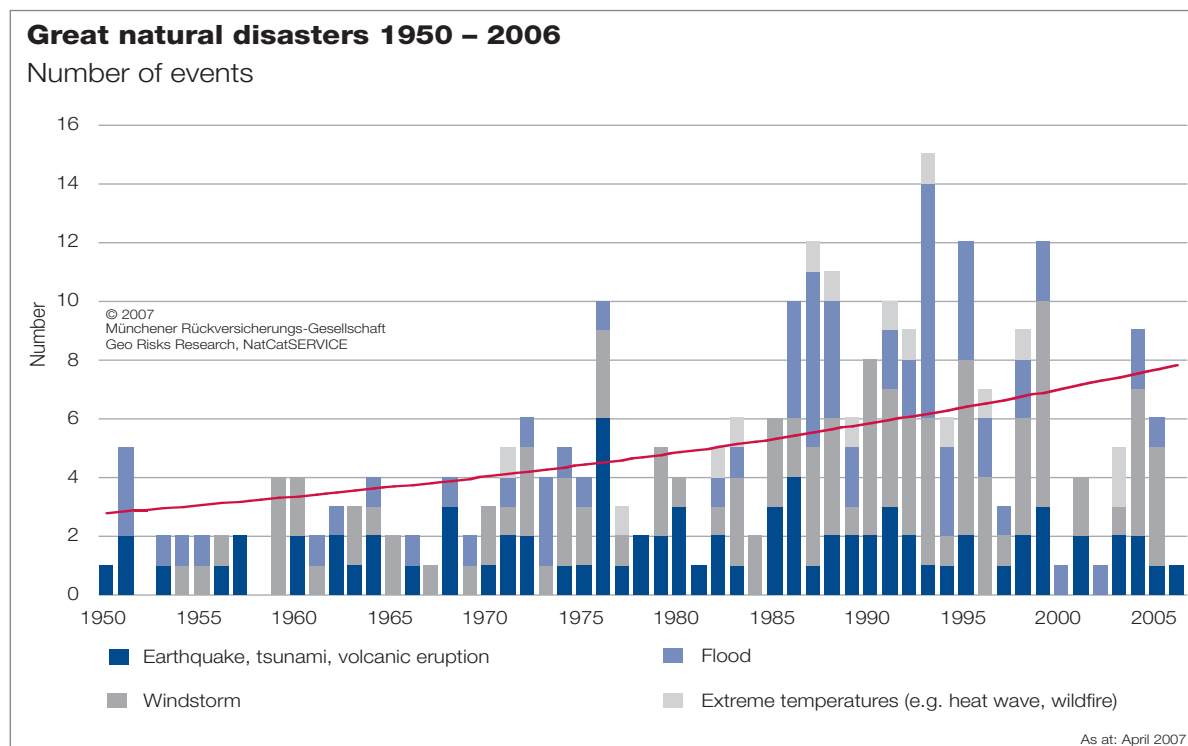
Figure 2



Source: Munich Re, “Topics Geo – Natural Catastrophes 2006”

1 A useful recent reference point on the impacts of climate change on the sector is the report “From Risk to Opportunity”, Ceres, 2006  
 2 IPCC Fourth Assessment Report, Working Group I, page 783

Figure 3



Source: Munich Re, "Topics Geo – Natural Catastrophes 2006"

Traditionally, risk modellers have relied on historic claims data to help insurers price forward-looking risk and determine underwriting requirements. However, given that the past is no longer a reliable guide to the future, and that extreme weather events are likely to become more intense and frequent, the models underpinning insurance pricing may give misleading results. To the extent that risk may be systematically underpriced, claims will turn out to be higher than forecast, thereby significantly impacting on the profitability of the sector. Such a scenario occurred when Hurricane Katrina struck New Orleans in 2005. Pre-Katrina estimated losses were significantly less than actual losses, which led to unanticipated claims rippling through the industry.

“The pace of change in extreme weather events is already fast, and the scale of losses could reach \$1 trillion in a single year by 2040”

UNEPA Insuring for Sustainability, 2007

In addition, the raised likelihood of single large extreme weather events, or the shortening of recovery periods between storms, has implications for the capital adequacy requirements for the sector, since a single-year of large claims could bankrupt a company.

Many of these impacts would be felt primarily on property insurance. But climate change is also likely to shift risk profiles in other areas:

■ **Business interruption insurance:** Businesses operating in vulnerable areas may face higher risks of having their operations closed by extreme weather, and slower, more expensive re-building costs once a catastrophe hits.

■ **Health and life insurance:** Data suggests that climate change is also affecting mortality and morbidity rates as tropical diseases enter new territories, asthma rates increase and extreme heat and cold spells lead to premature deaths. Warmer weather may mean lives saved in some regions that historically have been exposed to snap cold spells. However, some experts suggest that these will be more than offset by deaths associated with extreme hot weather such as occurred in the European heatwave of 2003.

■ **Liability insurance:** Under changing legal regimes, companies may face the threat of lawsuits for their historical greenhouse gas emissions which contributed to global climate change and are increasingly being linked to specific events. Professional indemnity insurance also looks likely to suffer as customers sue property developers for damages not covered by insurance, arguing that buildings should have been constructed to withstand such extreme events.

