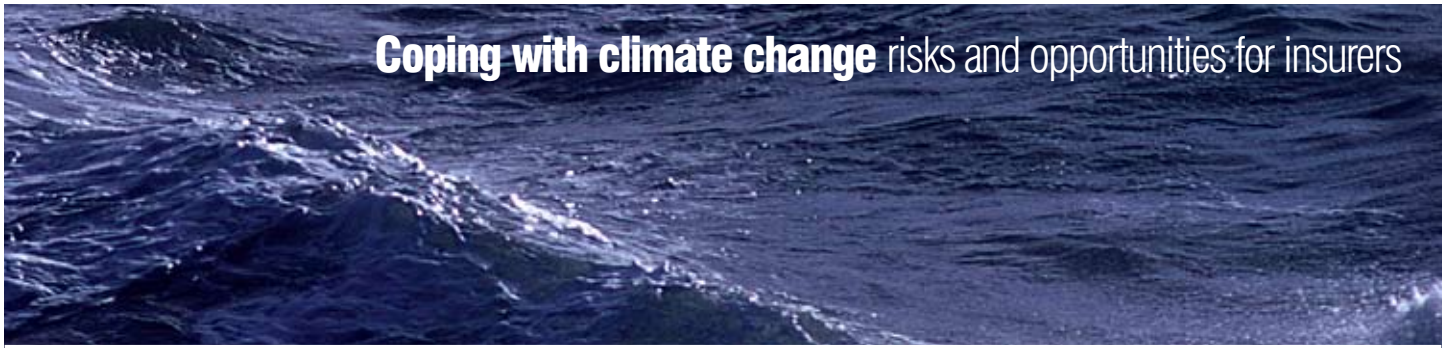


Chapter 15

Life & health insurance, pensions & mortgages

15.1 Introduction

The chapter considers the interrelationship of climate change with human health and longevity, and demographic trends, and hence the life insurance and pensions business. The analysis then moves to the considerable negative implications for mortgage business and its potential consequences on the economy. The need for more awareness of climate change in this area is clear, and various actions are identified for the insurance industry.

15.2 Climate change – the effects on life and health insurance and pensions

In the 1970 Bangladesh flood, an estimated 300,000 people lost their lives. In 2003, around 70,000 extra deaths resulted from heatwave in Europe. Every year 4,000 people worldwide die in floods, while spreading infectious disease such as West Nile Virus has accounted for over 650 deaths in North America. Asthma rates have quadrupled in the US since 1980. Malaria is spreading geographically, and 3,000 African children a day die from the disease. Other vector borne diseases also have a climate link. Cutaneous Leishmaniasis affects two million people a year and is now spreading into North America as its climate changes. In 2004, the UK's Met Office instituted a Heat-Health alert system. In July 2006 it published its first Level 3 warning.

Climate events clearly have an impact on people's health and on the risk of an early death. The table below shows some of the studies that have been carried out worldwide since 2001 on the issue of health and climate change.

Table 1: National health impact assessments of climate change published since the World Meteorological Organization's Third Assessment Report in 2001

Country	Key Findings	Adaptation Recommendations
Australia (St Michael et al., 2003b)	Increase in heatwave-related deaths; drowning from floods; diarrhoeal disease in indigenous communities; potential change in the geographical range of dengue and malaria; likely increase in environmental refugees from Pacific islands.	Not considered.
Bolivia (Programa Nacional de Cambios Climaticos Componente Salud et al., 2000)	Intensification of malaria and leishmaniasis transmission. Indigenous populations may be most affected by increases in infectious diseases.	Not considered.
Bhutan (National Environment Commission et al., 2006)	Loss of life from frequent flash floods; glacier lake outburst floods; landslides; hunger and malnutrition; spread of vector-borne diseases into higher elevations; loss of water resources; risk of water-borne diseases.	Ensure safe drinking water; regular vector control and vaccination programmes; monitor air and drinking water quality; establishment of emergency medical services.
Cananda (Riedel, 2004)	Increase in heatwave-related deaths; increase in air pollution-related diseases; spread of vector- and rodent-borne diseases; increased problems with contamination of both domestic and imported shellfish; increase in allergic disorders; impacts on particular populations in northern Canada.	Monitoring for emerging infectious diseases; emergency management plans; early warning systems; land-use regulations; upgrading water and wastewater treatment facilities; measures for reducing the heat-island effect.
Finland (Hassi and Rytkonen, 2005)	Small increase in heat-related mortality; changes in phenological phases and increased risk of allergic disorders; small reduction in winter mortality.	Awareness-building and training of medical doctors.
Germany (Zebisch et al., 2005)	Observed excess deaths from heatwaves; changing ranges in tickborne encephalitis; impacts on health care.	Increase information to the population; early warning; emergency planning and cooling of buildings; insurance and reserve funds.
India (Ministry of Environment and Forest and Government of India, 2004)	Increase in communicable diseases. Malaria projected to move to higher latitudes and altitudes in India.	Surveillance systems; vector control measures; public education.
Japan (Koike, 2006)	Increased risk of heat-related emergency visits, Japanese cedar pollen disease patients, food poisoning; and sleep disturbance.	Heat-related emergency visit surveillance.
The Netherlands (Bresser, 2006)	Increase in heat-related mortality, air pollutants; risk of Lyme disease, food poisoning and allergic disorders.	Not considered.

Table 1: (cont)

Country	Key Findings	Adaptation Recommendations
New Zealand (Woodward et al., 2001)	Increases in enteric infections (food poisoning); changes in some allergic conditions; injuries from more intense floods and storms; a small increase in heat-related deaths.	Systems to ensure food quality; information to population and health care providers; flood protection; vector control.
Panama (Autoridad Nacional del Ambiente, 2000)	Increase of vector-borne and other infectious diseases; health problems due to high ozone levels in urban areas; increase in malnutrition.	Not considered.
Portugal (Casimiro and Calheiros, 2002; Calheiros and Casimiro, 2006)	Increase in heat-related deaths and malaria (Tables 8.2, 8.3), food and water-borne diseases, West Nile fever, Lyme disease and Mediterranean spotted fever; a reduction in leishmaniasis risk in some areas.	Address thermal comfort; education and information as well as early warning for hot periods; and early detection of infectious diseases.
Spain (Moreno, 2005)	Increase in heat-related mortality and air pollutants; potential change of ranges of vector- and rodent-borne diseases.	Awareness-raising; early warning systems for heatwaves; surveillance and monitoring; review of health policies.
Tajikistan (Kaumov and Muchmadeliev, 2002)	Increase in heat-related deaths.	Not considered.
Switzerland (Thommen Dombois and Braun-Fahrlaender, 2004)	Increase of heat-related mortality; changes in zoonoses; increase in cases of tick-borne encephalitis. Increase of heat-related mortality; changes in zoonoses; increase in cases of tick-borne encephalitis.	Heat information, early warning; greenhouse gas emissions reduction strategies to reduce secondary air pollutants; setting up a working group on climate and health.
United Kingdom (Department of Health and Expert Group on Climate Change and Health in the UK, 2001)	Health impacts of increased flood events; increased risk of heatwave-related mortality; and increased ozone-related exposure.	Awareness-raising.

