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The Geneva Association - General Secretariat - 53, route de Malagnou - CH-1208 Geneva
Tel.: +41-22-707 66 00 - Fax: +41-22-736 75 36 - secretariat@genevaassociation.org - www.genevaassociation.org

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# Changing Risks: Impact in the Insurance Industry

*by Antonio Salgado*

Natural disasters have coexisted with humanity throughout history. Last decades have seen how natural disasters have attached great importance because of sharply increase in losses caused by them.

Most of the increase is due to economic, demographic and geographic changes as are the significant increase of values at risk, the increase in insurance penetration, the higher value concentration in exposed regions as coastal areas or the increase in population density.

But there is another risk factor which is strongly rising as a potential cause of frequency and severity of natural disasters: climate change.

## THE SCIENTIFIC EVIDENCE

Recent research has resulted in broad scientific consensus that the Earth´s climate is warming and that - although some changes occur on a cyclical basis throughout history - current climate change, or "global warming", is being driven by rising levels of greenhouse gasses (GHG) such as carbon dioxide (CO2) and methane present in the upper atmosphere. They allow short-wave radiation from the sun to enter the atmosphere, but absorb some of the long-wave radiation that is reflected back from the Earth´s surface. The rays are trapped in the atmosphere, keeping the Earth warm and disrupting its climate system.

Since the industrial revolution, when burning of fossil fuels increased dramatically, the Earth´s temperatures have risen sharply.

All ten of the hottest years on record have occurred since 1.990,with 2.005 being the warmest. There is evidence that the last few decades have been warmer than any other comparable period in the last 400 years. The concentrations of GHG are

increasing and doing so at a faster rate than once projected. That is linked to the use of fossil fuels and other human activities.

The result is that the Earth´s temperature is increasing at an alarming rate The sea surface temperature has increased by between 0,2 and 0,6 degrees Celsius in the past century, while air temperatures are warming at the same time.

Nowadays there is a vast scientific consensus that climate change is occurring and it will lead to significant changes in weather events.

So, what appears to be a certainity from scientific data is the existence of climate change as a fact while the exact nature, location and intensity of such events remain uncertain due to the fact that weather related events are impacted by a complex set of interrelated factors.

## CONSEQUENCIES

2.005 year was one for the record books with insured losses reaching US$ 83 billion. This figure is about 70% higher than the prior Record of US$ 48 billion in 2.004. Well known names as "Katrina", "Rita", "Ivan" or "Wilma" pushed figures up to said levels.

Losses arising from natural catastrophes have raised substantially in the last 30 years. The top 10 costliest hurricanes have all occurred within the past 10 years, with seven of those occurring in the last two years.

Severity of weather related catastrophes is beyond all doubt.

However, one should ask oneself to what extent this accumulation of violent climatic phenomena, essentially storms and hurricanes, s simply an isolated episode or a product of natural cycles or to the contrary we are looking at a worsening trend caused by climate change.

Scientific evidence does not come up with a conclusive answer on this aspect.

For the time being it is not possible to demonstrate with significant evidence that the increase in frequency and intensity of the

2.005´s hurricanes is specifically due to climate change. However, climate models do indicate that some of the effects of climate change such as increase in temperatures and consequently the evaporation of sea water could favour conditions for the forming of tropical storms and hurricanes.

It is a fact that in 2.005,the surface of Caribbean waters reached very high temperature levels which coincided with the highest activity recorded in the formation of tropical storms in the Caribbean. Moreover, seven of these were transformed into powerful hurricanes with the effect that we all remember.

Therefore, although we can not conclude this categorically, the increase in the frequency of the different catastrophes may be a logical consequence of climate change.

## OTHER NON CATASTROPHIC PHENOMENA AS SOURCES OF RISK

The most well known aspects of climate change correspond to large catastrophes. However, climate change can give rise to other phenomena that, although less extreme, may constitute an important source of risks in the forthcoming decades.

Through the European Environment Agency, the European Union has started to evaluate and estimate the vulnerability of the Member States in this regard.

Undoubtedly there are 3 phenomena which are particularly important:

First of all, the increase in temperatures. Over the forthcoming decades there will be varying increases of temperature in different parts of Europe and Spain will be one of the worst affected areas with increases of up to 4,5 degrees Celsius.

Together with the increases in temperature, the European Environment Agency has identified as another of the principal changes,

the reduction in quantity and quality of the hydro resources. In the case of the Iberian Peninsula, the losses could be as much as 50% in some hydrographic basins.

Lastly, the increase in the sea levels, due to the melting of polar ice caps, is another of the principal identified risks. During the 20 th Century, increases of between 0,8 and 3 milimetres/year were registered and predictions point to increases of between 2 and 4 times in the speed of the rises over the next decades.

These effects of climate change are a big concern for the insurance industry, particularly the property and casualty market,

because of their repercussion on many activities and the whole socio-economic system.

## EFFECT ON THE SOCIO ECONOMIC SYSTEM

Without doubt it will be agrarian activities that are most affected by climate changes over the coming decades. In general, the contribution to Gross National Product of these activities in the European Union Member States is low. However, in countries such as Spain and others in southern Europe where the proportion is higher, there could be considerable repercussions.