“We’d be out of our minds if we wrote weather insurance on the opinion global warming would have no effect at all”

Warren Buffett, Berkshire Hathaway CEO, shareholder meeting, 2006

### How are companies responding?

Clearly, there is a need for insurance companies to review their premiums to take the effects of climate change into account. The first obstacle is that adapting the historically-based catastrophe models to take climate science into account is a complex and time-consuming task, particularly as climate change science does not give precise answers as to exactly how and when extreme weather patterns will change.

A second obstacle comes from competitive pressure to keep insurance costs low. If some companies increase prices to take account of increased climate risk while others stick with traditional models, these forward-thinking companies could price themselves out of the market. Although not rational over the long term, such behaviour may nevertheless persist because of the cyclical nature of the market and the extreme swings in pricing that tend to occur. This may particularly be the case when there has been a run of quieter weather, and the level of attention given to the issue wanes.

A third obstacle arises in regimes where insurance regulators are elected officials. For instance, in some US markets, regulators may actually preclude companies from accurately reflecting climate risk in insurance pricing, in order to keep insurance costs down, and maintain public support. The cost of insurance is increasingly becoming a hot political issue for officials and companies alike.

However, there are re-insurance and risk modelling companies that are leading the way in attempting to quantify how climate change should be factored into risk pricing. Box A describes how modelling company **RMS** is charting new ground by developing the first forward-looking catastrophe models that attempt to incorporate the impact of rising temperatures. Re-insurers **Swiss Re** and **Munich Re** have also undertaken very significant research and analysis on how changing weather patterns will affect risk pricing<sup>3</sup>. The challenge will be to filter these data through into mainstream risk pricing, rather than being seen as a public-spirited contribution to scientific understanding that remains disconnected from business decision-making. Greater transparency by insurance companies about exactly how they are assessing these risks will help to provide pressure to change and could help to loosen the hold of regulators who are reluctant to approve additional price increases.

Companies do not, as yet, appear to be making adjustments to their capital requirements in response to the changing risks. Individual companies are unlikely to take the initiative here, as it could put them at a competitive disadvantage; it is an area where the regulator is likely to have to play a leading role. Whilst some regulators are now pointing to the risks, this has yet to translate into hard policy.

#### BOX A: RMS works to incorporate climate risk into catastrophe models

RMS has recognised that if weather-related risks are changing over time, due to global warming or natural variability, then estimates of risk will depend on the period over which they are made. For instance, its US hurricane model is based on the explicit assumption that risk is being estimated over a future five-year period. As the impacts of climate change also create added uncertainty about risk, RMS has introduced a process for eliciting the expert opinions of leading researchers about future hurricane activity in the North Atlantic and at landfall in the United States. Its climate modelers are already investigating where and how such impacts should be incorporated in catastrophe models that assess current risk, and how to model changes in risk into the future.

RMS is also engaging with the research community in other climate and weather-related disciplines, to stay abreast of advances in the understanding of the impacts of climate change, past, present and future. RMS has committed to pursuing initiatives to enhance catastrophe modeling to explore the potential costs of future climate risk, and undertake case studies to assess the economic implications of climate change for communities and for business, in both the developing and the developed world.

### Loss reduction, claims processes and repairs

#### How is the sector affected?

Changing pricing is not the only way for the insurance sector to adapt to changing risk. Other options include withdrawing from high loss regions, incentivising loss-reducing behaviour, and improving the risk profile of customers at the point of reconstruction or repair.

In extreme cases, insurers may refuse to provide insurance at all if they cannot quantify the risks, or if they view the risks as too severe relative to the price levels they are allowed to set – although this option may not be available to them if markets are heavily regulated. For instance, the State of Florida has become the number one provider of residential insurance because private insurers have withdrawn from the market following repeated catastrophic hurricanes. High insurance premiums (or at the extreme, unavailability of cover) in particular high-risk areas send strong price signals that could deter new construction in these areas, thereby limiting the long-term economic losses from climate change.

Rather than withdraw, and jeopardise entire markets, insurers can also incentivise policy-holders to protect themselves against damage, so as to limit potential losses. In the area of climate change, insurers can encourage actions such as the installation of storm shutters or flood defences by offering discounts to customers who do so.

“The correlation of seemingly unrelated events... and the increasing frequency of extreme events are likely to put considerable pressure on insurance companies’ capital requirements”

Financial Services Authority (FSA), *Financial Risk Outlook 2007*

Insurers already use this technique in other business areas – for instance, providing discounts to customers who fit security alarms, or cheaper premiums for customers who give up smoking.

Climate change may also have implications for claims and repair processes. Major catastrophes put immense strain on claims processes, as systems may not be able to cope with the scale of response necessary. In addition, repair costs tend to rise quickly following catastrophes as customers face strained resources for re-building. On the flip side, the claims and repair processes also present an opportunity to reconstruct in a more sustainable way. By rebuilding using eco-friendly construction materials and the leading building techniques, insurers can both prevent future losses and also reduce greenhouse gas emissions that contribute to climate change.

### How are companies responding?

While it is clearly in insurers' – and society's – interests to encourage customers to reduce the risks they face, examples of this are so far limited. More common has been the more extreme approach of withdrawing from high loss regions. Several major US insurers, faced with increased risks and the inability to raise prices due to restrictive regulatory regimes, are starting to withdraw cover from areas where it is no longer economic to offer it – see Box B. While a logical response, companies still face considerable challenges if they go down this route. For example, insurers may face the so-called captive agent problem if they opt for selective withdrawal of services. Under this scenario, companies who cease providing homeowners insurance may lose business in other insurance lines due to a consumer backlash. Furthermore, insurers who exit a particular market run the risk of being locked out for the medium to long-term, even if the risk profile to that area changes.

