

Science & *the Public Affairs forum*

Climate change: its impact on UK business and the economy

18 March 2004

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Introduction

Climate change and its potential effects on business and the economy across the world often take second place in the media to the more immediately obvious environmental effects. It is important to remember that while we need to find solutions to the environmental problems, it is equally essential that we realise and prepare for the huge impact that these could have on the way businesses and the world economy function as a whole.

Climate change has the power to affect businesses and companies across the world, and even to change the dynamics of the global economy as we know it today. Members of the scientific community and representatives from organisations concerned with climate change met to discuss the issues surrounding the effect on business and the economy at a Science and Public Affairs forum, held at the Dana Centre in London on 18 March 2004. The forum was hosted by the BA and sponsored by the Met Office.

Speakers at the forum were Dr Andrew Dlugolecki from the Climate Research Unit at the University of East Anglia, Kay Jenkinson, Communications Manager for the United Kingdom Climate Impact Programme (UKCIP), and Jonathan Hearth, Marketing Director at the Met Office. The evening was chaired by the science journalist Vivien Parry.

Effect on business and the economy

In order to prepare for the changes that global warming could bring about, businesses need to know how the weather is going to change and how accurate these predictions are. For this information, businesses rely on environmental scientists who create models of conditions to help them predict the type of changes that will occur. These models can also take unlikely events, such as the switching off of the Gulf Stream, into account, in order to make the predictions as accurate as possible and to account for all possibilities.

Although there are some sceptics who question the evidence of climate change, statistics on weather conditions speak for themselves. Dr Andrew Dlugolecki introduced figures gathered over the last forty years which show a steady increase in temperature in the United Kingdom. In the 1960s, on average the United Kingdom saw one hot month per year (based on decile months, i.e. looking at the top 10% of temperatures historically). However, we are now seeing an increase to an average of 3.5 hot months per year. Conversely, the number of cold months has dwindled drastically. The position for wet weather and dry weather is more complicated. Thus businesses are already having to cope with climate change.

Kay Jenkinson raised the important fact that when talking about the effects of climate change, it is impossible to talk in terms of absolute figures or certainties. The best scientists can offer are very high probabilities of the weather changing – warmer, wetter winters and hotter, drier summers – but that doesn't necessarily mean there is a huge amount of doubt about it.

Organisations like UKCIP are trying to get businesses to think about how they might be affected by climate change, particularly an increase in temperature and rainfall, and the steps they can take to prepare for this. Businesses need to be aware that climate change will have different effects in the north of the United Kingdom to the south, and the type of weather they need to take into account will depend on the sector of business they are in.

Predicted weather changes for the United Kingdom are wetter, warmer winters and hotter, drier summers and we can expect to see more extreme weather events, such as storms. In some countries, such as the United States, there could be a decline in the number of hurricanes due to a reduction in the suitability of weather conditions needed for hurricanes to occur. Scientists' models also predict a rise in sea level, again resulting in more flooding, and an

increase in storm surge – a combination of tide, sea level and weather that can cause very major flooding events.

The causes of global warming, most predominantly greenhouse gases such as carbon dioxide, are almost universally agreed, but there are also other important factors that are thought to play their part.

A member of the audience who works for a long-range weather forecasting organisation pointed out the fact that the effect of the sun in terms of global warming is often ignored as being an important factor. Both the sun and also volcanoes do actually play their own part in climate change. Dr Dlugolecki agreed, volcanoes, particularly the very rare super-volcanoes, which are thought to be up to 10,000 times more powerful than normal volcanoes, could have a cataclysmic effect on the climate, with even the possibility of creating a nuclear winter where it would become abnormally dark and cold due to a layer of smoke and dust blocking the sun's rays.

Energy and water

In the United Kingdom, it is predicted that flash flooding will become more of an issue as rainfall becomes heavier, occurring in more severe events. Industries such as water and electricity suppliers will need to ensure that their systems can cope with the change in rainfall. Flash flooding can cause problems such as short-circuiting, resulting in power outages, so it will be essential for the water and electricity industries to ensure that their systems are safe and reliable. The change in rain distribution will also present new problems of water storage.

There is no doubt that climate change is going to have a huge impact on energy providers and also on the amount of energy needed and consumed. Although warmer winters will mean a decrease in heating bills, hotter summers will push the cost back up again when people begin switching on their air conditioning. The United States already experiences an energy surge during the summer months due to the increasing use of air conditioning systems.

