insuring climate change

Autumn 2007

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Insuring tomorrow's weather

Scientists believe that dangerous, long-term changes are taking place in our climate. Businesses, on the other hand, are concerned about how events like windstorms and floods will affect them during their next reporting periods, which might be as short as three months. Weather is the intersection between climate change and insurance.

Hurricane forecasting illustrates the difficulty. Scientists believe that they can forecast the number of tropical storms in a season with reasonable accuracy; what they cannot do is predict how many hurricanes in a year will make landfall, and there is little implication for insurance when the storms remain at sea, as the 2006 and 2007 seasons have shown.

But our understanding of each these processes is moving closer together, as the discussion at our conference Insuring Climate Change revealed. The insurance industry clearly expects that we will see more extreme and more changeable weather as historic greenhouse gas levels feed into our complex climate and weather systems, a process which scientists believe we cannot reverse for some years. And the effects of climate change will be superimposed on the normal cyclicality of the weather.

The new millennium has already shown us freak weather. In 2007, the UK suffered its worst flooding for many years and the wettest summer months since records began in 1766. Southern and southeastern Europe recorded unprecedented summer temperatures and forest fires. Oman experienced its first ever cyclone. There were forest fires in California, tornadoes in Florida and two category five hurricanes in the Gulf of Mexico.

In June 2005, before Hurricane Katrina or this year's flooding, the Association of British Insurers released a report on the financial risks of climate change. Its experts predicted that by the 2080s the annual cost of storms could be $27bn. Wind damage losses from the most extreme hurricanes could total $100bn-$150bn. Insurers' capital requirements could increase by over 90% for US hurricanes, and by around 80% for Japanese typhoons. The costs of flooding in Europe could go as high as $120bn-$150bn in a year.

The insurance and risk management industry has a great challenge on its hands. Predicting the effects of climate change remains full of uncertainty, even for scientists and catastrophe modellers.

Insurers and reinsurers also have knowledge that they can share from their understanding of how extreme weather affects people, businesses and economies. By taking part in public initiatives, such as the United Nations Environmental Programme (UNEP) Finance Initiative and the UK's ClimateWise, the industry is contributing toward the sustainability of the planet and its own business.

Lee Coppack, editor Catastrophe Risk Management
Helen Yates, editor Global Reinsurance

Catastrophe Risk Management
Lee Coppack, Editor
Claire Lavery, Head of Sales

Global Reinsurance
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Tim Whitehouse, Managing Director

Published by Newsquest Specialst Media
30 Cannon Street,
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+44 (0) 20 7618 3456

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"Today, climate change is a fact. And change presents us with both risks and opportunities." Ivo Menzinger and his team identify environmental risks and help develop sustainable strategies to cope with them. Swiss Re was among the first to recognise the potential impact of climate change on the financial services industry and to study effective ways of managing associated risks. Combining expertise and financial strength, Swiss Re is ideally positioned to provide your company with tailored solutions to mitigate your exposure and protect your balance sheet – ensuring, in a climate of uncertainty, that you feel secure. www.swissre.com

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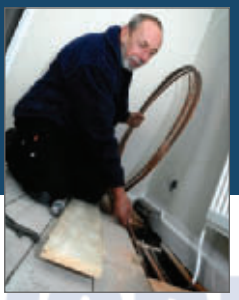

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Insurance industry approved repair specialists

Opportunities for insurers

Partnerships between public authorities and the insurance industry will create business opportunites to mitigate the effects of climate change. By Lee Coppack

In the aftermath of a natural disaster, it still takes a poor country three to six months to get the relief funds promised by international organisations. Parametric catastrophe insurance or bonds could provide immediate liquidity for government emergency expenses, said Eugene Gurenko, lead insurance specialist at the World Bank.

Insurance is increasingly seen as a vital element in our efforts to adapt to climate change and its consequences in the developing world, he said as he opened our Insuring Climate Change conference as a keynote speaker. As a result, there were enhanced business opportunities for the insurance industry. "The creation of public-private partnerships in weather and catastrophe insurance may be an effective way to reduce financial vulnerability of business and households to climate change."

Gurenko explained that climate change posed a particular threat to the developing world because of geographical positions, low incomes and high dependence on agriculture which is so vulnerable to weather extremes. "As a percentage of GDP, economic losses caused by weather related disasters in developing countries have been much more pronounced than those in industrialized countries. Between 1985 and 1999 alone, they lost 13.4 per cent of their combined GDP vs. only 2.5 per cent in industrialised nations."

The challenge was to help developing countries to grow but follow a low carbon route, for their annual greenhouse gas emissions were increasing faster and had now surpassed those of high income countries.

In addition to financial instruments that would provide immediate funds to a government after a disaster, Gurenko said that catastrophe insurance for infrastructure, public housing and other publicly owned assets, typically not insured today, could help poorer countries recover from a major disaster.

The World Bank also believed that products could be developed for the middle and low-middle income consumer market, such as stand alone parametric catastrophe insurance products that could be sold through alternative distribution channels. Traditional indemnity based insurance could be offered through public-private partnerships supported by development banks and governments, such as regional catastrophe pools.

Gurenko said that the Caribbean Catastrophe Risk Insurance Facility (CCRIF), launched in early 2007, was an example of such a regional pool. Created through partnership between public bodies and the private sector, it protected a region consisting of small states of which at least one was beset by a damaging hurricane every two years. The pool had reduced their insurance costs by 40 per cent and would provide participating Caribbean governments with immediate liquidity if the country suffered a hurricane or earthquake.


Eugene Gurenko

The World Bank, Gurenko said, sees itself as uniquely positioned to bring together the key players from public and private sectors to create programmes that neither side would be able to do on its own.

■ ***Lee Coppack is editor of Catastrophe Reinsurance.***

Insurance

Insurance as the ag

Insurance is an agent of change. Indeed, the Association of British Insurers (ABI) was pushing floods. By Anita Anandarajah

Although a great deal of scientific uncertainty remains about how climate change is affecting short term metrological events, the ABI's position is that it is time to be prepared for the impact of changing weather patterns.

The summer floods of 2007 have been the most costly natural disaster to strike the UK, incurring insured costs in excess of £3bn, but according to Swenja Surminski, ABI policy adviser on climate change, public attention was already waning only three months afterwards. She commented on the lack of awareness within the government and insurance clients. "We need to make sure the respective sectors make their own risk analysis to understand the impact of climate change," she said.


Swenja Surminski

The ABI believes that government has still failed to address the flooding issues properly. Surminski argued, "We need to make sure we are not reacting to the event; we need proactive thinking, flood defences and planning systems. What we have now is a short term view for a long term problem."