Already, climate is known to have significant effects worldwide on the insurance industry, not just in terms of property damage but also in terms of loss of life. Reinsurer Swiss Re reports each year on natural catastrophes and man-made disasters and its latest report (for 2007) shows that of the top 20 worst catastrophes in terms of victims, 16 were due to 'weather' events. That is not to say that any or all of those were due to climate change, but it does put into perspective the role of weather in the world's largest catastrophes.

On floods alone, it reports 52 out of the 53 natural catastrophes in 2007 involved loss of human life. Two of those events were the floods around Yorkshire in June which cost four lives and the floods around Gloucestershire in July, which cost three lives. Thousands of people were left homeless by these floods while thousands more will suffer short- and long-term health effects as a result of their experience. (Source: Natural catastrophes and man-made disasters in 2007, Swiss Re, March 2008).

So why is climate change apparently not high on the agenda of the life, pensions and health insurance industry – a sector where in the UK health and protection insurance alone is worth billions of pounds a year in premiums and where sums insured on risk are significantly more than that? Or, why does it not appear to be on the agenda for the £1 trillion UK mortgage market?

The short answer is that many of the deaths that occur globally are among the world's poor – those who do not live in affluent OECD countries, have few assets, do not understand the risks or who are powerless to take the appropriate actions. And, of the affected population in affluent Western countries, many are elderly (and often poor and uninsured too), the incidence of climate-related deaths is much lower and the proximate cause of death is unlikely to be attributed to climate change. Indeed, there is a lack of clear data on climate-linked mortality and morbidity that points to a determinable and assessable extra risk for any individual insured life. In some cases too, climate change is beneficial. For example, warmer winters in the northern hemisphere should result in a fall in winter mortality (an issue that particularly affects the UK).

But even low risk geographic areas such as Northern Europe can be affected by severe weather and by any increase in the propensity of such events. Evidence of just how severe such events can be is that the night of 31 January/1 February 1953 saw a storm surge in the North Sea resulting in flooding that accounted for 1,835 lives lost in the Netherlands, 307 in the UK and 230 around Northern European coasts. Storms and flood cost lives every year across the UK, heatwaves regularly cost hundreds of lives across Europe and all such events affect thousands more.

That is not to say that the industry is doing nothing. Both the ABI and CII report regularly on climate change issues. For actuaries, the Climate Change Working Party reports to the Environmental Research Group of the Actuarial Profession. In 2005, reinsurer Swiss Re co-sponsored (with the United Nations Development Programme) Climate Change Futures – Health, Ecological and Economic Dimensions, a scenario-led project led by The Center for Health and the Global Environment at Harvard Medical School. Munich Re's Munich Re Foundation has a broad remit, including microinsurance, and has produced reports and workshops on climate change. Many reinsurers (and other organisations) take an active interest in climate change and in thought leadership as to how the industry should respond and indeed drive the agenda.

But a search under 'climate change' on insurance company and reinsurer websites will invariably highlight a raft of activity under the heading of 'general' or 'property' insurance but relatively little on 'life' or 'pensions' or 'health'. The Climate Change Futures report expresses the issue succinctly:

'Remarkably, the insured costs associated with health and loss of life from natural disasters are not known or tracked by the industry. This is largely because the losses are diffuse and do not manifest in single "catastrophic" events. The lack of information is worrisome, as the industry lacks good grasp of its exposure as it does in the property/casualty lines.'

The report also highlights sensitive insurance branches to climate events (in terms of probabilities between 2 in 3 and 95%). Most, if not all, apply to the UK too.

Table 2: Likely effects of climate change on human health

Type of Event	Effect
Temperature extremes:	
Heatwave	Health, life
Heatwaves, drought, permafrost melt	Health
Frost, frost heave	Health
Rainfall/precipitation extremes:	
Flash flood	Life, health
Summer drought, land subsidence, wildfire	Health
Snowstorm, ice storm, avalanche	Life
Drought and floods	Life, health
Wind extremes:	
Midlatitude windstorm	Life
Tropical storms including cyclones, hurricanes and typhoons	Life
Other extremes:	
Lightning	Life
Tidal surge, coastal inundation	Life
Flood and drought	Health, life
Elevated atmospheric CO_2	Health

Source: Swiss Re, climate change futures, 2005

From the same report, only three climate events were identified that do not meet a 'high confidence' measure of sensitivity (at least two thirds), even though individually each can be highly dangerous and life-threatening:

- Flood, inundation, mudslide
- Hailstorm
- Tornadoes

Of these last three events, so far as the UK is concerned, floods have already led to loss of life, while deaths from hailstorm and tornadoes are more likely to arise if the events themselves become more common. It is not just loss of life that flooding affects though. The Samaritans, for example, train volunteers specially to handle flood victims' concerns and worries.

Research by Professor Dennis Parker at the University of Middlesex found that only one in three flood survivors experienced no physical health issues, while only one in sixteen was free of mental health effects:

Table 3: Percentage of people reporting physical or mental health problems following a flood

Physical effects	% reporting	Mental effects	% reporting
Stiffness in joints	23	Anxiety during rain	67
Respiratory illness	21	Stress	67
Gastro-intestinal	20	Depression	56
Weight loss	20	Sleep problems	51
Skin irritations	16	Panic attacks	27
Muscle cramps	16	Anger attacks	24
High blood pressure	14	Nightmares	18
Sprains/strains	14	Suicidal thoughts	9
No physical effects	36	No mental effects	6

Source: Professor Dennis Parker, Middlesex Flood Hazard Research Centre

Solar ultraviolet radiation can have a range of health effects from impairing immunity to malignant melanoma and other cancers.

