Climate Risk: More than Just the Weather

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As far as we know, the world's climate has always varied from year to year and decade to decade. Today, however, anthropogenic forces are at work causing rapid changes. Because these changes are man-made, we, as a society, have choices to make on how to control them. We also need to adapt to the changes that are already locked-in.

The markets are very focused on carbon emissions—quantifying them, reducing them, investing in them, and investing in the reduction of them. The adage of one London trader—that "greed got us into this mess, and greed will get us out"—is being used to good effect to bring forth a wide range of financial tools across the industry.

While the markets have cried out for global regulations that would enable them to thrive, they still await policies that would set the price for a tonne of carbon and pave the way for the future carbon economy.

The fact that some level of climate change is now inevitable is another critical factor that currently seems peripheral to mainstream thinking, but will become more central. Part of this inevitability is simply due to the laws of physics: the Earth takes time to respond fully to a change in greenhouse gas concentrations, so we are still "catching up" with the increased concentrations emitted over the twentieth century. Even if greenhouse gas emissions (GHG) ceased today, the world would continue to warm for a few decades before the warming levelled off and eventually began to subside. But with no binding agreement on emissions cuts at Copenhagen, emissions seem set to continue rising until such an agreement can eventually be achieved and enforced. The time when global temperatures cease to rise from man's influence, therefore, seems increasingly further away.

Betts, Richard A. and Matthew Huddleston, *Journal of Environmental Investing* 1, no. 1 (2010).

With additional changes already in the pipeline, there is a global need to adapt—to become weather- and climate-resilient. Those who plan ahead will be able to minimize damages and exploit opportunities; in competitive fields, those who act first will gain a competitive advantage in the market. Adaptation is inherently local; mitigation actions are necessarily global. This means all have an opportunity to contribute and the question then becomes, "What should be done?"

In an ideal world, adaptation plans would be based on robust forecasts of the impacts of climate change on a specific activity in a specific place at a specific time. For example, a decision on siting a new piece of infrastructure such as a dam or power station would take into account the climate changes projected for that site over the lifetime of the investment (*i.e.*, several decades or beyond). In the nearer term, a commodity trader may wish to know which crops will do well and which will fail in the coming season or next few years.

The picture is nuanced and intertwined. Take the need for cool water for nuclear power stations. France had to curtail the output of a number of nuclear power stations in the extreme summer of 2003 due to environmental regulations and low river water levels. Another example is the siting of wind farms using two years of wind observations, when even 50 years of data may be insufficient if climate changes the patterns of wind, rendering the wind farm ineffectual. These examples show the emerging impact of weather and climate on carbon- and climate-friendly technologies and suggest that changes in weather, being far from certain at local levels, may still have surprises in store and bring massive impacts on our societies as we search to adapt to become a planet-nurturing and resilient society.

These kinds of questions are demanding and driving new science that goes past current limitations to predict both man-made and natural variations over the near term, say the next ten years, or the lifetime of a CEO, or a politician's term of office. They also demand that we predict the impacts of climate change, not just the weather. It is clear that useful insight can be gained even with this aspect of the science in its infancy. From an investor's point of view, intelligence on climate risks becomes one additional—but essential—factor in the portfolio of risks to be taken into consideration in investment decisions.

Biographies

Dr. Richard Betts leads the climate impacts research team and climate change consultancy team in the Met Office Hadley Centre. He has worked in climate science for 17 years and made a number of key advances in climate modeling. His particular research interests focus on assessing the impacts of climate change on ecosystems, and the impacts of deforestation and afforestation on climate. He was a lead author on the both the IPCC Fourth Assessment Report and the Millennium Ecosystem Assessment, and contributed as a peer-reviewer to the *Stern Review on the Economics of Climate Change*.

Combining expeditions to both the Arctic and Antarctic with a degree in laser Physics, Matt Huddleston gained a PhD in Polar climate modeling from the Scott Polar Research Institute, Cambridge, in 1998. Matt then joined the Met Office Hadley Centre, developing climate prediction models for global seasonal and climate forecasting. His research interests include long-range forecasting of Atlantic hurricanes and assessing what is 'normal' in our changing climate.

His research team's work hit the headlines in September 2005 with the Met Office's first UK winter forecast. Since then, as part of Met Office Consulting, Matt has been working closely with the commercial world including the insurance, energy and finance industries.

He recently lead a team to update projections of the financial impacts of climate change on major perils for the Association of British Insurers with AIR Worldwide and has authored reports on UK adaptation for the Confederation of British Industry (CBI) Task Force on Climate Change and on African economies under a changing climate for Barclays bank.