Despite the worrying outlook, she outlined new opportunities for the insurance industry: the £33.5bn carbon trading market which has given rise to a significant insurance market, including guarantees for clean development mechanism delivery; £450m-£1.3bn in industry renewables and a higher uptake of insurance by households and small and medium sized businesses. There was healthy competition and better models and products were being developed.

ClimateWise

In September 2007, insurance companies and organisations joined forces in the UK ClimateWise initiative. ClimateWise currently has 39 signatories to a set of six principles that aim to encourage more climate friendly and climate proofing behaviour among individual and business customers, and to influence public policy on tackling climate change.

Nigel Ralph, senior property underwriter at ACE, which is a partner of the initiative, discussed the effects of climate change on underwriting property risks and the importance of using appropriate models to capture predictive trends.

"Any change in the average weather will lead to a corresponding change in the damage effect of weather perils on a property portfolio. The consequences are twofold. We see an increase in the overall loss burden, which is of significance to an insurance company, and the intensity and frequency of extreme events," he explained.

Ralph said that it was critical for underwriters to understand how catastrophe models incorporated climate change. He questioned whether the three major existing proprietary models captured all the effects of climate change, saying that there was a need to look at short and long term predictive trends.

He commented, "There is the opportunity to develop new and old weather related products. There may well be a market developing for short term option covers in the light of adverse hurricane forecasts. Therefore, I do not foresee a shortage of capacity in the current climate," he said, but he qualified his comment by saying that the price of the capacity might or might not be acceptable to clients.

Customer pride

Sam Mostyn, group executive of culture and reputation at the Insurance Australia Group (IAG), provided an Australian perspective on

gent of change

g the government to strengthen flood defences since well before the summer's catastrophic

the opportunities for insurers in a country which suffers drought, bush fires and storm surges. "Our customers are telling us that the more we can talk to them about impact of these events on a personal level, the more they are interested in the product."

She said that the climate change debate had awakened IAG to the benefits of rewarding customers' behaviour which built a deeper relationship with its brands. "We are now offering significant discounts for preventative action taken by our customers. When a customer takes action to prevent a bush fire or engages in storm resistant activity, we reward them with a premium discount."

The insurer's acknowledgement of such changes in behaviour made insureds feel good about what they were doing, according to Mostyn. For example, she said, "Drivers in Australia have gained something of a sense of pride in understanding the impact of their CO2 emissions."

Mostyn believes that some of the greatest opportunities for the industry, particularly in direct retail business, do not come from underwriting and claims management. They are rather to be found in the consulting area, in innovative design and construction practices, and in risk management.


Nigel Ralph

In Australia, small and medium sized enterprises particularly had largely been left to deal with the impacts of climate change alone. "The risk managers who may be involved do not know where to start when it comes to carbon adaptation resilience.

> " I do not foresee a shortage of capacity in the current climate."

"However, the insurance company can come through with a series of consulting products that will help those businesses become far more sustainable," she said.

Mostyn concluded that it might be time for the insurance industry to open up to new partnerships within the supply chain or with local governments and non-government organisations. "As an industry we can wait for the big events to occur and respond just with pricing. We can, on the other hand, start to look at new products and services, given our privileged insight and data point when it comes to climate change."

Anita Anandarajah is a feature writer for Insurance Times.

Sustainable insurance

It can be possible to insure what seems uninsurable by bringing public and private sectors together. By Lee Coppack

Some peak zones could simply become uninsurable through more extreme weather, according to a survey conducted by *Insurance Times*, *Global Reinsurance* and *Catastrophe Risk Management* ahead of the Insuring Climate Change conference. Climate change is also predicted to have the greatest impact on the poorest who are least able to afford insurance.

Sunny Sehgal, head of the environmental risks team for HSBC Insurance Brokers, said that risks that the private sector cannot address on its own may, however, find financial solutions through public-private partnerships. He explained that what the insurance industry can do to create "sustainable insurance" is the theme of an initial report published in Mary 2007 by insurance working group of the United National Environmental Programme (UNEP) Finance Initiative.

The working group was established as recently as 2006. It consists of an alliance of 16 leading insurance and reinsurance brokers "who are committed to advancing the principle of sustainability in their operations as an integral part of their corporate responsibility." One of its project lines is work on microinsurance, natural catastrophe pools and alternative risk transfer (ART).

This working group's report, said Sehgal, had two important messages in terms of climate change. One was an emphasis on the benefit of public private partnerships; the insurance industry needed to recognise there were challenges and particular risks that neither it nor the financial markets could address, but governments and the World Bank could facilitate solutions.


Sunny Sehgal

Second, was a focus on micro-insurance "as a means of delivering insurance to those least able to afford it but who will suffer the most."

Sehgal said, "Once private insurance can get comfortable with the underlying risk, then it is a win-win situation." For example, he described a case study in which his company had been involved with the UNEP to support renewable energy projects in China, Indonesia and Egypt.

The team started by modelling the main risks to the projected revenues from construction to operation. "We looked to see what types of insurance and combination of types of insurance would be most valuable," said Sehgal. The investigation covered various classes of insurance as well as alternative forms of risk transfer.

The optimum solution, it turned out, was straightforward: some standard construction insurance plus political risk cover. "I think this type of assessment can be crucial to unblocking some barriers to finance," he explained.

He also indicated that although some ART techniques were currently too expensive for alternative energy projects, he believed this would change as the sector developed.

The UNEP insurance working group described the insurance industry as a lever of economic development, which when coupled with its intrinsic expertise in risk management, has a critical role to play in addressing global challenges. Sehgal concluded by saying, "There are huge risks in climate change but also huge opportunities and value for insurance industry in sustainable development."