An article in Environmental and Health Perspectives in August 2005 hypothesises that anthropogenic climate change is a contributor to the rise in asthma in recent decades. Certainly air pollution is a factor in the growth of asthma worldwide. Asthma is a serious condition – the direct healthcare costs for asthma in the US were more than $11.5 billion in 2004 (source: American Lung Association, 2005).

The World Health Organisation (WHO) estimated, in its 'World Health Report 2002', that climate change was responsible in 2000 for approximately 2.4% of worldwide diarrhoea, and 6% of malaria in some middle-income countries.

Despite all the available data, there is still no reliable answer to the question, 'How much will climate change cost, in terms of mortality and morbidity?' In fact, the answer is far from simple, not least because climate change will result in some savings as well as some costs.

So, is life, pensions and health insurance affected by climate change? If so, should life, pensions and health insurers take a greater interest in the issue? The answer to the first question is clearly 'yes' and, to the second, 'maybe' and for three underlying reasons:

1. The nature of life insurance and pensions is that they are long-term contracts where the insurer is locked into the terms offered typically for some years, often for decades.
2. Insurers have a tendency to apply retrospective rather than prospective underwriting – and for good practical reasons. Looking backwards it is possible to see what has happened (down even to small group level), why, and the effects and lessons that can be learned for the future. Looking forward is plagued with uncertainties and if all possible future adverse events are priced for, consumer detriment can arise (e.g. life premiums rising).

A good example of how this process can go wrong is AIDS/HIV. In the 1970s and early 1980s life insurers largely ignored AIDS/HIV until it had begun to become established. Massive premium hikes and tougher underwriting then had to be implemented (partly to discourage applicants selecting against insurers – insuring against risks that they believed they had a higher chance of getting but of which insurers had no knowledge) and, invariably, the adjustments were too draconian, admittedly on the back of a lack of hard information as to how the disease might progress.

Only subsequently, as the condition has become better understood and managed, has it become possible to adjust both premium rates and underwriting to what might be the 'correct' level (Source: The Facts of Life & Health Insurance, Taxbriefs, 2001). It is, therefore, important, from a consumer viewpoint, that the industry should not be panicked into having to price for events that it does not understand, and the best way to achieve that is for the industry to follow the issues as they develop.

3. 9/11 proved that life insurance is not immune from catastrophe risk. One estimate (Rasmussen 2005) shows that an influenza pandemic similar to that of 1918/19 could result in US insurers having to pay out double the current $30-40 billion a year on group life claims. Globally, the figure could be as high as $90 billion. What effect might a widespread flood, a series of heatwaves in a high population density area or an exotic new disease that has spread into new areas because of climate change, have?

Quantifying the effects of climate change is, however, a far from straightforward process. In its 2001 paper Health Effects of Climate Change in the UK, the UK's Department of Health (DH) used a Medium-High scenario for the 2050s, and concluded that the likely effects on health and mortality could include:

- Heat related deaths increasing by 2,000 a year.
- Cases of food poisoning rising by 10,000 a year.
- The risk of major disasters caused by severe winter gales and coastal flooding increasing significantly.
- Skin cancer cases rising by perhaps 5,000 a year and cataracts by 2,000 a year.
- Summer ozone increases could mean several thousand extra deaths a year.

However, the DH points to positive effects for the UK too:

- Cold-related deaths are expected to reduce substantially from 60-80,000 at present to perhaps 40-60,000 a year.
- The effects of air pollutants on health are likely to decline.

This data underlines the difficulty of coming to useful conclusions. But, based on the DH's report, the overall effect could be little different from today's mortality results, although the pattern of deaths and health effects could be significantly different in some areas.

This report was updated in a draft report published in May 2007, and it warned that there is a 1 in 40 chance that by 2012, South Eastern England will have experienced a severe heatwave. If that were to happen, the report estimates that this 'will cause perhaps 3,000 immediate heat-related deaths and 6,350 heat-related deaths.' The report goes on to identify the risk of a severe heatwave being 25% for the following decade.

Heatwaves tend to have less effect in hot countries than in cold countries and if a country moves from being a cold country to being a warm country, it is likely that it citizens will, over time, be less susceptible to very hot days. As the report notes, however, there is no clear evidence of how long this timeframe would be.

Such a forecast is backed up by earlier research. '…There is a high level of certainty that an increase in the frequency and intensity of heatwaves would increase the numbers of additional deaths from hot weather' (Intergovernmental Panel on Climate Change, 2001).

This has to be offset against fewer winter deaths if winters are warmer. One issue in the UK is that it is not the weather itself that results in excess winter mortality (many countries with colder climates do not suffer excess winter mortality as high as that in the UK), but a range of issues that are influenced by cold weather, e.g. influenza and damp housing conditions.

The General Register Office for Scotland (GRO) defines excess winter mortality as: 'The difference between the number of deaths in December-March and the average of the preceding (August-November) and following (April-July) non-winter periods.' Based on figures it has produced, plus those published in October by ONS for England and Wales, and in answer to an enquiry by us to the Northern Ireland Statistics and Research Agency in December 2006, excess winter mortality is around 30,000 deaths a year:

Table 4: Excess winter mortality 2000/01 to 2005/06

Year	England & Wales	Scotland	N Ireland	Total
2000/01	24,840	2,200	411	27,451
2001/02	27,230	1,840	193	29,263
2002/03	23,970	2,510	341	26,821
2003/04	23,450	2,840	307	26,597
2004/05	31,640	2,760	293	34,693
2005/06 (estimate)	25,700	1,790	449	27,939

Sources: Office for National Statistics, October 2006; General Register Office for Scotland, November 2006; Northern Ireland Statistics and Research Agency, December 2006, based on registration data.

The GRO's 2002 paper 'The Raised Incidence of Winter Deaths' pointed out that additional winter deaths (in Scotland, although this also applies generally in the UK) were particularly associated with respiratory and circulatory diseases and that there was a clear link between excess winter deaths and the level of influenza activity.

One issue is whether any improvements in winter excess mortality will be more than outweighed by extra deaths during heatwaves.