In some extreme cases, where risks have risen above what is economically viable to insure, market exit may be the only option. In this case, governments are likely to intervene to cushion the impact on individuals and on the local economy. However, withdrawal of cover may also be a result of insurers being unwilling – or unable – to raise prices to the correct level, or because they lack robust information about the genuine level of risk. This is an undesirable outcome both for the insurance industry and for society, compared with the option of allowing pricing to reflect true risk levels.

It is therefore vital for insurers to develop more accurate risk modelling, and to improve coordination with regulators over insurance pricing, land-use and infrastructure planning. This will allow insurance companies to price risk more efficiently by identifying which areas are very highly exposed, while enabling local governments to invest in minimising exposure to risks in the first place.

### BOX B: State Farm Withdraws... and re-enters Louisiana's Gulf Coast after negotiating with regulators.

In 2006, following the devastating effects of Hurricane Katrina, State Farm decided to stop writing new homeowners' insurance in the Louisiana Gulf Coast, because the risk profile and cost of losses in the area were simply too high. With 32% of the local market-share, the impact of this decision on the company and the local economy was significant.

In August 2007, nearly one year later, the company announced it would begin accepting new business in southern Louisiana after negotiating changes to the Louisiana building code with state regulators. The company may find it difficult to win back its former customers, given the controversies around its earlier departure; but it is too early to judge whether this effect will be significant or not.

The role of the re-insurers in helping primary insurers manage their risks is a critical one. Again, in some risk-prone areas, re-insurance cover may become limited or very expensive, restricting the ability of primary insurers to take on risks. This issue reached crisis point in Florida, where the State stepped in to provide re-insurance cover after repeated storm losses pushed up the price of commercially available re-insurance. The move will maintain the insurability of Florida's coastal property, thereby averting severe political backlash. However, it is likely to delay the process of introducing more accurate risk pricing, and moving people out of areas that are ultimately unsustainable. Over the long term, this could prove far more costly to taxpayers.

We found select examples of companies attempting to incentivise loss-reducing behaviour. One example is in the US, where some insurers require homes in certain areas to have storm shutters fitted as a condition of insurance, or apply a higher deductible (excess) to homes without these in place<sup>4</sup>. But we found few other examples of such action.

A small number of companies are identifying ways to ensure that repairs are carried out in a way that promotes sustainability, in terms of both improved climate resilience and greater energy efficiency – see Box C. However, in the small number of examples we found, this tends to be presented as an optional extra, not something that is done routinely across all repairs. This could be an area where individual companies are reluctant to move too far ahead of the market for fear of losing competitiveness.

“The issue... is not so much how to pick up the pieces after disaster has struck but how to make it less likely to, and less damaging if it does. That means changing behaviour, not just writing cheques”

Economist, 28 July – 3 August 2007

4 See, for instance, “Storm Shutter Insurance Requirement”, Janet Kaminski. <http://www.cga.ct.gov/2006/rpt/2006-R-0695.htm>

**Box C: The Fireman’s Fund offers “green” repairs**

**Fireman’s Fund**, the US company owned by **Allianz**, offers a “Green-Gard Property Upgrade”, which in the event of a loss will pay for environmentally-friendly upgrades such as:

- Non-toxic, low-odour paints and carpeting
- Energy efficient electrical systems
- Interior lighting systems that meet Leadership in Energy and Environmental Design (LEED) or Green Globe requirements
- Water efficient interior plumbing
- High efficiency roof and insulation materials

The company also offers “Green-Gard Certified Green Building” coverage, which ensures that buildings maintain their green certification in the event of a loss, including paying for a LEED professional to oversee repairs.

**New products and services**

**How is the sector affected?**

Climate change offers opportunities to the insurance sector as well as risks. Changing weather patterns, and efforts to reduce greenhouse gas emissions, will result in shifts in the structure of the global economy. Insurers who spot these trends early can benefit as a result. Examples include:

- **New market opportunities:** Since climate change will result in extreme weather events affecting new geographic areas, insurers that can spot these shifts and provide appropriately-priced risk cover stand to unlock whole new markets. For example, communities farther inland are now in the market for wind cover associated with off-shore hurricanes. Similarly, climate change will impact large sectors of the economy in varying ways from high-emitting oil companies to highly efficient environmental service providers. Insurers that understand the changing risk profiles of their clients will be better able to weather the effects of climate change across the economy.
- **Renewable energy technologies:** Global markets for renewable energy investments worldwide are already worth \$55 billion per year, and are still expanding rapidly<sup>6</sup>. Specialist insurance products include coverage for the risks of damage to the assets themselves, as well as cover for unexpectedly low levels of wind or sun. While these areas represent a small percentage of insurance policies at present, the provision of insurance for renewable energy technologies will provide an important foundation to ensure the sector’s growth going forward. Insurers active in this space stand to benefit by establishing first-mover advantage.

■ **Carbon markets:** Markets for carbon emissions are likewise growing rapidly. Insurers can, for instance, protect companies against swings in the price of European emissions allowances, or provide insurance that covers the delivery of clean development mechanism (CDM) projects in developing countries.

■ **Investment products:** Changing public attitudes may increase demand for “green” investment products – see also below. With their large financial assets, insurers also have an opportunity to inject capital into the most promising climate solutions, which could increase investment income.