■ ***Lee Coppack is editor of Catastrophe Risk Management.***

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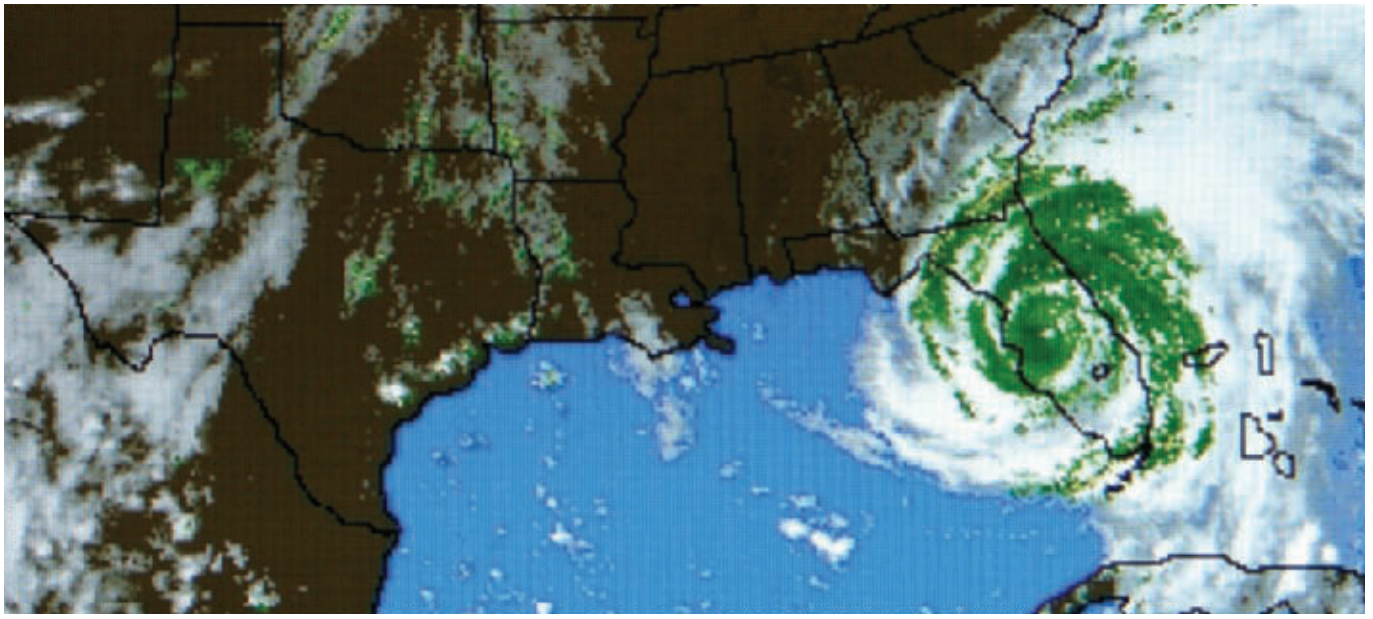
Survey

Insuring tomorrow's

Is the insurance industry strong enough to cope with $40 billion plus weather losses every y



To what extent can the industry prepare for the catastrophe risks of tomorrow? In September 2007 *Global Reinsurance*, and its sister titles *Insurance Times* and *Catastrophe Risk Management*, undertook an extensive survey into industry views on the challenge of climate change, its likely consequences and how best to address them. There where 128 respondents. A broad cross-section of UK and international insurance, reinsurance and corporate risk management professionals took part.

Is climate change a real challenge for insurers? When asked, 68 per cent of our respondents said it would significantly impact their business, while only 13 per cent – a fifth of that number – said it would not. Nineteen per cent were undecided.

We also asked respondents whether their clients, by and large, believed that climate change would significantly affect their businesses. Here, 37 per cent said that their clients saw a definite or probable impact, while a further 16 per cent said their clients saw a possible impact. Only 11 per cent said their clients thought they would probably or definitely have no effect (with a further 35 per cent unsure).

Climate change is plainly rising up the agenda when dealing with clients. Seventeen per cent of our respondents said they now "invariably" discussed climate change related matters with clients. A further 32 per cent said they were doing so more often than not or fairly often.

Given the warnings contained in the UK's Stern Report on the economics of climate change, the survey asked respondents whether they were concerned that climate change could cause broad economic damage. Twenty-one per cent of our insurance sector respondents said they were very concerned indeed, with a further 57 per cent either quite or moderately concerned. Fifteen per cent said they were only slightly

"Climate change is plainly rising up the agenda when dealing with clients."

weather

year? By Peter Joy and Helen Yates

concerned, while seven per cent said they were unconcerned.

If climate change is going to tilt the insurance market, which lines will be most affected? Domestic property was the most vulnerable according to our respondents. Fifty-two per cent said they expected it to be among the three lines most affected. Business interruption, agriculture and commercial property were not far behind, with responses of 50, 49 and 47 per cent respectively. Sixteen per cent thought construction and engineering would be among the most affected lines, while medical and health, motor, aviation, life and marine risks all gathered only single digit responses.

Pricey premiums

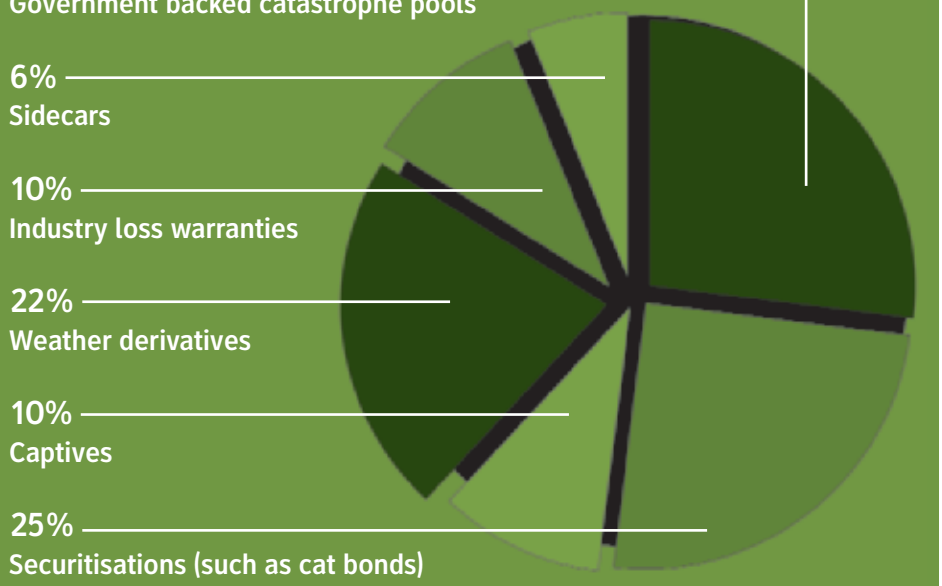
What will be the consequences for premiums? We asked those of our respondents with UK exposures whether they expected upward pressure on UK insurance premiums as a result of climate change between now and 2012. Seventy-seven per cent said yes, they did. Seventeen per cent were unsure, while just six per cent said no.

We asked those who thought UK premiums would rise as a result of climate change to give their best estimate of the extent of this increase, and 33 responded here. Their views ranged from five to 100 per cent, with an average of 25 per cent and a median of 20 per cent. If the market's collective view is right, then we can expect to see overall rises in UK premiums of perhaps 20 to 25 per cent in the coming five years arising from the costs of climate change – independent of any other factors.