To put that into context, a severe heatwave would, in the year that it took place, result in more early deaths than are attributable to road traffic accidents in the UK. In 2005, for example, there were 3,201 road traffic fatalities in the UK (source: Department for Transport, 2006). It would also exceed the 2,973 fatalities of 9/11 in the USA. In other words, a severe heatwave in the UK could result in more fatalities than 9/11 and every road traffic collision in the UK in a year combined. That is not to sensationalise the figure – but simply to emphasise the size of the risk that climate change – at the extreme – could have, and why it is important to plan to minimise such effects before the first such event occurs, rather than to wait for it to happen (on mainland Europe such a severe heatwave did in fact occur in 2003, while in 2007 a heatwave in southern Europe left 550 dead in Hungary, Romania, Greece and Austria).

One concern we have with both the 2001 DH report and the 2007 draft update is that they do not include a range of scenarios setting out the total number of fatalities that climate change could result in. This would not be a simple calculation, and climate change would result in many lives saved as well as lives lost, but at present, it is difficult to determine what the overall effects might be. Doing so, would perhaps give a better indication of where resources should best be spent in maximising positive outcomes, while minimising negative ones.

The DH's 2007 report also touched on possible catastrophic climate events such as a repeat of the 1953 floods. It defined such a risk as 'low' but added that 'this risk will increase due to the rising sea levels unless coastal defences are upgraded appropriately'. But, could a repeat event lead to such serious consequences today?

In theory, yes. And in practice, Hurricane Katrina's impact on the US city of New Orleans in 2005 showed how such a human catastrophe can still happen, even in one of the most sophisticated countries in the world with some of the best early warning, healthcare and rescue systems. It is estimated that at least 1,836 people died as a result of the floods.

It is possible to envisage a scenario in which a repeat of the 1953 east coast floods could have even more wide-reaching consequences, not least because of the considerable amount of extra housing that has been built in the area in the intervening years.

Other effects

There may be other effects that climate change could have on the health, life and pension sector in the UK too:

Voluntary outwards migration.

One and a half a million British people live abroad according to the Foreign Office (July 2006) and, according to an ICM Research study for Clerical Medical published in August 2006, one in three Brits (30%) now plans to retire abroad. The most popular country to retire to is Spain (20% of those planning to move abroad) and many people, naturally, have chosen 'hot' holiday resorts as their chosen destination. Of those planning to stay in the UK, nearly eight out of ten still want to travel abroad.

Despite dire warnings, many people still want to get a good suntan and take advantage of the hot weather that the UK is not renowned for. As the effects of sun damage become more apparent, this trend could change and if more Brits decide to stay at home, there may well be additional demands on the health services and both positive and negative effects on mortality.

Climate-led inwards migration.

If global warming continues, some countries and some areas may simply become uninhabitable to those who have no access to water and cheap food, or are threatened by coastal inundation. If that happens, many people will want to migrate to safer areas, such as Northern Europe. Although the main effects of that would be economic and political, knock-on health and mortality effects can be expected too. The UK has long benefited from inwards migration, but if global warming continues, is there a threshold population beyond which the political, social and health costs become unacceptable or give rise to political instability?

Diverging mortality trends.

In July 2006 the Actuarial Profession in the UK announced that it would no longer publish standard mortality tables that would give an indication of life expectancy. One reason is that, despite a general trend of longer life expectancy, issues such as obesity mean that there is a growing rift between how long an active and healthy person might live and how long say a poor, obese and unhealthy person might live. Insurers have long differentiated between male and female lives yet a male living in the South East of England has a life expectancy at birth greater than a woman in the Northern & Yorkshire area (source: the Government's Sustainable Development website, 13 December 2005). Climate change may add to this effect.

Currently, life insurers do not rate by postcode. Climate change and the relentless drive to lower premium rates to offer better value to the majority even at the expense of a growing minority (known as 'preferred underwriting') may change that.

The life/pensions balance

Any improvement in mortality may benefit life insurance rates but have the opposite effect on pension annuity rates and vice versa. If there is a positive climate change mortality dividend, overall the effects could be:

- Pensions. Fewer early deaths put additional strain on pension funds. Ultimately, such changes result in annuities costing more, i.e. more money has to be invested in order to secure the same pension benefit (income) at retirement. However, as longevity improves, so the fund needed to generate a particular level of income tends towards the pure investment return. That then has policy implications – should it still be mandatory for individuals to have to purchase an annuity by age 75 if the mortality element of that is becoming increasingly eroded?
- Life insurance. Fewer early deaths mean lower premium rates so that buying £1 of cover costs less or that more cover can be bought for the same premium.

Of course, it is still uncertain whether that the anticipated "climate change mortality dividend" (or cost, so far as pension funds are concerned), as outlined in the Department of Health's 2001 paper, will actually materialise, but it would be prudent to include it as a scenario in its financial projections.

Health-related insurance products

With the growing strain on the NHS's resources, and the rapid increase in affluence, there is a trend towards using private insurance for health-care. A particularly interesting area is the provision of support services to the elderly (UNEPFI IWG, 2007). For example, since 1959, AXA Assistance has provided assistance for vulnerable people, including the elderly, sick, disabled and people who are in dangerous situations requiring urgent repatriation services. Allianz subsidiary, Mondial Assistance Group, offers a "radio finger" service for older people. In an emergency, they just need to touch a radio transmitter, which can be worn round the neck like a key, and help is quickly at hand. Since the elderly and unwell are likely to be among those groups stressed by extreme weather, this could affect the operation and profitability of such services.

Policy design

Might policy design and/or pricing have to change as a result of climate change? Possibilities include; no longer covering malignant melanomas on critical illness insurance policies; introducing ratings for climate-sensitive lifestyles; postcode rating; revised age loadings; detailed underwriting of even mild respiratory conditions. None of these are inevitable, but all could be on insurers' agendas in future as a result of climate change.

Green life insurance?

One trend over the past two decades has been for life and health insurers to reward positive lifestyle changes. For example, the 1980s saw most life insurers offering lower rates to non-smokers, a benefit that was extended to customers who subsequently gave up smoking. One medical insurer (PruHealth) now offers financial rewards to individuals who join a gym, lose weight or give up smoking, for example.