**How are companies responding?**

This is an area of considerable innovation in the sector. US insurance giant **AIG**, for instance, offers a range of products related to climate change, including coverage of transactions in carbon markets.

**BOX D: AIG Links Business Growth and Climate**

Building upon its experience in environmental and business interruption insurance, in 2007 AIG provided the first ever insurance coverage for a carbon credit transaction. AIG provided a letter of assurance to Chinese factories covering a commitment from a Japanese firm to buy carbon credits generated under the Carbon Development Mechanism. AIG also launched the first “green fund” in Hong Kong and has plans to roll out similar products in India and other key markets.

“AIG pioneered insurance coverage to manage environmental risks and remediate environmental damage, and we are far and away the leader in the field today. To maintain that leadership, we are looking ahead to anticipate future risks and opportunities. The threat of climate change, for instance, poses risks to property and human health. At the same time, AIG sees opportunities to improve the environment, protect customers and reward shareholders by developing products and investing in technologies that can mitigate the risk and the effect of climate change.”

**Martin Sullivan, CEO, AIG, 2007 Annual Letter to Shareholders**

Some insurers are also experimenting with new products that encourage their customers to cut their greenhouse gas emissions. One example is discounts for hybrid car insurance offered by companies such as **Travelers**. Others such as **Aviva** are looking into new pricing structures for car insurance based on a “pay-as-you-drive” model that encourage customers to drive less.

And **Royal & SunAlliance** has announced a pilot scheme to fit GPS systems in cars, to gather information on driver behaviour, which can then be used to inform their customers about changes they can make which would result in more fuel efficient driving.

With their very wide reach into the general population, there is significant potential for insurance policies to influence public behaviour. But insurers need to consider whether products make sense from an actuarial point of view – in other words, whether the premium reflects the actual level of risk involved in providing the insurance. The hybrid car discount, for instance, would be justified on an actuarial basis if the risk profile of the typical hybrid driver were lower than average. If the risks in insuring this type of driver actually were the same as average, then a “green” discount would have to be justified on other grounds, such as marketing or a deliberate attempt to change behaviour.

## Investment portfolios

### How is the sector affected?

The insurance industry is a very significant investor in the world economy. Assets under management of the sector are \$16.6 trillion<sup>6</sup>, making insurance the single largest gatherer of investment capital in the economy. In the UK, for instance, it controls 17% of all company equity in the London stock market.

Climate change will affect the value of these financial assets, as government regulations, evolving consumer demands and the changing weather itself affect the opportunities and risks facing companies. Many insurers also own and manage substantial property portfolios. With the direct impacts of weather events on certain properties on the one hand, and stricter legislation governing building standards, this is an asset class that is particularly impacted by climate change.

The insurance industry's ability to direct capital investments also makes it highly influential in driving company behavior and market trends. The insurance sector has the size and scope to provide significant capital to cleaner energy technologies and help drive society towards a low-carbon economy. It also can use its influence to encourage the companies in which it invests to alter their behaviour to respond more effectively to the impacts of climate change.

### How are companies responding?

Some companies have explicit policies in place to manage environmental, social and governance (ESG) risks to their invested assets, including climate change. Some asset managers, including **F&C**, have specialist teams working on ESG issues. Investor groups on climate change have also had an important influence. These include in Europe, the Institutional Investors Group on Climate Change (IIGCC), which counts a number of asset managers acting for insurance companies as members (including **F&C**); and in the US, the Investor Network on Climate Risk, of which **AIGGIG** is a member. Several insurance companies have also signed up for the UN Principles for Responsible Investment (UNPRI), which call for the integration of ESG issues into investment processes; these include **Dexia Insurance** and **Standard Life**.

Others have developed specific investment products for customers who may be concerned about climate change, including ethical investment products, climate change funds, and carbon trading products. And **PruPIM**, the property management arm of **Prudential**, has taken a proactive approach on property management – see Box E.

### Box E: PruPIM takes a pro-active approach to sustainable property management

**Prudential's** property management subsidiary, **PruPIM**, has undertaken a number of projects to manage emissions from its property portfolio. One is the identification of an “Improver Portfolio”. This covers 25 properties across a range of sectors. Consultant Ecofys conducted energy and environmental audits for each property to establish a baseline. These audits are being repeated annually to judge the effectiveness of various measures to improve the environmental performance of buildings while also maintaining or enhancing investment returns.

The company is also working with Ecofys and the Carbon Trust to examine sustainable construction strategies, and to see how it can incorporate a cost of carbon into its property investment decision-making processes.

However, as we will discuss further in Section 4, many insurers still fail to see a link between climate change and the value of the assets they hold. In many cases, this reflects a lack of relevant expertise within the asset management arm. The sharp increase in research on the investment impacts of climate change by the brokerage arms of many investment banks over the past year is likely to prompt further change in this area.

## Participation in public policy

### How is the sector affected?

Because of the central role it plays in economic life, and the knowledge it possesses of risk and claims patterns, the insurance sector can have an important role in shaping public policy.

The sector's in-depth knowledge of risk assessment can be invaluable information for governments attempting to plan adaptive measures to prepare for the impacts of climate change. Sharing knowledge and research on the potential future impacts of climate change can be particularly valuable in developing countries, where domestic analytical capacity may be limited.