Of course, some peak disaster and catastrophe zones could be hit for a lot more than a 25 per cent rise – if, that is, their premiums reflect their true risk to the insurance portfolio. We asked UK based respondents whether they thought those living in peak UK flood zones would be charged premiums that fully reflected their claims risk. We also asked internationally oriented respondents, whether premiums for property in

Alternative risk transfer

On the assumption that natural catastrophe risk will rise over the next few decades, which three of the following alternative risk transfer mechanisms has the most potential to aid the industry in absorbing increased losses?



Survey

international peak natural disaster zones would truly reflect their claims risk.

Here, there was a remarkable convergence of views. In the UK, only 19 per cent said yes, they would, while 68 per cent said only partly and 13 per cent no, not by a long way. Internationally, the respective figures were 17 per cent, 69 per cent and 14 per cent.

That being the case, the money has to come from somewhere. One source is the taxpayer, via the state. What, we asked, was the proper role of government in insuring against natural disasters? Among UK oriented respondents, 60 per cent said that the government should act as the insurer of last resort to ensure affordable coverage, while 32 per cent said that it should not warp the market by providing insurance in any circumstances. Nine per cent, however, said that it should actively participate in the insurance market.

For international respondents, the respective figures were 78 per cent, 14 per cent and nine per cent. Perhaps understandably, our international respondents, many of them reinsurance professionals and risk managers, seemed significantly keener on state intervention than UK domestic insurers, who are unlikely to face a Hurricane Katrina or Kobe earthquake-sized catastrophe any time soon.

Many insurance professionals also volunteered their own opinions here. While several cited the moral hazard and undermining of market mechanisms that occurred when homes on floodplains or in hurricane alley were not charged realistic premiums, governments were also seen as partly responsible for allowing development to take place in high risk areas.

Many UK respondents blamed the government for neglecting drainage infrastructure and flood defences and said they do not want the government fobbing off its financial responsibilities onto insurance companies.

"Where they have given planning permission despite Environment Agency advice to the contrary, the government and councils should get involved in insuring risks in flood prone areas. They would then have an incentive not to allow building on flood plains, on which there appear to be many instances of irresponsible development," was one comment.

Many in the industry are keen not to be seen to be "abandoning" sections of the population, and they felt insurers had a responsibility to cover owners of existing properties. But underwriting future flood plain properties was quite another thing. Said one, "Rates in peak flood zones should be allowed to float sufficiently to create pressures that justify adequate mitigation or avoidance of risk. Government intervention should be restricted to existing properties and should be subject to an exponential 20 year taper. This will minimise short term impact on homeowners, but create market pressure for longer term mitigation measures."

New tools

International respondents were asked which alternative risk transfer (ART) and funding mechanisms had most potential to aid the industry in absorbing increased losses, assuming increasing natural disaster risk over the coming decades. We offered six options. Of these, the two clear favourites were state backed catastrophe pools (79 per cent) and catastrophe bonds (77 per cent), with weather derivatives at 65 per cent and industry loss warranties at 31 per cent. Captives came in at 28 and sidecars at 20 per cent.

As for which alternative sources of finance had the most potential to aid the industry in

absorbing increased losses, 77 per cent went for reinsurance companies and 62 per cent for dedicated funds. Forty-six per cent opted for hedge funds, 28 per cent for private equity and 26 per cent for the institutional loan market. Eleven per cent only saw serious potential for pension funds here.

Finally, we asked respondents what, in their own words, were their best strategies for managing their climate change exposures. Input here boiled down to six key points:

- Diversification and use of natural hedges.
- More sophisticated and alert modelling.
- Monitoring and management of risk.
- Lobbying for better planning and building standards.
- Lobbying for reductions in carbon emissions; sound reinsurance.
- A realistic approach on pricing – with a willingness to walk away rather than under-price a risk.

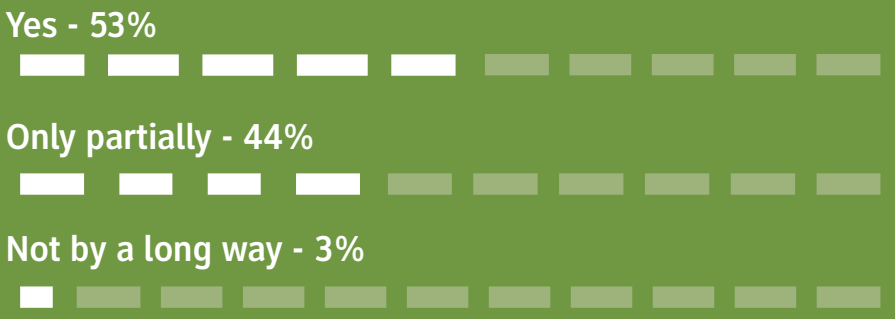
All in all, there is a general – though still not universal – consensus that climate change is a pressing issue for the insurance industry, that property lines, business interruption and agriculture are most exposed, and that premiums will rise significantly in consequence.

Cat pools and bonds are seen as the most useful ART mechanisms, but the majority expect conventional reinsurance to maintain its primacy over the capital markets. Getting constructive action will require close cooperation between the industry and governments. In the meantime, the industry is banking on diversification and an alert, professional and profit focused approach to risk.

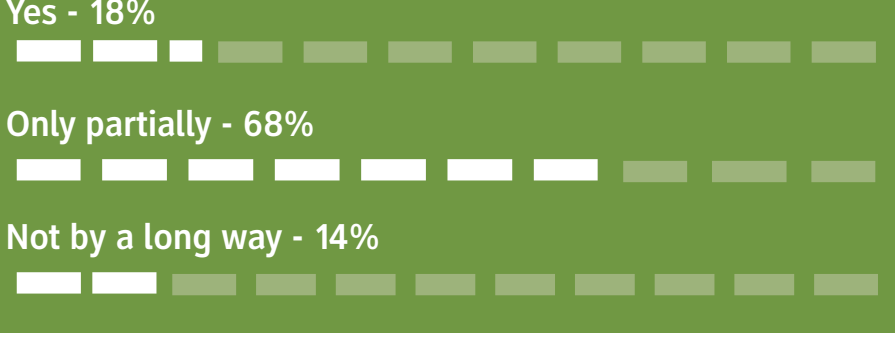
Peter Joy is head of research, Newsquest Specialist Media.
Helen Yates is editor of Global Reinsurance.

Rating the risk:

Should those living in peak natural disaster zones be charged premiums that fully reflect their claims risk?



Will those living in peak natural disaster zones be charged premiums that fully reflect their claims risk?