We are not aware of any life or health insurer that currently rewards a green lifestyle but such a move could have marketing advantages. It would also be interesting to see whether people who have a 'green' lifestyle are more likely to be more risk-averse in other aspects of their life. If so, insurers may feel able to offer better terms to such individuals.

Pensions

Pensions – particularly annuity costs – are affected by mortality but not (directly) by morbidity. The general mortality trend in recent years has been an increase in longevity of insured lives (source: The Actuarial Profession, various reports) and therefore any small increase in mortality due to climate change (given that roughly 1% of the UK's population dies each year – around 600,000 people) is likely to be more than offset by the general improvements in mortality that medical science has been steadily delivering.

It can be argued that increasing longevity, coupled with the high 'cost' borne by annuitants who die early is making annuities an increasingly unattractive investment vehicle for many people, but that is beyond the scope of this paper.

The fact that any increase in mortality due to climate change benefits annuity providers is therefore perhaps disquieting but does illustrate that pension providers may have little direct financial incentive to take a close interest in any likely extra mortality due to climate change. In any event, many of these providers also provide life assurance cover, so the two effects may do little more than cancel each other out for some providers. However, for those financial companies which "buy out" closed pension funds, this is a material concern. If they reinsure this risk through, for example, a "mortality bond", then the reinsurer in turn is at risk to this climate change effect.

Can we underwrite individuals?

We can underwrite populations to price for the effect of climate change, but can we underwrite individuals?

Over time, the industry will include climate change as a factor when assessing life expectancy and so in pricing life insurance and pensions. Even then, it may do so not by factoring in climate change itself, but by looking at overall mortality trends and future expectations.

Will the industry be able to rate individuals in respect of their exposure to the mortality and morbidity effects of climate change (as we can already rate an individual property, for flood risk, for example)?

Possibly not for long-term contracts. But that does not mean that individuals will be unaffected. Assessing any individual risk is undertaken against a background of trends in general mortality and morbidity data, and it is that which will affect how much someone pays for their life or health insurance or what annuity rate they can get from their pension fund. For shorter-term contracts , such as emergency care, it is clearly easier and more necessary to underwrite weather vulnerability.

Who 'owns' climate change in the insurance sector?

There may be another factor behind the sector's apparent lack of interest in climate change. That is that climate change as an issue tends to be 'owned' by the general insurance sector. This is an important point and arises because they suffer direct and measurable financial consequences. Reinsurers and composite insurers will understandably focus on the effects on property insurance but will also hold a watching brief on behalf of other parts of the business, such as life and health.

If and when evidence emerges, they may draw attention to the issues for their life and health counterparts, so avoiding considerable internal duplication of effort. A pure life or health insurer in turn can rely on its reinsurers and even on composite competitors to flag up any significant changes in understanding or effect. There may, however, be a considerable time-lag factor, while the 'silo effect' means that, in practice, there is relatively little cross-pollination of ideas between say life and general insurance areas.

Discussion

On one level, there is no shortage of data, information and opinion on climate change and health. In its 2003 paper 'Climate change and human health – risks and responses' the WHO said: 'Both the detection and measurement of health effects of climate change are necessary as evidence underpinning national and international policies relating to measures to protect public health.' But it warned that: '…the process of climate change is detectable only over decades, and the resultant health impacts will be similarly slow to emerge.' It also warned of the importance of distinguishing apparent from real climate change. But, following events such as the European heatwaves of 2003 or Hurricane Katrina in 2005, is this too complacent?

For the financial services sector, that creates a problem. A single event – such as a windstorm or flood – may affect hundreds or even thousands of properties, leading certainly to an immediate impact on insurers' claims ratios and, within weeks or months, perhaps to changes in property insurance practice or premiums too. It is a 'fast burn' effect.

For life, health and pensions insurers, climate change is a 'slow burn' effect. Single events have relatively little direct and immediate effect, other than to the individual lives concerned. Only over time can it be determined what morbidity and mortality effects are arising and only then if insurers have sufficient data, in sufficient detail, to be able to come to realistic conclusions about the underlying trends. Except, that climate change can also create climate effect thresholds, e.g. for disease or disasters, or for the compounding effects of individually relatively minor factors.

For society as a whole, the real issue may easily become lost against a background of generally improving mortality too. Over the past century we have generally enjoyed a two year increase in life expectancy every decade. That is a great achievement.

But it remains important to know whether climate change is contributing to that, or whether it is holding back further progress. And, the challenge is then to look at how to manage policy so as to encourage improvement and to minimise detriment.

Even within an overall aim of maximising financial return, financial services organisations can contribute positively to that. For example, life insurers already reward good health and factors such as not smoking, whilst also providing financial protection against unexpected events such as early death or serious illness. As such, their motives may primarily be financial, but their effects go beyond that.

Recommendations; life and health insurance and pensions sector

The key is not just to quantify what the effects of climate change might be, but to look at ways of mitigating any adverse affects while also capitalising on the positive effects, and sharing this knowledge with individuals, employers and other stakeholders. Although the primary focus is with insurers and reinsurers, other insurance-related organisations such as brokers, employee benefits consultants and health service providers (some of which are now owned by financial services companies) should also take note.

- In general, the life, pensions and health insurance sector should explicitly recognise climate change as a risk factor, which could affect human health and longevity overall and differentially.
- The sector should support research into quantifying the effects of climate change on morbidity and mortality.
- There are certain customer groups which are more sensitive to climate change, e.g. the elderly, and those with respiratory conditions. Institutions which provide products focused on such groups, such as pensions, or emergency care for the elderly, should therefore urgently review their terms and conditions. Specialised institutions may be more at risk, e.g. those involved in buying out closed pension funds, or reinsurers who provide mortality bonds.
- Insurers should consider giving advice to customers, e.g. on the risks of sun exposure or avoiding lightning strikes or dealing with respiratory problems in heatwaves.
- Underwriters should consider rewarding customers who take steps to reduce adverse exposures, especially for corporate customers, where the risk is more manageable.
- Life and pensions' insurers should ensure that any climate-related shift in liabilities is reflected in their investment strategy. More generally, they should review their investment strategy to ensure that climate change risks and opportunities are explicitly considered (as outlined in Chapter 16).
- Insurers should be reviewing their own internal practices, carrying out an environmental impact survey, encouraging good practice among staff and publishing the results for the benefit of their customers (see Chapter 2).