Furthermore, given that policies to cut emissions will limit the long-term risks to their business, it is also strongly in insurance companies' interests to take a more active policy stance in favour of mitigation. Indeed, insurance companies are likely to be particularly well placed to highlight the need to plan mitigation and adaptation in a co-ordinated way – for instance, thinking about the vulnerability of new renewable energy infrastructure to future weather conditions.

<sup>6</sup> Source: UNEPFI “Insuring for sustainability” (2007)

### How is the sector responding?

How the sector exercises its influence varies from country to country. In the UK, for instance, a strong industry body, the Association of British Insurers, has regular and detailed discussions with government on policy; this has resulted, for instance, in the maintenance of flood cover in the UK (unlike most other European countries) in exchange for a firm government commitment to invest in flood defence. In the US, in contrast, relations are mainly conducted at state level, with trade associations focusing on state-specific insurance regulation of building codes and pricing.

Individual companies are increasingly sharing their expertise with governments. An example is **Munich Re's** Climate Insurance Initiative, set up in 2005 to share analysis and to develop insurance solutions in developing countries. In South Carolina, the Heinz Center for Science, Economics and the Environment has formed a Coastal Vision Steering Committee made up of insurance executives, regulators, community activists and academics to identify ways to make America's coasts more resilient to climate change while maintaining a market-based private insurance sector.

There are also a growing number of examples of companies involved in efforts to persuade governments to implement tough policies to cut emissions. Examples include the Corporate Leaders Group on Climate Change in the UK, and its EU-level counterpart, the EU Corporate Leaders Group. **F&C**, **AXA**, **AIG** and **Allianz** are all members of the EUCLG, with **F&C** and **AXA** also active in the UK group. In the US, the US Climate Action Partnership has been a powerful voice in favour of action to cut emissions; signatories include broker and risk consultant **Marsh**, and **AIG**.

## Companies' own operations

### How is the sector affected?

Insurance companies are not major greenhouse gas emitters compared with industrial firms, and this is therefore a much less significant area of impact than those highlighted above. However, there are often economically-viable opportunities both to save energy and to cut emissions through energy efficiency measures. As major employers, insurance companies also have the opportunity to influence wider social attitudes by mobilising their own staff, through, for instance, encouraging lower-impact forms of commuting or giving out information about how to save energy at home. By cutting their own emissions insurers can set an example for their customers and employees.

### How are companies responding?

A number of insurers, particularly in Europe, demonstrate a relatively high level of awareness about the need to reduce their own emissions. For example, **Royal & SunAlliance** – which has had an emissions reduction programme in place for some time – announced in December 2006 that through purchasing carbon reductions to cover all its emissions, it had become carbon neutral<sup>7</sup>. **Aviva** cut emissions from travel and buildings by half between 2002 and 2006, and sources renewable power for its properties in several of its main markets. It, too, is offsetting its remaining emissions.

## 4. Company strategies

With climate change affecting insurance companies across many business areas, the development of robust strategies to take account of climate change is crucial. But how many companies are doing this?

Last year, F&C wrote to a number of global insurance companies to request information on their climate change strategies. We looked at the disclosure record of insurance companies covered by the Carbon Disclosure Project, and analysed the information available on companies' websites and annual reports. This research has allowed us to build a picture of the landscape of climate change strategies across a range of insurance companies.

### F&C correspondence

In April 2006, F&C wrote to 31 insurance companies based in Europe, the US, Bermuda and Japan to ask for information on their response to climate change.

Overall, we had a 50% response rate. Geographically, responses were not evenly distributed. While 58% of EU companies responded to our letter, we received replies from only 36% of US companies, and from none of the Bermudan companies.

Box F below summarises the content of the responses we did receive.

#### Box F: Responses to F&C letter.

We asked insurers to report on how they were responding to climate change in five specific business areas. The following gives a summary of the responses we received.

#### Management and governance

There were several good examples of companies taking responsibility at Board level for climate change, though this was by no means the norm.

**AXA** reported that it had created a task force, the Climate Core Group, led by a Group Senior Vice President within the Group Risk Management division. Since writing to us, the company has appointed a full-time climate change director, and has published a report on how climate change will affect the small business sector.

**Swiss Re** told us that climate change has been identified as a Top Topic for the company, meaning that it is of group-wide strategic importance. It set out the four pillars of its climate change strategy: to increase understanding of the risks, to build awareness in the private sector and in governments, to develop products and services that contribute to mitigation and adaptation, and to minimise its own carbon footprint.

#### Insurance pricing & Risk Reduction

Many companies highlighted the impact of climate change on insurance pricing as an important area. Re-insurers such as **Munich Re** and **Swiss Re** provided considerable evidence of work in this area while others highlighted it as an issue, but with less detail on how they were actually responding to it.

**Safeco**, a large general insurer in the Pacific Northwest and Rockies Mountain regions of the US, reported that longer summers and strong property growth had led it to revise its underwriting requirements for wildfire insurance. Its risk pricing models were more accurate in the Gulf Coast area thanks to its robust claims database, which helped it to avoid major losses following Katrina. As such, it is one of few insurers in the area that has not had to make major adjustments to its underwriting or pricing requirements.

In the US, companies such as **MetLife** and **Allstate** reported that they offer discounts or other incentives to customers who install storm shutters or wind-resistant glass, or take other steps to "hurricane-proof" their homes in hurricane-prone markets.