An insurance buyer's perspective

Climate change poses two questions for risk managers – how have the risks changed and what do they need to do to keep the business running? By Lee Coppack

Risk managers think about climate change risk in terms of the ways it will manifest itself as operational threats, Paul Hopkin, technical director of the UK risk management association, AIRMIC, told the conference.

In the UK, increased exposure to windstorms and floods was the greatest risk and heightened importance of business continuity planning and adequate insurance coverage were the most important aspects of minimising the damage to the business, he said.

Pointing out that AIRMIC members spend about £5 billion on commercial insurance premiums a year, Hopkin told insurers that when it came to managing the risks of more extreme weather, prompt agreement and delivery of contract wordings were simply a prerequisite. He said, "We believe contract certainty is important, but it is not sufficient on its own. Coverage certainty and claims certainty become increasingly important when we are talking about extreme weather."

In terms of coverage certainty, Hopkin said insurers needed to provide adequate limits for large risks, "If underwriters offer 15 to 20 per cent lines on a slip for large risks that have a significant storm or flood element, this is a trend we don't find particularly appealing."

Ground floor, Hard Rock Hotel, Biloxi, MS, after Hurricane Katrina. Photo: Paul Hopkin

He also made a plea for the insurance industry to consider how it deals with claims in the aftermath of a widespread event. The commercial insurance buyer does not want its settlement from a major flood or storm affected by the rest of the losses to the insurer's book but wishes it treated as if an isolated event, like a fire, had caused the loss.

"One of my pleas to the insurance industry is this: look at how a claim would be handled if your facility is in the middle of an area susceptible to extreme weather events."

Sharing his experience post-Hurricane Katrina from his time as director of risk management with the Rank Group, Hopkin described how the recently completed Hard Rock Hotel in Biloxi, Mississippi, on the Gulf of Mexico, suffered extensive damage after the 30 foot storm surge took out its ground and first floors.

> Coverage certainty and claims certainty become increasingly important when we are talking about extreme weather events."

He explained that Rank was not directly involved because the hotel was going to be operated under licence, but that it appeared the very large extent of insurers' losses from the event as a whole was an element in the coverage dispute which followed.

"Climate change," Hopkins stated, "certainly increases the burden on risk managers to think more carefully about the risks and have a more open and constructive dialogue with their underwriters.

Lee Coppack is editor of Catastrophe Risk Management.

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Energy

Opportunities in the ren

There are few areas in the commercial world where things are changing as quickly as they ar

Insurers have begun to acknowledge the incredible diversity in the renewable energy sector. While wind energy has already achieved a significantly high profile, other areas like biofuel, hydrothermal, solar, and wave and tidal energy are gradually catching on, said David Wright, chief executive of Lloyd's broker Ascot Renewco, one of the latest companies to take advantage of the business opportunities in this search for gold.

The majority of premiums for the renewal energy sector lay in the onshore wind sector, particularly in the UK. Global onshore premium income was estimated to be approximately £30-40m ($61.5-82.0m), while offshore premium income globally was between £20m and £25m.

The booming market is not without its perils, and underwriters are clearly aware of them. They have been slower to embrace the offshore wind sector, in particular, because of the risks involved in constructing wind farms at sea. "It will take vast effort if you are an insurer to keep abreast of the ever changing technologies and processes," said Wright.

He spoke of bigger turbines being developed beyond existing 3 megawatt (MW) machines. There was talk of 5MW and even 7.5MW

machines, which meant the potential losses, would increase further.

Access to dependable and accurate loss data is extremely important for any insurer for modelling future losses and setting pricing patterns. But because the industry has a very brief history, underwriters have to employ their wits and draw from experience in other industries. "Reliability and breakdown data are only becoming available gradually. The industry is learning as it goes along," Wright said.

Tom Sexton, global renewable energy leader for Marsh, explained that offshore cable laying was a concern because this was where most losses had occurred. Also, there were significant lead times in case of damage to offshore transformer platforms; they could take 18 months to replace.

"The business interruption risk can be significant. Hence, the premium to cover any delay in start up in construction can be quite substantial. Add to that the tight supply market at the moment on cables, transformers and appropriate vessels to undertake repair work, and the weather risks in working offshore. One of the reasons insurers have been less quick to get into the sector is because of these peculiarities. As a result, there is a lack of

newable energy sector

re in the renewable energy sector. By Anita Anandarajah

capacity," he said.

Wright agreed that the insurance market for offshore wind facilities is limited at the moment, as it was for the more prototypical technologies, such as the marine and tidal sector. "Still, there is capacity. I see it grow on a weekly basis; there is increasing opportunity for a book of renewable energy business, and there are not many books growing at the same speed," said Sexton.

Apart from wind, Ascot Renewco had seen a healthy mix of enquiries for hydro, marine and tidal devices, biofuels, waste to energy, solar and geothermal risks from brokers from across the globe. Solar energy was small. but growing in Spain and Germany. Sexton argued that some form of pooling arrangement was needed to get insurers more interested in this sector.

When it came to biofuels, Sexton said development was quite regional and the number of opportunities in the UK was limited at present. There was more activity in Germany and North America. "A lot of biofuel activity we see is across Europe and insured locally. We will see some of that business come into the London market," he predicted.

He said there could be three or four plants built in the UK in the next few years, and added that insurers would need good technical underwriting capability and a good understanding of the sector to value the risk appropriately.

"After onshore and offshore wind, we'll see biofuel slowly grow. Wave and tidal sector is a very niche market at the moment with a limited number of opportunities but the hope is for the sector to continue to accelerate," Sexton commented.

Said Wright, "So far the insurers' response has been fragmented. The emerging picture is one of insurers who insure by their home territories and by a subsector of a particular renewable field. They also insure by risk type. It is seldom all of those three together." He saw definite emergence of an underwriting market. "Interest in the renewables field will grow at more rapid rates in future years," he predicted.

> "The booming market is not without its perils, and underwriters are clearly aware of them."

Anita Anandarajah is a feature writer for Insurance Times.

David Wright

Eco-initiatives for SMEs

There are 4.5m small and medium enterprises (SME) in the UK. Most of them do not see climate change as a threat. By Anita Anandarajah

Seventy per cent of SMEs do not see climate change as a threat in spite of the catastrophic flooding of summer 2007, revealed Truska Angel, head of climate change at Axa. The insurer discovered these views when it updated research it commissioned in 2006 from Professor David Crichton of the Benfield-UCL Hazard Research Centre.

Yet, said Angel, damage to this business sector as a result of climate change could have devastating economic and social consequences, because SMEs are responsible for about 50 per cent of the UK economy. There was, therefore, a need to raise awareness among smaller corporate customers.

