



Sir Nicholas Stern  
Stern Review  
2nd Floor, Room 35/36  
HM Treasury  
1 Horse Guards Road  
London SW1A 2HQ

9<sup>th</sup> December 2005

Dear Sir Nicholas,

I am writing to you regarding the call for evidence to aid your investigations into the economics of climate change. As Chief Executive of AXA Insurance I very much welcome this chance to contribute to this debate. I believe that climate change presents a major threat to both the natural and the economic well-being of the planet and the effects it will have on both individuals and businesses over this and future generations.

As Chief Executive of AXA Insurance I have taken a keen interest in this subject. I Chair the Household and Property committee at the ABI which has a specific remit on climate change, I regularly speak to industry and most recently to Government at the Autumn DEFRA conference on climate change and I am pleased we are sponsors of the Carbon Disclosure Project.

To give a brief overview of who AXA Insurance are. AXA Insurance is the third largest general insurer in the UK. It offers both personal and commercial insurance, ranging from home, personal and travel insurance through to liability and property insurance for businesses.

AXA Insurance forms part of the AXA Group, an international company and a world leader in wealth management and financial protection, managing funds worth more than €742 billion. AXA operates in around 50 countries and serves more than 50 million customers worldwide. We cater to a wide range of needs, providing advice and guidance to our individual and corporate customers on a variety of financial products and services. These include investments, life insurance, retirement planning, long term care, asset management, medical insurance, dental and hospital care services as well as motor and home insurance.

Lastly AXA Insurance in the UK is the second largest insurer of SME's and the leading property insurer for small business including business interruption. As I mention in this short letter I believe it is increasingly important that not just the initial effects of climate change but the wider implications associated with social change, business interruption and increased costs of doing business in a changed world are considered. Often the initial economic costs of a climate change event are dwarfed by costs to communities of unemployment, reconstruction and the social upheaval that such events cause. I cite several recent examples in this letter and I am concerned that any study into climate change should recognise the wider implications for businesses and communities.

Although there is still hotly contested debate about the exact causes of climate change and as a result the best courses of action we should take to both prevent and mitigate its effects, it is undeniable that our climate is changing and the effects of this will be witnessed by our own and future generations.

In the last 100 years we have already seen a rise in global temperatures of 0.7°C while predictions of further global temperature increases in the next 100 years range from 1.4°C to as much as 5.8°C above 1990 temperatures. I believe that in deciding as a country how we react to and try to prevent further climate change we must first more rigorously investigate and understand what we believe the true economic costs of such changes in our climate would be.

It is for this reason that we at AXA Insurance are now devoting resources to such an investigation into the economic consequences of climate change. The expertise we have in risk analysis, which we perform to underwrite our insurance products, already takes many factors regarding climate change into account. By using this expertise in risk analysis we intend to produce a body of work which will help Government and

industry better understand the economic consequences of failing to act in the prevention of and protection against climate change.

While this work remains in its infancy I would ask for an opportunity to meet with you to discuss in greater detail our intended research which I have briefly outlined in this letter. From this I hope that AXA Insurance will be able to make a valuable contribution to Government thinking regarding the economic consequences of climate change.

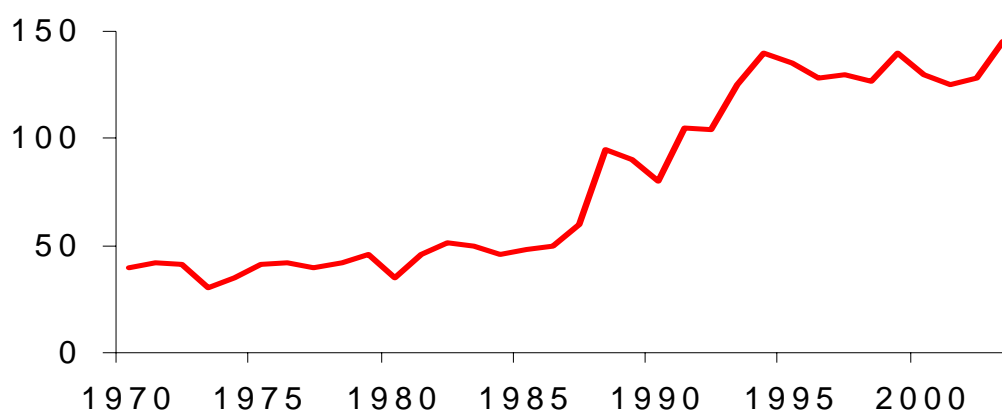
Although the economic consequences of climate change are already widely talked about, too often they remain focused on single issues such as major floods or hurricanes rather than looking at the costs of climate change in its entirety. Even when the costs of individual events are investigated the size of the costs are often too narrow, looking at the physical damage of an event rather than the full damage to an economy.

To take Hurricane Katrina as an example, the major costs of this hurricane will lie not only in the clearing and repairing of flood damaged buildings but also to the wider economy due to the interruption to business continuity and the inevitable redundancies. As businesses have started to reopen they face lower numbers of tourists, further damaging their economy and higher insurance premiums from providers who are now acutely aware of the risks of insuring property in the New Orleans area. AXA Insurance believes that the total costs of hurricane Katrina will likely mean that this will be the most expensive single insured event on record with a total cost between \$15billion and \$25 billion.