This, in turn, will have a knock-on effect on the way we produce energy. With fossil fuels becoming scarcer the need to find more environmentally friendly methods of producing energy, such as solar, wind and water power, or geothermal energy will become ever more pressing. Dr Dlugolecki believes that the technology for renewable energy sources is already advanced enough to supply much of our requirements, but that it lacks support, in particular from the government, so as renewable energy is not always seen as a viable investment, whereas fossil and nuclear fuels are subsidised heavily in various ways.

It is important to bear in mind the impact that climate change can have on these non-renewable energy sources. In France, during a hot spell in August 2003, several of their nuclear power stations were forced to operate at a reduced capacity and some reactors had to stop working entirely due to a lack of cold water to cool fuel rods. Future energy technologies must anticipate, adapt and respond to the shifts in climate in order to remain productive and viable.

It was widely acknowledged at the forum that alternative forms of energy to fossil fuels must be found, as using fossil fuels contributes further to the problems of global warming.

A member of the forum audience pointed out that there is an increasing need to produce more energy to deal with the effects of global warming. We are faced with a situation causing more fuel consumption at a time when we it must be reduced. Jonathan Hearth from the Met Office pointed out, there is not a simple and straightforward answer to the question, "It's a huge issue for the energy producers and it's a huge issue for policy makers across the world."

Our economy is based on industries that rely on fossil fuels for energy. With the likelihood that oil will become very scarce within the next twenty to thirty years, Dr Dlugolecki believes that finding a replacement for oil should be a main priority, as the effects of this are likely to be seen before those of (advanced) global warming.

Insurance

For businesses like the insurance industry, climate change could have both positive and negative effects. Already certain sectors of industry have begun taking out newly designed types of insurance policies like weather derivatives and catastrophe bonds to cope with the developing effects of climate change. So with the new demands on insurance policies for risk transfer, insurance companies have the opportunity for more business.

This also means a change in the type of insurance businesses take out and also a change in the type of insurance policies available. There are already examples of policies being developed in order to fulfil changing customer demands. A chain of garden centres, for example, has already tapped into this possibility by taking out a policy which pays out if the spring sees more rainfall than average to counteract the negative effect the weather would have on their business.

The clothing industry too is one that will have to protect itself against profit loss due to weather. Already one clothing manufacturer is offering retailers a rebate on winter clothes if it turns out to be a mild season and they are unable to sell enough of their winter stock. The manufacturers are able to do this by taking out a weather derivative which will pay out if it is a mild winter.

A further issue for insurance companies will be the increase in flood and storm damage, and hotter, drier summers will mean more cases of subsidence. These will have a knock-on effect on the insurance industry and in turn the general public as new higher priced premiums will be required.

Insurance companies are more likely to suffer from the increase in extreme weather conditions. When Hurricane Andrew hit Florida in 1992 it caused 30 billion dollars' worth of damage, half of which was insured, thus causing several companies to go bankrupt as a result of making the payments. While individual storms cannot be attributed to climate change, this illustrates the potential risk that insurers face themselves.

Consumers

As is evident from the emergence of new insurance policies, whether the effects of climate change are positive or negative very much depends on the type of business you are in. Planning for climate change is important because the effects are already starting to happen. Some ski resorts in Scotland have already seen a dip in profits resulting from a lack of snow on the slopes, and some have even been forced to close completely. On the other hand, hotel resorts in the south of the United Kingdom may see an increase in business as the south coast gets warmer and drier.

The effects of climate change can be seen in clothing sales and everyday food purchases. One famous jumper manufacturer has already seen a drop in sales as the winters get warmer. The construction industry, and others whose work can be delayed by bad weather, will have to find ways of coping with the increased intensity of rainfall and more extreme weather events, either with preventative methods or by taking out new types of insurance, although they will also benefit from the absence of severe cold periods.

The financial sector has also begun to realise that global warming does not necessarily mean that business has to get worse, and that actually there is opportunity for profit. A Dutch bank

has already realised this potential and in 2003 it offered internet investors a higher rate of interest (7.5 %) if the summer turned out to be cooler than average but, only 2% if the summer was hot, this compares to the growing going rate of 3.3%.

The weather also has an effect on consumer trends, namely when people go shopping and what they go out to buy. Last summer during the extremely hot period, fewer people went out shopping. Interestingly the biggest variable with temperature in terms of product sold in the supermarkets is leg wax, closely followed by women's razors.