#### Products & Services

Several companies reported innovative and interesting examples of new products or services they were offering in light of climate change:

Japanese group **Millea Holdings**, for instance, now offers an "eco-car discount" for low-emission vehicles, and provides coverage to wind farm customers that hedges the risk that wind speeds may fall below predicted levels.

#### Investments

Responses in this area were considerably weaker, with one company specifically stating that as a provider of life and pensions, it did not see climate change as a Board level issue. However, there were some exceptions to this trend, as mentioned above. A further example was **Munich Re**, which performed a risk analysis to identify the opportunities and risks that climate change creates for its investments. The outcome of this has been incorporated in the mandate for its asset management company MEAG.

#### Public Policy

A number of companies mentioned their participation in the industry groupings discussed above. Several also mentioned initiatives of their own. For example, **Allianz** joined forces with WWF to produce research on the impact of climate change on the financial sector, and to call for greater awareness in the sector.

## Publicly disclosed information

We selected a sample of 18 major insurance companies in the US and EU. We analysed the public reporting of these companies on climate change strategies, looking at Annual Reports and Corporate Social Responsibility reports, and company websites. Quality of reporting varied widely, from companies that did not mention climate change at all, to those with a comprehensive climate change strategy – an example of which is given in Box G.

We also looked at company responses to the Carbon Disclosure Project (CDP), which surveyed 30 of the largest insurance companies worldwide. The CDP reported an insurance sector response rate of 63% for the latest survey, below the average of 72% for all companies. Response rates for insurance companies in North America significantly lagged those in Asia and Europe<sup>8</sup>.

The table below summarises our findings across a representative sample of European and US insurers.

### BOX G: Travelers sets out its response to climate change

In late 2006, The Travelers Company unveiled its climate change strategy, in response to pressure by F&C and other members of the Investor Network on Climate Risk. The resulting strategy covers the following areas where climate change may affect its insurance business:

- catastrophe modeling;
- coastal underwriting;
- re-insurance requirements;
- claim services;
- risk control;
- emerging risks;
- new product opportunities;
- collaborating with communities and governments;
- impact on investments;
- company direct emissions

Company Name	Country of incorporation	Primary business	Market cap (\$bn) <sup>A</sup>	Responded to F&C letter? <sup>B</sup>	Responded to Carbon Disclosure Project? <sup>*C</sup>	Disclosed climate change strategy? <sup>D</sup>	Publishes own greenhouse gas emissions?	Discussion in Annual Report?	Discussion in CSR report? <sup>E</sup>	Signatory to Climate-Wise principles? <sup>F</sup>
Aegon	Netherlands	Life	28.8	yes	yes	partial	yes	no	yes	no
AIG	US	All	166.5	entered dialogue	yes	yes	no	yes	yes	yes
Allianz	Germany	All	93.0	yes	yes	yes	yes	yes	yes	yes
Allstate	US	All	32.3	Yes	no	partial	no	no	yes	no
Aviva	UK	All	35.0	no	yes	yes	yes	yes	yes	yes
Axa	France	All	79.6	yes	yes	yes	yes	yes	yes	yes
Berkshire-Hathaway	US	All	168.9	yes	no	no	no	yes	n/a	no
Friends Provident	UK	Life	8.1	n/a	yes	yes	yes	yes	yes	yes
Generali	Italy	All	54.6	no	partial	partial	no	no	no	no
Hartford Financial	US	All	29.2	No	partial	no	no	no	n/a	no
MetLife	US	All	44.7	yes	no	no	no	no	n/a	no
Munich Re	Germany	Re-insurance	37.4	yes	yes	yes	yes	yes	yes	yes
Progressive	US	General	15.4	no	no	no	no	no	n/a	no
Prudential	UK	All	33.2	yes	yes	yes	yes	yes	yes	yes
Royal & SunAlliance	UK	General	8.3	n/a	yes	yes	yes	yes	yes	yes
Swiss Re	Switzerland	Re-insurance	53.1	yes	yes	yes	yes	yes	yes	yes
Travelers	US	General	33.3	entered dialogue	yes	yes	no	yes	yes	no
Zurich	Switzerland	All	42.7	yes	yes	partial	yes	no	n/a	yes

A: Market capitalisation figures and exchange rates correct as at 1 August 2007

B: n/a: Company was not written to by F&C

C: Answers reflect responses to CDP4. Partial: Company did not complete the CDP questionnaire, but did provide some information

D: Partial: Designates a strategy covering 3 or fewer of F&C's recommended 5 point strategy

E: n/a: Company does not publish separate CSR report

F: At the time of going to press, 13 September 2007

## 5. Key findings

### Climate change is affecting the global insurance sector and leading companies are beginning to respond

Across the board, we found that insurers are in general agreement that climate change is happening and will affect their businesses through extreme weather events and changing legislation. However, companies disagree on the speed and severity with which climate change will affect them. Leading companies are developing climate change strategies and working with policymakers to position themselves to benefit as these impacts unfold.

### European insurers are, on average, ahead of their US counterparts in their response to climate change

A clear pattern emerges of a more active stance, on average, by European insurers than their US counterparts (with a couple of notable exceptions, particularly **AIG** and **Travelers**).

We believe that the lack of action in the US can be attributed to a number of factors:

- Weaker public awareness and acceptance of climate science;
- Limited national public policy action on climate change
- State-based insurance regulatory regimes that limit the industry's ability to respond as effectively as it should.