Hurricane Katrina is the most prominent example of an emerging trend of the increasing costs of 'natural catastrophes'. The reasons behind these increasing costs are admittedly partly socio-economic due to the increased number and value of assets in areas at risk from flooding and other extreme weather events. It is undeniable though that extreme weather events are becoming more prevalent, with Andrew F Dlugolecki predicting in his paper "The Changing Risk Landscape: Implications for Insurance Risk Management" that by 2050 the prevalence of extreme weather events on a global scale will have increased from 1% during the average year to 4% during the average year.

Given the non linear relationship between property damage versus weather event severity this is likely to lead to exponentially increasing costs from the higher prevalence of extreme weather events. This can already be seen in the recent past (see graph below)

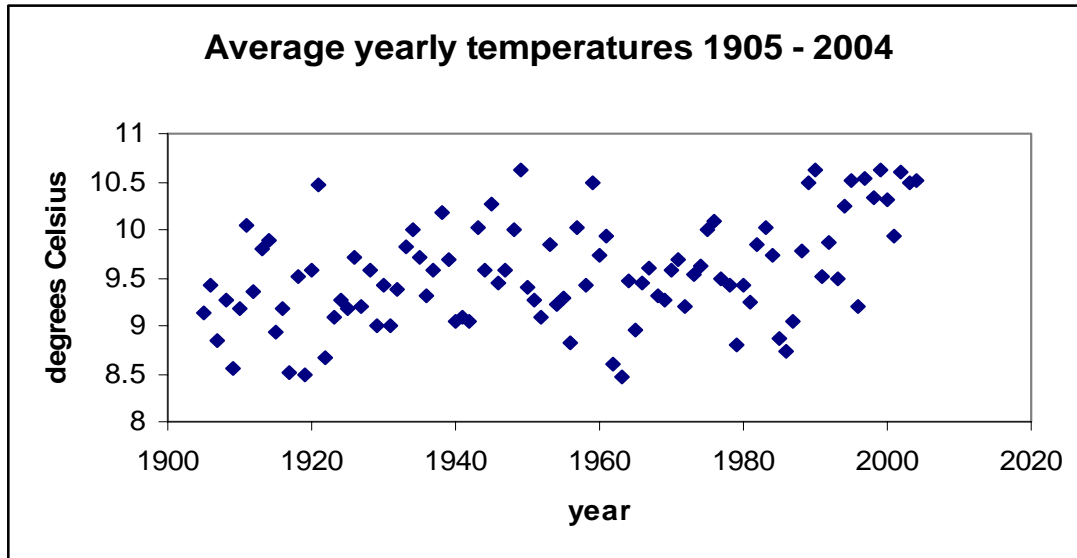
**Number of Extreme weather Events 1970 - 2004**



Source: Munich Re (Insured damage 2004 excludes Asian Tsunami)

The costs of the increasing numbers of extreme weather events in 2003 totaled \$15 billion and in 2004 \$40 billion.

It is important however that events such as Hurricane Katrina or closer to home incidents such as the Carlisle floods (which cost AXA alone £24.5 million in insurance claims) do not distract from the broader picture of climate change and the costs associated with not just major weather events but the aggregate costs of the more minor effects of a changing UK climate. Although the changing UK climate is difficult to identify as the graph below shows, consensus is now forming that we are seeing steady warming of the UK climate above historical norms. In recent times we have started to see explicit evidence of this; out of the 8 years in the last 100 where England had an average temperature above 10.5 °C, not a single one of these years was prior to 1989 and indeed the 1990s was the hottest decade on record.



Source: Met Office Hadley Centre, Central England annual temperatures data set

AXA Insurance's own figures show that an average weather related insurance claim is around £8,000 and the occurrences of such claims are dramatically increasing. AXA believes if Government, industry and society as a whole are to have an informed debate about the prevention of and protection against climate change far more rigorous cost benefit analysis of climate change, for the UK must be performed.

The UK Office of Science and Technology in its recent report "Future Flooding" predicts that the annual costs of increased flooding due to climate change by 2080 to be in the region of £1.5 to £20 billion in real terms. The estimate range is wide. The estimate is understandably difficult to predict so far in advance but it also prevents a coherent response of what action to take against climate change. This in turn affects the projects we fund and how we invest in preventative versus protective measures.

The complexity of costing such scenarios regarding climate change should not be an argument for not doing so. Specifically the AXA Insurance research into climate change will aim to investigate the economic consequences of climate change for the UK with specific regard to:

- Physical damage to personal and commercial property through e.g.
  - Flood
  - Subsidence
  - Freezing
  - Wind

- Potentially rising insurance premiums
- Effects on Equity Markets
- Health costs

We will base our costings on a variety of different climate change scenarios created by institutions such as the Met Office Hadley Centre. I would however be keen to hear your views on the specifics of our costing process surrounding specific UK climate change as well as your broader views on this research project as a whole.

I look forward to hearing from you.

Yours sincerely

A handwritten signature in black ink, appearing to read 'P. Hubbard', with a large, sweeping flourish at the beginning.

**Peter Hubbard**  
**CEO AXA Insurance**