The Met Office provides weather forecasts to many such businesses, and it is in fact a very important part of their marketing. Jonathan Hearth said, "Our shopping habits are ruled very much by the weather and you do see a fall off in shopper volumes when the weather gets uncomfortable, either it gets very hot or very cold, and again when it's raining." Supermarkets are well aware of this variability and certainly subscribe to some sort of weather prediction service.

Businesses may also have to rethink the way we run our working lives. For example, is it eventually going to become too hot to work during the middle of the day as we currently do in the United Kingdom? Are we going to have to shift our working hours to accommodate the rise in temperature, thus having an effect on sales figures and customer access?

Agriculture

The further issue of how climate change is going to affect agriculture in the United Kingdom was also raised during the forum. Jonathan Hearth said, it is important that the agricultural community recognises and prepares for the fact that agricultural demographics will shift globally; different crops will have different sustainability in parts of the world which will change from how they are today.

The types of crops we grow in the United Kingdom will most likely change. We may see an increase in crops which are normally associated with warmer climates as the northern cold extremes retreat further north. Products which aren't currently grown in the UK, such as sunflowers, soya and more exotic vegetables like navy beans, could all provide new business for farmers.

A very important aspect of climate change that will directly alter agricultural methods is the distribution of rainfall. Although we can expect the same amount, at least in the United Kingdom, it will fall at different times of the year.

Kay Jenkinson pointed out, this is obviously going to mean changing the way we store water and the way it is irrigated, in particular to ensure that water can be stored for the summer months. However, increased dryness in the summer could affect the quality and yields of the crop due to an increase in drought and heat waves.

Politics

The need to alter our lives and the way we do business will in turn have an effect on government policies in key areas. New phenomena such as population dislocation will almost certainly influence current immigration policies. Population dislocation is very likely to happen as the world gradually gets hotter and drier and some areas become increasingly difficult to live in. The Mediterranean region, for example, is going to become increasingly uncomfortable to live in over the next thirty to forty years and cooler countries such as the United Kingdom may see an unprecedented increase in immigrants.

Jonathan Hearth commented upon the political aspects of climate change and said that as it becomes more and more accepted in the United Kingdom as a reality and starts to affect politics in a bigger sense, then shifts in the global economic model are going to appear. Issues like carbon trading, where every country is allowed to produce a certain amount of carbon dioxide which can be traded with other countries in exchange for renewable energy, will start to have an effect on companies and our trading models. Jonathan said, "I'm absolutely convinced that will happen, exactly when and in what direction I'm not sure."

In financial terms, the advent of Carbon trading has made the big financial markets accept that climate change is real. Carbon trading also has an important part to play in developing countries, "What I can see from a justice point of view, it's a very good thing. We are going to have to find a way of allowing the poorer countries to become rich without destroying the world by using fossil fuel themselves, and one of the ways is by giving them an entitlement to carbon which they can sell to us in exchange for renewable technology. So yes, Carbon trading is a very good way forward, to use man's desire for wealth for good, said Dr Dlugolecki."

Other issues

As well as environmental and economic effects, the change in the climate could also mean a change in our general health. The quality and type of food we eat, the water we drink and our homes are all dependent on our climate and weather. Some scientists have suggested that a warmer world will be a sicker world, and that we may see the emergence of some conditions and diseases which we are not really experiencing today.

The need to rethink the way we design buildings was also raised at the forum, such as houses needing to be sturdier to cope with increasing storms. But for companies to be able to think about what they might need to do, they need to have access to information about the weather. Jonathan Hearth pointed out that most of the data about weather prediction is actually available free of charge as most of it is funded for the Department for the Environment, Food and Rural Affairs.

Some suggested solutions to the problem of global warming have often seemed futuristic in nature, such as burying the excess carbon dioxide that we produce deep under the sea in oil wells, for example, or disused coal mines, or using giant mirrors to deflect the sun's rays from the Earth, but, as Dr Andrew Dlugolecki stated, these methods are highly expensive and do not offer a guaranteed solution which is free from financial risk.

Conclusion

Climate change is going to have a significant effect on most businesses, whether it is positive or negative, even if they are not directly affected by environmental factors. They may be indirectly affected in their supply chain, transportation, or their consumer market.

It is important that businesses realise the need to plan for climate change and that they have the resources and knowledge to do so and access to the relevant information. Organisations, such as the United Kingdom Climate Impact Programme were set up in order to fulfil this function and are currently working with a number of business stakeholders.