She argued that the insurance industry had a duty to promote responsible behaviour for SME insurance buyers, getting them to respect building codes and to avoid building on flood plains. "Insurers should consider producing their own more resilient building standards for new build and repairs which could form a condition for providing cover in the future. They can also offer incentives, like discounts on premiums, to promote sustainable and responsible behaviour."

Angel called for increased support for tailor-made insurance products that would assist the development of renewable energies. She believed that new property, casualty, life and health insurance products should be created to help mitigate the impacts of climate change .

According to the Carbon Trust, a company established by the UK government to spearhead carbon emission reduction, SMEs are responsible for around 20% of the country's total greenhouse gas emissions. Axa is developing a carbon footprint calculator to enable SMEs to understand the impact of their carbon emissions. This would enable them to work toward accreditation for being carbon neutral.


Truska Angel

Anita Anandarajah is a feature writer with Insurance Times.

Why SMEs miss savings:

Research released by the Carbon Trust just one week after the conference revealed that lack of time and expertise to measure and reduce their carbon emissions was preventing the UK's small and medium sized companies from getting their share of the £3 billion worth of achievable business energy savings. In response, the Carbon Trust launched a campaign to encourage businesses to apply for interest free loans to replace or upgrade existing equipment to more energy-efficient versions.

According to the Carbon Trust's research, while 63 per cent of SME senior managers and directors surveyed realised they could reduce their carbon emissions through low and no cost energy saving measures, 69 per cent said their business had made no investment to reduce carbon emissions. Almost all, 93 per cent, respondents said their company did not measure carbon emissions and cited lack of expertise as the key barrier.

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The capital market r

Capital market solutions will transform the industry. By Helen Yates

The prospect of dealing with larger and more frequent catastrophe events had many delegates to Insuring Climate Change concerned. One solution to these losses is to transfer peak risks to the capital markets which, said Mark Hvidsten, CEO of Willis Capital Markets "will absolutely transform the industry".

Hvidsten said it was reasonable to expect the capital markets to provide 10 to 20 per cent of reinsurance capacity in the next three to five years. Looking at rough figures, if the reinsurance market is worth $300bn, this would equate to $30bn-$60bn. Along with other delegates, he predicted that alternative risk transfer (ART) would become an increasingly important means of dealing with peak catastrophe losses, which scientists predict will increase in frequency and severity as the climate heats up.

The confidential nature of some deals means precise estimates of market size are difficult. But according to Hvidsten, $5.1bn of insurance linked securities (ILS) has been issued so far in 2007. Swiss Re puts the total non-life issuance of catastrophe bonds in 2007 to date at $5.7bn. This already exceeds last year's total issuance, which in itself was a record year, and there is plenty more in the non-life catastrophe bond pipeline, according to Luca Albertini, managing director and head of European ABS/ILS* origination and structuring at Swiss Re


Mark Hvidsten

"There is plenty more in the non-life catastrophe bond pipeline"

evolution

Capital Management and Advisory. According to Swiss Re's figures almost $8bn is still waiting to be issued in 2007.

Credit crunch

There were suggestions that one or two proposed transactions had been put on ice as a result of the US sub-prime home loans market collapse, while investors apparently wait to see what effect, if any, the credit crunch could have. However, Jonathan Spry, senior vice president of GC Securities at Guy Carpenter, argued, "The decision to allocate assets to ILS has been validated by the recent subprime/credit market contagion. Returns that are generally uncorrelated to broader financial markets are now even more attractive to investors."

Spry predicted the explosive growth in ILS would continue. "The pipeline is strong. There are new perils coming to the fore. Pricing has come down and has remained stable in the face of credit market turmoil".

He believes that capital market capacity could account for half of all retrocession capacity in just a few years. In 2006 following Hurricane Katrina, over $6bn went into alternative retro solutions such as sidecars and industry loss warranties. This was largely a response to insufficient affordable retro capacity at the time. Since then many players have returned to the sector, and capacity is no longer an issue. As a result a number of sidecars have already been wound down.

Basis risk solutions

Despite the departure of a number of "disposable reinsurers" in 2007, it is clear that other alternative risk transfer vehicles are here to stay and evolving all the time. Hvidsten pointed to what he saw as encouraging signs of a maturing market. The increasing willingness for investors to take on an indemnity form of catastrophe risk was particularly telling.

Indemnity triggers are structured so that the bond pays out depending on the cedant's individual loss experience. Non-indemnity triggers are based on an industry overall loss experience or parametric measures, such as wind speed. This introduces basis risk as it means that an individual company may experience a significant loss, but find, for


Jonathan Spry

Securitisation

example, that the overall industry loss as measured by ISO's Property Claim Services, is not sufficient to trigger the bond.

Basis risk is clearly unattractive for insurers and reinsurers. Index and parametric triggers are popular with investors, however, as they are easily understood. On the other hand, indemnity triggers have proved popular for insurers and reinsurers but less attractive to investors. Much greater due diligence is required for those investing in products built around indemnity type structures. A great deal has changed in just one year according to Albertini. In 2006, only four per cent of cat bonds had indemnity triggers, but this has grown to 46 per cent so far in 2007.


Laurent Dignat

Index triggers remain important, said Albertini. A lot of the "club deals – the private transactions you don't hear about" such as industry loss warranties, swaps and weather derivatives tend to refer to market wide indices. Perhaps unsurprisingly, with its well established indices, the US still dominates the ILS market, providing 63 per cent of global capital market non-traditional reinsurance capacity. Europe is in second place, providing 25 per cent of capacity. Albertini argued that a European index was needed so that a derivatives market could develop.

New frontiers

From a reinsurance buyer's perspective, the non-traditional market is attractive for two main reasons, said Laurent Dignat, head of European solutions at Guy Carpenter. "They can become less dependent on an ever more concentrated reinsurance market and gain some room to manoeuvre in renewal negotiations." He said one of the main challenges was in providing cover for unknown risks and attracting new equity investors to respond to increased demand.

> "Investors are increasingly looking for different risks and perils to invest in"

According to Hvidsten, investors are increasingly looking for different risks and perils to invest in. Some new non-peak perils have already come into the market – including UK flood and Mediterranean quake – in an effort to cater to this.

Presently, however, capital market products are more likely to focus on the well modelled peak zone perils. To date, most ILS issuance has been for US wind and earthquake risks and European wind risks and one reason is the lack of an established index in Europe.