15.3 Mortgages

Against the background of the considerable fallout from the 'credit crunch' from mid 2007, climate change might be thought of as a 'minor' issue for mortgage lenders today. That may be true but, while the effects of credit crunch (itself fallout from problems in the US sub-prime mortgage market) are hopefully short-term, the effects of climate change are likely to be much longer term.

Mortgage finance is likely to be affected by climate change. In broad terms, mortgage lenders require security (the borrower's home) that is likely to maintain or increase its value over a 60 year period (CML, 2006). Only by having such high levels of underlying security can lenders afford to offer very competitive mortgage terms. It also follows that if climate change leads to any significant destabilisation of the mortgage market, the knock-on macroeconomic consequences could be serious.

In January 2007 a walking poll of mortgage lenders' literature available in the high street was undertaken. Lenders chosen were those located along a route from the Tower of London to the CII's offices in the City of London. A mystery shopper simply asked for their mortgage literature as someone who was moving house (no location was specified). The results were:

Table 5: A straw poll of climate change communication by mortgage lenders

Lender	Mentions of climate change
Abbey	None
Britannia	None
Halifax	None
HSBC	None
Nationwide	None
NatWest	None
RBS (Royal Bank of Scotland)	None
Woolwich (Barclays)	None

To be fair to lenders, their literature did not tend to cover other issues that might affect a property's value or set out what constitutes a mortgageable property either, although some did so and in a reasonable amount of detail too (e.g. how to recognise subsidence or dampness). It is also possible that at a later stage or during any face to face discussions that climate change issues might have been raised (especially if a potential property is in at at-risk area).

Nevertheless, it is surprising that in the UK's capital at the beginning of 2007, high street lenders appeared not to make any mention of climate change, greener living or what constituted a mortgageable property now or in the future (and which might therefore affect the value of a property).

That said, the Government's Pre-Budget Report's (December 2006) tax incentives for carbon neutral new homes could change that, at least for new homes, while other green tax incentives introduced in the 2007 Budget Statement could also influence future mortgage product design.

Indeed Co-operative Bank chief executive David Anderson said after the Budget on 21 March 2007: "We are convinced that green mortgages will be the most common form of home loan in the future." He added that the bank planned: "...to reward and encourage home owners to actively reduce their CO_2 emissions."

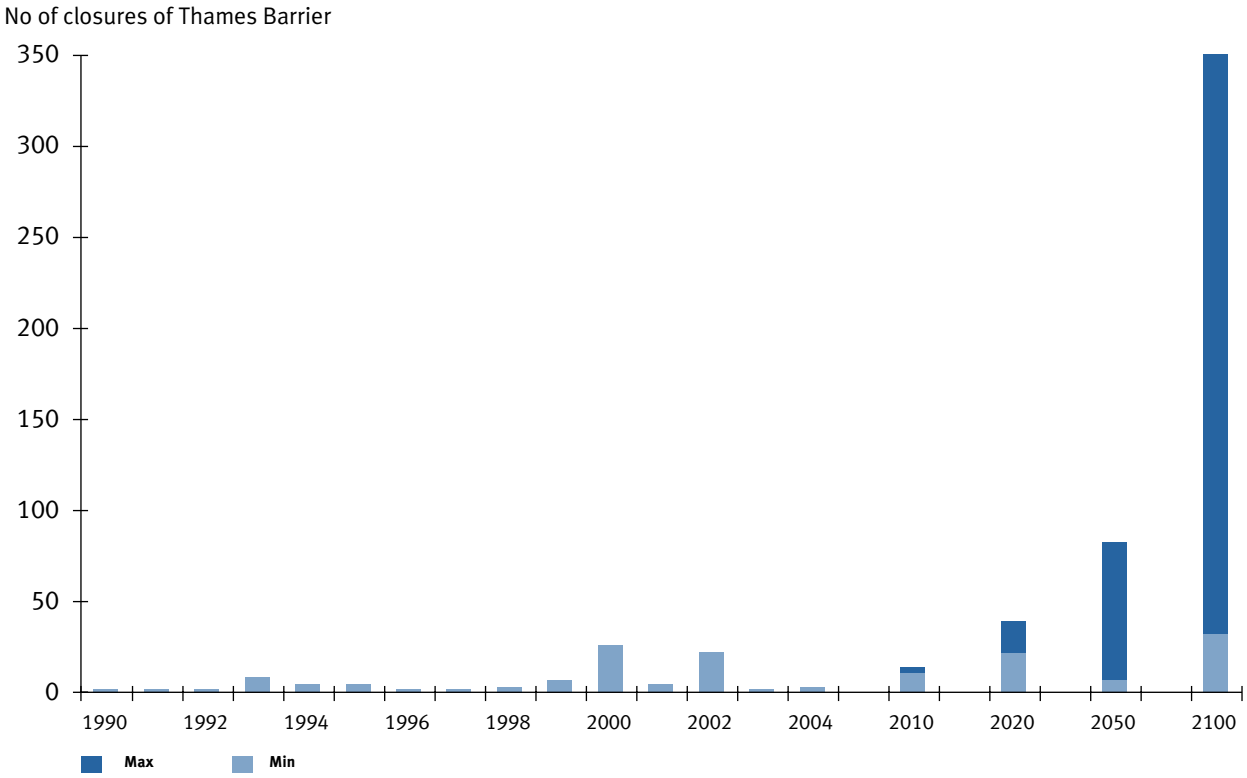
While such measures are welcomed, it is also important for consumers to know – in simple terms – what makes a property mortgageable and what might change that in future.

A key area of concern is building on flood plains – this is covered in more detail in other chapters of this report. As well as the direct effects of flooding on new properties in such areas, remedial action to reduce the risk can result in widening the risk of flooding to properties in other areas.

One specific concern is plans to build extensively in the Thames Gateway. This is an area of land stretching 60km from East London on both sides of the River Thames and the Thames Estuary. There are, for example, plans to create a 'water city' of some 40,000 new homes around the canals, waterways and green spaces in the Lower Lea Valley – part of the preparation of the area for the 2012 Olympic and Paralympic Games.