However, there are signs that this may be starting to change. The National Association of Insurance Commissioners has initiated a very serious effort to examine the impact of climate change, and is considering requiring additional mandatory disclosure on climate change in annual filings with state insurance regulators.

### Risk analysis is improving too, but there is a long way to go

We were encouraged that many of the companies that responded to our letter mentioned the importance of taking climate change into account in risk pricing.

But for many companies, pricing in climate change remains an aspiration rather than a reality. The task of changing the way risk models are constructed, from a model based purely on historical averages to one that also takes into account climate science, is a very significant one, and we are only part way through this process.

More accurate pricing by the insurance industry is important not only for the sector's own health, but also in helping society be better prepared for the changing climate: accurate price signals can deter investment from unsustainable locations.

### Loss reduction strategies are generally short-sighted and unsophisticated

In the US, insurers who take the extreme route of withdrawing from high risk regions may face short-term gains as their exposure to large losses is reduced. However, few seem to have considered the medium-long term impacts of such a strategic decision and look likely to face reduced market share and steeper competition from new entrants or government insurance providers down the line.

Strategies to encourage customers to increase their resilience to climate change and reduce their risk exposure also remain at an early stage. Furthermore, few companies are using the opportunity following a claim or catastrophe to make properties more resilient and more energy efficient. There seems to be a generalised expectation that the onus lies with government to lead on large-scale, publicly-funded infrastructure investment, such as flood defence.

### Many companies are waking up to the opportunities, as well as the risks

Our research found many examples of companies identifying opportunities arising from climate change, from policies to cover carbon trading, to specialist renewable energy cover, to green investment products.

While these may be, as yet, a relatively small part of a major insurer's business, the availability of affordable insurance in these emerging areas is critical in making the economics stack up for global emissions reductions.

### The impacts on the sector through asset management are less well understood

There was a disappointingly low level of awareness of the impacts of climate change for asset managers. While there are some examples of good practice, many companies have yet to focus on this area, despite holding large and potentially vulnerable investment portfolios.

### Disclosure is improving, but investors need more information about the materiality of the risks they face

The improving response rate to the Carbon Disclosure Project, alongside the growing number of companies now publishing climate change strategies, demonstrate that disclosure is improving, although it remains patchy.

Our analysis of disclosure indicates that only 61% of companies refer to climate change in their Annual Report (and some of these are only brief references). Some companies publish information in their Corporate Social Responsibility reports, but not their Annual Reports. This implies that climate change is not deemed by these companies to be an issue of material importance to their financial performance, since if it were, it would automatically

be covered in the Annual Report. But as illustrated by the asset management divisions of the insurers themselves, the level of investor awareness is relatively low overall, with only a minority of shareholders demanding such information.

**Creating effective insurance markets that reflect climate risk will be painful**

All trends indicate that climate change is impacting the insurance sector through the value chain from catastrophe modellers to re-insurers to direct insurers and ultimately to end customers. However, severe bottlenecks remain that prevent the markets from pricing climate risk accurately and driving loss-reducing behaviour. All parts of the value chain will need to adjust in order to preserve the benefits of private insurance markets; some of these adjustments will be painful. For instance:

- Regulators will need to reduce their hold on insurance pricing and withdrawal of coverage, and allow insurers to pass on higher risk through higher pricing

- Treasuries will need to dedicate significant sums to climate-proofing densely-populated areas through investment in public infrastructure, such as flood defences and brushfire clearing
- Governments will need to set tighter building standards for property development and refurbishment, in order to reduce losses and keep insurance prices affordable
- Very high-risk areas will need to be classified as “un-insurable.” This will mean fewer coastal developments and an increase in self-insurance.

These changes may be difficult. But they are necessary in order to drive the shifts in capital allocation, building patterns and behaviour that will help society minimise the impacts of climate change. Delaying action will ultimately increase the cost of climate change to the insurance industry and on society. It is therefore strongly in insurers’ interests to tackle this issue as early as possible.

## 6. Recommendations

The insurance industry is waking up to climate change. But while there are some examples of good practice, the industry response so far has been inconsistent. With regulators and governments at an early stage of understanding – and in some cases hindering, rather than helping, the industry – current action is failing to match up to the scale of the issue.

So what needs to happen? Clearly, change is needed **at the company level**. Some insurance companies, particularly in the US, are not even at the starting blocks yet, and urgently need to raise the issue to Board level and develop a climate change strategy. Other companies may have acknowledged the issue, and considered implications for some parts of their business, but many have failed to take the more systematic look across the business that is needed.

Alongside greater action at company level, **systemic changes** are also needed. Insurance is a heavily regulated industry, and if regulatory constraints prevent climate change from being taken into account, then these need to be tackled. Some of the necessary changes can only be effective if industry co-ordinates its efforts, and works more closely with governments to develop market-based solutions that reflect underlying climate risk.

Changes at both levels therefore need to happen to enable the industry to deal with the challenges that lie ahead. Specifically, we recommend the following:

### Company-level action

**Develop a climate change strategy.** Insurers should undertake a comprehensive review of the impacts of climate change across their business lines and develop a climate change strategy. The content of the strategy will vary depending on the nature of the activities, geographical exposure, and size of the company. However a robust strategy will address the following questions:

- **Management & Governance:** How will climate change impact the overall medium and long-term business strategy? Will specific business lines be disproportionately affected?
- **Insurance Pricing:** Do underwriting policies and reinsurance requirements need to be adjusted in light of the changing risks from climate change? Do catastrophe models used by the company fully reflect underlying climate risk?
- **Products:** Has the company considered adapting existing products, or developing new products, in response to the changing climate?
- **Investments:** How might climate change affect investment portfolios? Are there additional investment opportunities in climate solutions that may be worth

considering? Are there negative trends and vulnerabilities to be avoided?