But there are solutions. Swiss Re's Albertini and Guy Carpenter's Spry explained how the recent Blue Wings cat bond, covering UK flooding and transacted on behalf of Allianz, had been structured. The solution was to create a bespoke parametric index based on flood depths at multiple locations. "The appetite is definitely there," concluded Spry. "If the models and perils are well understood, there is huge capacity within the capital markets."

** ABS/ILS stands for asset backed securities and insurance linked securities.*

Helen Yates is editor of Global Reinsurance.

Case study: indexing flood risk

This year's summer flooding in the UK has raised new concerns about how to deal with these extreme risks. By Nick Thorpe

The extensive flooding that hit the UK this summer first and foremost put the UK back at the centre of the climate change debate. With the Association of British Insurers (ABI) estimating insured losses from the flood events in June and July alone at more than £3bn ($6bn), it also raised concerns about insurers' ability to deal long term with potentially high risk situations. The issue of flooding is very much on the agenda.

Luca Albertini, managing director and head of European ABS/ILS* origination and structuring at Swiss Re Capital Management and Advisory, pointed out to the conference that it should come as no surprise that the UK is vulnerable to floods. "The UK has suffered four large loss events in the last 10 years," he said, "and three of them have a return period exceeding 20 years. What we are seeing now is above average flood activity, and this is in line with almost all research results which predict higher activity due to climate change."

Jonathan Spry, senior vice president, GC Securities, described how the capital markets could provide solutions to UK flood risk. "Although it is undoubted that the capital markets will play a role in securitising flood risk, there are factors which must be considered carefully," he said. "For example, should one use simple solutions which have a high basis risk, or more highly complex solutions with a much lower basis risk?"

Spry was involved in the first securitisation of UK river flood risk, using Blue Wings Ltd., a Cayman Islands based special purpose vehicle. The first $150m bond was issued in April 2007 as part of a $1bn programme structured and placed by Swiss Re for Allianz.

Blue Wings holds two risks - first, earthquake in Canada and the US, excluding California, and second, river flood in the UK. The earthquake element uses a modelled loss trigger, but the UK flood element has a bespoke parametric index as its trigger.

Albertini said the creation of this index was truly innovative. Risk Management Solutions (RMS) identified more than 50 reference locations across the UK at which flood depth would be measured. At each location, a pre-event reference point was selected, which could be a gargoyle on a church parapet or the window height of a house, against which the flood high water mark would be measured.


Luca Albertini

> The UK has suffered four large loss events in the last 10 years and three of them have a return period exceeding 20 years

*ABS/ILS are asset backed securities and insurance linked securities.

■ ***Nick Thorpe is associate editor of Global Reinsurance.***

ART Q&A

Q&A: Transferring pe

Dan Ozizmir, managing director of Swiss Re's Capital Markets, talks to Global Reinsurance edi

Q With scientists predicting that climate change will lead to increasing natural catastrophe losses, what do you think the insurance industry should be preparing itself for?

A We would absolutely agree with the increasing trend of peak risks. I would also add that the increase of peak risks is not simply a function of climate. As we see an increasing concentration of economic wealth in certain areas, the scale of that risk is also increasing. To me it's not just about the peak risks. The peak risks are important when we look at insurance linked securitisation (ILS) because the benefit of spreading risk globally to the capital markets is greatest in peak risks.

Q Why are cat bonds typically more focused on peak risks?

A Let's say there's a risk that could cause $100bn to $150bn loss; Tokyo quake and Florida hurricane are both single risks where that's not impossible. If you really think about the size and volatility for the insurance and reinsurance community, it's obviously quite staggering.

Compare that to an earthquake in Portugal, which might cost $5bn in damage. The ability of the insurance and reinsurance industry with its capital base to absorb a $150bn loss is different from a $5bn loss. The insurance industry has well under $1trn of capital, whereas the capital markets have over $30trn. Their ability to take on that volatility is much greater. That's why when we do catastrophe bonds the focus is typically on peak risks.

Q In what way has ILS evolved since Hurricane Katrina in 2005?

A The major trends we've seen since Katrina have mainly been an increase in the volume of issuance and in the volume of trading. That's primarily because many issuers, particularly primary companies like Allstate, State Farm, Chubb, Liberty Mutual and Travelers in the US, did their first issuances post-Katrina.

They have seen a very strong reason to enter these markets because of the increased risk and the ability of the cat bond market to absorb that. We've also seen the

European primaries Axa and Allianz come into the market. We did a deal for Allianz called Blue Wings that covered UK flood risk.

Q Is the increasing use of indemnity triggers – whereby the trigger is based on the loss experience of the sponsor – part of the natural evolution of cat bonds?

A I believe that the amount of indemnity transactions done is going to ebb and flow. We certainly believe

> "The insurance industry has well under $1trn of capital, whereas the capital markets have over $30trn"

eak risks

itor Helen Yates

that investors have an appetite for both parametric and indemnity structures. Investors are willing to buy either as long as the structure and the pricing are appropriate. It really comes down to what the issuer is trying to achieve. There is always going to be flexibility for insurers or reinsurers when they're deciding which approach they want to take.

Q Will the pricing of cat bonds become more transparent over time?

A The answer to that is an absolute yes. The transparency comes from more data points. Certainly, there are a lot more transactions in the market than there used to be. The second place where transparency has improved is in secondary market trading. We do a significant amount of secondary market trading in this sector, and that certainly increases the validity of the daily and weekly price information that investors look at.

Q Is one of the issues that so many hedge funds are involved in this area and they're typically rather secretive, particularly about the more 'private club' deal risk transfer transactions, such as industry loss warranties?

A I don't think it is an issue, and that's quite consistent with other markets. What these over-the-counter transactions allow is that trading points and liquidity can continue in the markets in between the big public deals. It also enables issuers who want to do small transactions to do so and allows investors who don't need to have a rating or don't need to have a more liquid security to take on risk at a better price. To me, it's no different to any other market. In any market, there's always over-the-counter activity behind the public deals.

Q Looking at the potential impact of climate change, could certain peak risks essentially become uninsurable?

A The real thing to focus on is whether a risk can be modelled or not. If it can be modelled, then it can be insured and it can be sold to capital market investors. I don't believe there's a maximum amount of risk that the capital markets can take. Again, with over $30trn, can the capital markets afford to lose $100bn if there was a hurricane? The answer is yes. With terrorism and other things that are really very difficult to model, I don't think the capital markets can get broadly involved, however.

Q What do you think the future is for public private initiatives such as national and state catastrophe pools?

A There's a current bill going to the US Senate, where the proposal is to have a cat bond sold into the capital markets, and we certainly think that's appropriate. In the end, unless the taxpayers want to foot the bill for this, the idea of using the capital markets and collecting risk adjusted pricing from private investors is the right way to go.