Whilst the builders and planners will have taken climate change into account, the extent of the concern is illustrated by figures given for the number of closures of the Thames Barrier in a Parliamentary Answer on 16 June 2005, which showed how the nature of the underlying risk of flooding is increasing. The lower figure for future years indicates the best predicted outcome based on lowest climate change scenario impacts and maximum use of flood management mitigation measures implemented from 2030. The higher figure for each future year indicates the worst potential outcome based on maximum climate change predicted impacts with no additional flood management mitigation measures implemented from 2030.

Figure 1: Closures of the Thames Barrier



Source: Environment Agency, from Hansard 16 June 2005, Vol 435, at column 564W

Note: future projections show two figures. The lower is the best predicted outcome based on lowest climate change scenario impacts and maximum use of flood management mitigation measures implemented from 2030. The higher figure for each year indicates the worst potential outcome based on maximum climate change predicted impacts with no additional flood management mitigation measures implemented from 2030.

Coastal erosion also affects a property's mortgageability, and lenders will generally take a view as to the likely pace of such erosion and how and when an individual property might be affected by it. Or, more accurately, when its value and saleability might be adversely affected (which could be some years before the property itself is physically affected).

One concern to homebuyers is that a lender might lend on a property today, but in ten or twenty years time the property may become unmortgageable and/or uninsurable and, consequently, virtually unsaleable.

Insurers' policies towards climate change therefore have a direct knock-on effect on mortgage lending policy. The opposite can also apply – mortgage lenders' actions can and do have a direct effect on insurers.

The following sections highlight a number of areas where climate change could be an issue.

Mortgage protection

There is a strong correlation between the mortgage market and sales of individual protection insurance. In 2005, 1.091 million mortgage-related term insurance policies were written compared to just 665,000 non-mortgage term policies (some at least of which are also likely to be mortgage-related). Some 537,600 new mortgage payment protection insurance (MPPI) policies were also taken out in 2005 (CML, 2006). The year 2005 has been used because the fall off of MPPI policy sales (due to concerns over mis-selling and value) and the effects of the credit crunch on mortgages has tended to distort the position in later years.

This compares to 2.172 million new mortgages being taken out (including 1.155 million remortgages) in 2005 (CML, 2006).

If climate change is proven to affect mortality or morbidity to any extent, the subsequent effects on both the life and general insurance protection markets could be significant. If higher premiums lead to falling sales or increasing lapse rates there would also be a knock-on effect on welfare payments as people relied on the State again rather than on private insurance to provide their protection. This is especially true as most PPI products have a 30 or 90 day 'get out' clause allowing the insurer to increase premium rates or even to discontinue cover completely. As State benefits are designed to be a minimal safety net only, the overall effects on confidence could also be significant.

Internal climate control

In the past 50 years, building construction of residential property has focused on insulation to minimise the energy required to heat a home. As the climate warms, this will become less of an issue but the challenge then becomes to keep properties cool in summer. In the US for example, it is now common for energy consumption to increase on very hot days – the opposite of traditional expectations. That is due to the increasing use of air conditioning and electrical fans.

In the UK, air conditioning for domestic homes is much less common (although it is now commonplace in shops, places of work and on transport systems such as trains, buses and cars) but its use is increasing. But air conditioning brings its own health risks. A poorly maintained system (much more likely in a home than in say an office) can allow bacteria to breed in contaminated water, while homes that are shut off to external changes of air are also more likely to be unhealthy. At the extreme, legionnaire's disease is a possible and potentially lethal consequence of a poorly maintained system.

A well insulated home cannot only require less heating in winter, but less cooling in summer. For example, an old cottage built of light coloured Cotswold stone with thick walls and with small windows (perhaps itself an example of environmentally sound construction using locally quarried stone) will generally be cooler in summer than a modern dark coloured brick built residence with a large glass area.

Post-purchase borrowing could also increase to fund climate driven purchases.

In future mortgage finance may be increasingly required for:

- Energy systems such as solar heating panels.
- Insulation to keep homes cooler in summer.
- Installing air conditioning systems.
- Use of lighter coloured building materials to reflect heat better. Could the UK move from mainly red brick communities to more Mediterranean-looking white painted property communities?
- Swimming pools (although water shortages may prevent this).

Mortgage lenders could usefully play a more active role in educating home owners in how to improve the comfort of their homes in summer without increasing environmental damage in the process.

Green mortgages

In March 1981, the Ecology Building Society started trading in West Yorkshire with a prime focus to promote an ecological approach to the built environment in the UK, and thereby foster sustainable communities. Its lending policy reflects that and although it remains small (total assets are around £60 million) it has survived more than a quarter of a century and now boasts more than 60,000 accounts. However, it remains the only lender to focus on an ecological approach to mortgage lending.

Co-operative Bank has offered a Green Mortgage product since 2000 and makes an annual donation to the Climate Care organisation for each deal arranged. Since 2000 it has donated almost £1.5 million.

Generally though, anyone planning to build or buy a property constructed using environmentally sound methods or to renovate a derelict property could actually face considerable hurdles in the lending market. That may include lower loan to value limits, higher interest rates, retentions and shorter lending periods.

As the implications of climate change are better understood by the public and, as governments increasingly encourage it through fiscal and other measures, we would expect more lenders to offer green mortgages and also to promote their green credentials.

Insurance and mortgage term mismatch

Household insurance is generally written as an annually renewable general insurance policy, whilst most mortgages are still taken out for a term of 25 years, sometimes longer. Indeed, the trend is to increase mortgage terms. In November 2006 life insurer Bright Grey reported that the maximum term it would write critical illness cover for mortgage protection was being increased from 25 years up to 40 years and that 40% of mortgages for first time buyers were now for terms longer than 25 years. Other insurers also now offer longer terms to match such borrowing

Climate change could lead to the withdrawal of property insurance on properties that are still mortgaged (the longstanding agreement by insurers to provide cover will cease in 2013). Even where an insurer offers continuing cover to existing customers, it will often only do so at a higher premium and is unlikely to offer the same terms to a new buyer if the property is then sold.

In the UK, insurers are not legally required to continue to provide cover in any circumstance, although many will do so even if that means higher claims costs overall.

In some cases, consumers may be unaware that insurers are not obliged to offer renewal terms ad infinitum or may believe, erroneously, that property insurance will always be available. An ABI agreement with the Government does ensure that insurers will continue to provide cover where they have done so before but this will terminate in 2013.