The changing of climatic conditions may leave some areas prone to drought and heat waves and this could result in the creation of deserts, destroyed crops, the

reduction of water resources, damage to ecosystems, the forced migration of communities and an increased risk of wildfires.

## THE RISE IN SEA LEVEL

The rise in sea level is another of the better known and more worrying consequence of climate change.

In Europe, the coastal zones make up a high percentage of the population and ecosystems that constitute important food sources. Denmark, the U.K. and the Netherlands are particularly exposed in this respect.

The rise in sea level, already apparent, will make these zones more vulnerable to phenomena such as floods, erosion of beaches and other coastal zones, increase in the saline content in waterways and estuaries, etc. The consequences have serious implications for the sustainability of resources and the human population that inhabit them.

The European Environment Agency has carried out calculations which demonstrate the seriousness of losses associated with these changes.

Countries such as Holland are seeing that an increase in sea level of only 1 metre could oblige them to relocate more than 10 million inhabitants, almost 70% of the population. This circumstances would also mean losses of around 150.000 million Euros, almost 70% of the Gross National Product.

Other countries such as Germany and Poland could also suffer important material losses which could seriously affect the European economy.

The European Agency has not evaluated what the situation could be for Spain on this point. However, without making calculations of population relocation or material

losses, it is easy to imagine to what extent the situation could represent a disaster for our country.

A significant proportion of Spain´s wealth (as much as 12%) is based on activities linked to its coastline : tourism.

If we consider that a rise of only 1 centimetre in the sea level represents the loss of one lineal metre of beach, it is easy to understand up to what extent the rise in sea level represents a significant risk for our country.

## WHAT INSURERS CAN DO

The industry was shocked by the large losses it sustained as a result of 2.004 and 2.005 hurricane seasons. But worryingly it seems that these losses are part of a global trend of increasing weather related catastrophes and insured losses. Not only has the United States been hit, but in 2.004 Japan had a record breaking typhoon season, and storms and flooding are increasing in Europe.

According to the Financial Risk of Climate Change, a report by the Association of British Insurers (ABI),there have been at least 20 events globally every year since 1.990 that have been severe enough to be classed as big natural catastrophes by reinsurers. In the 20 years before 1.990,there were only 3 years that experienced more than 20 such events.

Average insured losses were only US$ 3 billion a year in the 20 years preceding 1.990,compared with US$ 16 billion a year between 1.990 and the end of 2.004.Insured losses for 2.005 are not included in these figures.

Many scientists are convinced that the increasingly volatile weather is a result of global warming. Many in the insurance industry are coming to the same conclusion. It is not only the increasing frequency of events that is worrying insurers, but the speed at which that frequency is increasing.

A CERES -which is an association of United States environmental investors- report entitled "The Availability and Afforddability of Insurance Under Climate Change" found that insured weather related losses in the United States are growing 10 times faster than insurance premiums and the overall economy.

In theory, increasingly volatile weather should mean more business opportunities for insurers and reinsurers. In this sense, the biggest reinsurers report a compound annual growth rate of more than 9%.So,in this sense, climate change provides an opportunity for the traditional catastrophe market.

But, if as CERES report suggests, premiums are not keeping pace with losses, then the industry faces more unexpected losses, a possible capital deficit and business could be threatened with insolvency.

**TIME FOR ACTION**

Now that the industry has started taking more notice of climate change, the question is what it can do to stop it becoming a problem.

Many believe the key to tackling climate change is investment and collaboration in scientific research, so the industry can assess its impact fully. Over the past few years insurers and reinsurers as Swiss Re, Munchener, The Association of British Insurers (ABI), Allianz or Lloyd´s have released reports on climate change.

Improving risk models will be essential to the industry´s success in tackling climate change. Many think models should change to reflect the latest scientific findings. The future is going to be different from the past and models should no longer rely solely on historical weather patterns. Some of the main risk modellers have already adapted their existing models but probably they need to be continually reviewed.

Better research and more accurate models should enable insurers and reinsurers to price risks correctly and review their terms and conditions of coverage.

As well as improving research and modelling, the industry should collaborate with governments to ensure everything possible is done to reduce risk and mitigate potential losses. In this sense, probably more effort is needed to ensure that regional planning strategies take account of climate change risks, that development and infrastructure plans are resiliant and that vulnerable activities are moved to safer locations.

Also, insurers have to promote improved building codes as technology and mitigation products come on the market.

For instance, the Association of British Insurers (ABI) has put forward specific proposals to the Goverment for flood risk management, committing itself to providing insurance if the Goverment put plans in place to improve flood defences and flood management. It appears that considerable progress has been made.

The way the insurance industry tackless the issue of climate change is vital, essential for a healthy economy. Without insurance you can not run a business. The problem of insurability have implications for the economy as a whole.

Antonio Salgado Gorostizaga
Director
Area de Transportes,Servicios e Inst.Financieras
DIVISION GLOBAL RISKS
MAPFRE EMPRESAS.