There is a significant role for private and public cooperation. A lot of it is awareness. Mitigation and things like building codes are absolutely critical in ensuring that the risks are minimised and managed.

Q How big do you see the ILS market becoming over the next 10 years?

A One way of looking at it – and there's clearly some speculation involved – is that the market's been growing at a 40 per cent compound annual growth rate over the past 10 years. If it continues at that rate, we'd be at about a $1trn market. Are we going to get to a trillion? I don't know. It seems like quite a lot. But to me, $300bn-$500bn for all insurance linked securities – not just catastrophe bonds – is absolutely doable.

Counting up the cost

Insurers face exposure to the effects of climate change on many lines of business and both s

Insurers could suffer a "quadruple whammy" from climate change events, Trevor Maynard, manager of emerging risks for Lloyd's, warned. Their balance sheets could be hit in three ways and if they tried to withdraw coverage in the wake of a major loss, their reputation could suffer, too.

He explained that after large losses, insurers would not only have to pay for their liabilities, but they could also expect capital requirements to increase. At the same time, the asset side of their balance sheet could suffer, for example if equity markets reacted to an anticipated drop in corporate profits or a change in oil prices.

Finally, he put the reputation point. "How easy would it be to withdraw coverage after an event? What would be the impact on reputation? As an industry we have a good opportunity to help society, but we have to watch our reputation very carefully along the way."

Determining the cost of climate change to the industry by 2050 was the title of the session, but none of the speakers was prepared to be that adventurous; the uncertainties were simply too great to project that far forward, although it was possible to say that a number of parts of the world, particularly coastal areas, were at more risk and values at risk were increasing.


Trevor Maynard

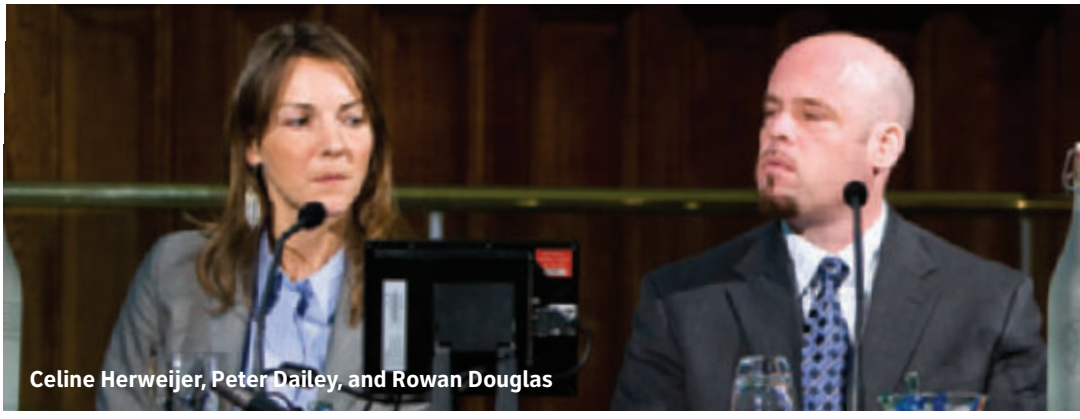
Maynard revealed that Lloyd's had increased its realistic disaster scenario estimate for a major Florida hurricane from $70bn to $108bn between 2005 and 2007, as a result of catastrophe modelling changes following Hurricane Katrina, economic growth and demographic trends.

He also commented that although a rise in windstorms, floods and forest fires would clearly result in property claims, it was less understood that climate change might affect liability lines of business, such as professional indemnity. "Architects and engineers could be asked whether they should have thought about the impact of climate change when designing their buildings," Maynard explained.

Levels of uncertainty

Two scientists working for catastrophe modellers stressed the "huge levels of uncertainty" that remain in trying to work out causal relationships between changes in our climate and insured events, such as windstorms and floods. As Rowan Douglas, chairman of Willis Research Network, put it, "We are talking about climate while we are interested in weather."

Peter Dailey, climate change scientist at AIR Worldwide, pointed to the complexity of the climate system and said that it was not possible to assume linear relationships between global warming and


Celine Herweijer, Peter Dailey, and Rowan Douglas

t of climate change

sides of their balance sheets. By Lee Coppack

warmer sea surface temperatures and so more tropical storms. He explained, "It is not clear that just because the atmosphere warms at some rate that the oceans will do so at the same rate."

Trying to relate ocean basin activity to actual landfalling storms was even more difficult. "It is possible to estimate the number of storms but not the number of storms which interest the insurance industry, which are the ones that make landfall," Dailey said. He added that it was possible changes to the climate were affecting hurricane steering.

Celine Herweijer, principal scientist future climate for Risk Management Solutions (RMS), spoke of using catastrophe models to explore how the risks might evolve beyond 2020, as modellers moved from the traditional statistical basis of the models to incorporate physical science that allowed them to incorporate the influence of changing weather patterns.

> "We are talking about climate while we are interested in weather"

For example, higher sea surface temperatures as a result of global warming were predicted to lead to stronger hurricanes, but differences in wind direction and speed between the upper and lower levels of the atmosphere, wind shear, might also increase because of climate change, and some scientists suggested they might cancel each other out.

Mitigation

"Never under-estimate the power of the dismal," said Douglas and he pointed out, "After Hurricane Katrina, the market creaked a bit but it didn't fail which is thanks to catastrophe modelling."

He said that the problem in tying climate change to its implications for weather and extreme events was lack of computing power to run such a vast model. Catastrophe modelling, he said, was just growing up and it had great potential to help in making decisions about how to manage climate change. To do so required transparency, openness and a willingness to work together. "There are tremendous opportunities for all of us if we integrate our work," he said.

Douglas's prediction for the short term was that there would be an aggregation of risk, not mitigation, but that there would also be no shortage of insurance capacity, although he said the price "may or may not be acceptable to the buyer".

Herweijer argued that although hazards were rising in a number of regions, we could do something about the potential costs. "Risk doesn't have to rise at the same rate if we make an investment in resistance," she stated. Catastrophe models may be able to help determine where we should focus our adaptations with the greatest cost benefit.

For example, RMS had analysed 136 large coastal cities for their vulnerability to future storm surge and relative sea rise. By looking at elevation, values at risk and the likelihood of flooding, RMS had been able to rank which cities were most likely to suffer a catastrophe and where there were the greatest assets at risk. "We hope this will motivate some of these cities for them to start adapting longer term to the impacts of climate change," Herweijer said.

Lee Coppack is editor of Catastrophe Risk Management.