Mortgage lenders are major buyers in the household insurance market and so able to use their considerable buying power to secure cover for their borrowers, but such arrangements are vulnerable to other factors such as:

- Some mortgage lenders are part of the same group as the household insurer and so the aggregate risk is not spread.
- The insurer may change ownership or go into run-off.
- The lender may switch insurers to secure better terms.
- Insurers may withdraw from markets wholly or selectively.
- If the premium reflects the true risk it may be unaffordable, e.g. for properties built on a flood plain.
- It may be argued that lenders should disconnect from insurance sales due to potential conflicts of interest and the potential for that to lead to consumer detriment.

Mortgage securitisation

Since the 1980s, mortgage lenders generally moved away from funding mortgages wholly or largely from retail funds towards more innovative funding solutions. One option is the securitisation of a mortgage portfolio. Under this arrangement a 'bundle' of mortgages is packaged together and sold off as an investment product either to private or institutional investors. In 2005, for example, UK mortgage securitisation was 145.1 billion Euros (source: ESF Securitisation Data Report, Winter 2006).

Whilst the risk is spread by having a portfolio, climate change imposes an additional risk. For example, if more properties are built in areas liable to flooding, the level of mortgage defaults could rise if climate change leads to more flooding. The recent experience with sub-prime lending and securitisation provides a warning of what could happen.

Recommendations for mortgage practitioners

Although this report focuses on insurance implications, we recommend that insurers and lenders jointly consider the effects of climate change as it affects the mortgage market. There are three reasons for that:

The mortgage market is massive. Mortgage lending has been in the region of £20-30 billion a month. Its impact on the economy as a whole is significant both because of its size and the knock-on effects on consumer sentiment.

Mortgages are long-term products (typically potentially lasting 25 years or more) that require a smooth running property market for maximum efficiency.

Any destabilisation of the property market is likely to have serious macroeconomic consequences, as we have seen from the credit crunch. On a microeconomic level, any shift in lending policy in future could have serious financial implications for individual homeowners who need to sell and are unable to do so.

To date, the effects of climate change have not affected the mortgage market greatly. That could change both due to growing awareness of the effects of climate change and of its consequences on the housing market. The following actions are necessary:

- Finance providers must ensure that homebuyers are aware of climate change factors that could affect the mortgageability of their property in future. In England, the new Home Information Pack (HIP) now includes an energy audit and this could be extended to provide a wider environmental audit. Such transparency might adversely affect parts of the property market, but it should help avoid buyers being misled and perhaps finding themselves with an uninsurable, unmortgageable and unsaleable property. This requires care – scaremongering must be avoided, stabilisation of the market is important but consumers also need the facts if they are to make the right decisions, especially as a mortgage is such a long term buy.
- Lenders need to consider their own exposure to climate change in the event that insurance becomes unavailable in future, particularly in respect of flood damage to properties over which they hold mortgages. This implies a major effort to understand such hazards, and ensure that their aggregate exposure is managed effectively, not simply ignored in the belief that insurance will solve the problem.
- Lenders should develop more green mortgages and look at how they can further encourage greener living. Changes in the 2007 Budget should help this process.
- Insurers and mortgage lenders need to work together and to jointly 'own' responsibility for how climate change issues are communicated to their customers.
- Recommendations in other chapters of this report cover property insurance in more detail.

15.4 Conclusions – the case for action

Climate change can have significant effects on human life and health. However, in countries such as the UK, there is a view that the overall effects could be positive rather than negative (although climate change itself could result in more deaths than all road traffic accidents put together). For individuals, many will welcome warmer winters; but others will be adversely affected by the health consequences in other seasons.

But is that an excuse for inaction? The challenge must be not to accept some adverse mortality and morbidity experience on the grounds that that is compensated by improved mortality around warmer winters and developments in other areas such as medical science, but to look to secure the best mortality and morbidity improvements possible across the board, or at least where there is a financial case to do so (ignoring any additional moral and other grounds that might apply).

Life and health insurers and pension and mortgage providers have, so far, made few public proclamations regarding climate change. That is not to say that climate change will not affect them – although they may be affected less than others (e.g. insurers that provide insurance against flooding).

But a case can be made as to why life and health insurers and mortgage providers should take a higher profile on the issue of climate change. In essence the argument boils down to:

- The need to consider carefully what the full effects can or might be over the longer term; not least because elements of the financial services markets are interdependent, e.g. many life insurance sales are dependent on mortgage sales and mortgage sales are dependent on the availability of property insurance.
- Climate change issues need to be followed more closely to build up a better understanding of the issues and effects. Being less affected (than general insurers) does not mean not being affected.
- We may already be at the point where climate change is having measurable financial effects on life and health insurers and mortgage providers but simply unaware of it because the data is not being collected or disseminated.
- Financial services organisations can make a difference both in how they price and design their products and in the messages they put out to their customers and others.

But, few organisations yet fully accept the arguments. Instead the view is that as and when (if?) information becomes available for life and health insurers and mortgage providers to quantify the effects of climate change on an individual level, there could be underwriting and pricing consequences or even product design issues but that these can be actioned then. The danger with that approach is that when such information does become available, the effects on consumers could be considerably greater (especially on a microeconomic level) than many organisations realise, while any destabilisation of the mortgage market could have considerable knock-on effects. At present though, climate change remains, perhaps wrongly, a relatively minor concern for the life, health, pensions and mortgage sectors.

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Biography

Andy Couchman

Andy is one of the leading commentators on the UK's health and protection insurance and mortgage markets. Co-author of the annual Protection Review book and monthly HealthCare Insurance Report newsletter, he also holds a number of editorial positions with specialist industry publishers and authors two of the CII's exam textbooks as well as online and other publications. Andy has written a number of books and reports on the industry, writes in the trade press and is a regular speaker at industry conferences. As a consultant, Andy works with many of the leading names in the insurance and mortgage sectors.

In 2007 he was voted one of the top 20 most influential people in protection insurance over the previous decade by his peers for Cover magazine.

A past secretary to the CII's Society of Fellows, and past president of the Insurance Institute of Swindon, Andy has been involved with the CII's work on climate change since the mid 1990s. Professionally, Andy is an FCII, a Chartered Insurance Practitioner and also holds the Certificate in Financial Planning.

He is managing director of Bank House Communications Limited. Before setting up this company in 1995, Andy's career was primarily in product development, where he managed a number of market leading insurance and mortgage products and services.