- **Public Policy:** What regulatory signals does the company need in order to price climate risk more accurately and capitalize on new insurance opportunities? How can the company work with regulatory authorities to craft public policy that is flexible and maintains financially vibrant private insurance markets?

**Disclose what actions are being taken.** Full and frank disclosure is critical, as it allows investors and stakeholders to see what steps the company is taking to protect itself against climate risk. Companies should disclose their strategies, and also respond to legitimate demands for information, such as the Carbon Disclosure Project. Companies should also report in their annual report any foreseeable material risks or liabilities associated with climate change.

### Systemic change

Some of the most fundamental issues raised by climate change cannot be solved by any one company acting alone. Participation by regulators and in industry-wide initiatives is important, both to learn and share experience in this nascent area, and to come up with joint solutions.

As we have highlighted through this report, **the role of regulators is crucial**. There is considerable variation in the way regulators operate between countries (and indeed, in the US, between states). Regulators need to tackle this issue head-on and give the industry a clear steer as to how they expect companies to manage these risks. They also need to ensure that existing regulations do not put obstacles in the way of companies that are trying to act responsibly. Governments also have a responsibility to consider, at an early stage, the infrastructure investments that will be needed to protect society against extreme weather. Dialogue between the insurance industry and policymakers is therefore a key part of the solution.

**Joint industry initiatives** can also be highly effective in establishing norms and best practice standards, and in providing a forum for co-operation. The **ClimateWise Principles** – reproduced in the Appendix – already cover a significant part of the European insurance industry, and we would encourage all insurance companies to sign up to them.

In the end, enabling society and insurance markets to adapt to the impacts of climate change will be a difficult process. But the earlier the insurance industry starts to make the necessary changes, the less the inevitable transition will cost. Tackling climate change now can drive behavioural change by customers, preserve private insurance markets, and reduce the overall impact of climate change on the global economy.

## Appendix: ClimateWise Principles



The world's climate is changing and the scientific community is overwhelmingly of the view that human behaviour is contributing to this. Climate change is already having significant social and economic impacts and will continue to do so.

The insurance sector enables businesses and individuals to manage risk, including long-term threats such as climate change. We believe that the long-term stability of our economy depends on an appropriate response to climate change and it is to the benefit of all that we incorporate the risks from climate change and the need for mitigation into our business strategies. We will work openly with policy makers, the scientific and academic communities and others across the world by sharing risk analysis and understanding so that we are all better equipped to mitigate and adapt to climate change.

The diverse nature of our industry means that different organisations will be able to take action in different ways on these principles. As signatories we will comply with all areas or explain why it is impossible to do so.

Working individually and collectively to reduce the economy's and society's long-term risk from climate change, and within the confines of a competitive market, we will:

### Lead in risk analysis

- Support and undertake research on climate change to inform our business strategies and help to protect our customers' and other stakeholders' interests
- Support more accurate national and regional forecasting of future weather and catastrophe patterns affected by changes in the earth's climate
- Use research and improve data quality to inform levels of pricing, capital and reserves to match changing risks
- Evaluate the risks associated with new technologies for tackling climate change so that new insurance products can be considered in parallel with technological developments
- Share our research with scientists, society, business, governments and NGOs through an appropriate forum.

### Inform public policy making

- Work with policy makers nationally and internationally to help them develop and maintain an economy that is resilient to climate risk
- Promote and actively engage in public debate on climate change and the need for action
- Support work to set and achieve national and global emissions reduction targets
- Support Government action, including regulation, that will enhance the resilience and reduce the environmental impact of infrastructure and communities
- Work effectively with emergency services and others in the event of a major climate-related disaster.

**Support climate awareness amongst our customers**

- Inform our customers of climate risk and provide support and tools so that they can assess their own levels of risk
- Encourage our customers to adapt to climate change and reduce their greenhouse gas emissions through insurance products and services
- Increase the proportion of repairs that are carried out in a sustainable way through dialogue with suppliers and developers and manage waste material appropriately
- Consider how we can use our expertise to assist the developing world to understand and respond to climate change.

**Incorporate climate change into our investment strategies**

- Consider the implications of climate change for company performance and shareholder value, and incorporate this information into our investment decision-making process
- Encourage appropriate disclosure on climate change from the companies in which we invest
- Encourage improvements in the energy-efficiency and climate resilience of our investment property portfolio
- Communicate our investment beliefs and strategy on climate change to our customers and shareholders
- Share our assessment of the impacts of climate change with our pension fund trustees.

**Reduce the environmental impact of our business**

- Encourage our suppliers to improve the sustainability of their products and services
- Measure and seek to reduce the environmental impact of the internal operations and physical assets under our control
- Disclose our direct emissions of greenhouse gases using a globally recognised standard
- Engage our employees on our commitment to address climate change, helping them to play their role in meeting this commitment in the workplace and encouraging them to make climate-informed choices outside work.

**Governance, reporting and transparency**

- Recognise at Company Board level that climate risk has significant social and economic impacts and incorporate it into our business strategy and planning
- Publish a statement as part of our annual reporting detailing the actions that have been taken on these principles.

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