



DR. JOHN LLEWELLYN, Senior Economic Policy Advisor for Europe, Lehman Brothers

## INTERVIEW: JOHN LLEWELLYN

Our third "Notable Expert", Dr. John Llewellyn, is internationally acclaimed on the all-consuming subject of Climate Change. Here, IDEAS shares what Dr. Llewellyn had presented at IE Business School earlier this year.

Earlier this year, Dr. John Llewellyn, Lehman Brothers' Senior Economic Policy Advisor, was at IE Business School to speak to both the Aula de Dirigentes and Global MBA students about *Climate Change*.

A New Zealander, Dr. Llewellyn received his undergraduate degree at the Victoria University of Wellington, N.Z., and his Doctorate at the University of Oxford. From 1970-74, he held several positions in research (Economics and related subjects) at the University of Cambridge. He then spent 17 years at the Organisation for Economic Cooperation and Development (OECD) in Paris. In 1995, he joined Lehman Brothers as Global Chief Economist, through 2006.

Dr. Llewellyn has published on a number of academic subjects in economics, and on a wide range of other topics. In February 2007 Lehman Brothers published his report *The Business of Climate Change: Challenges and Opportunities*.

He is a member of the:

- President of the European Commission's Group of Economic Policy Analysis;

- Council of Chatham House;
- Council of the Society of Business Economists;
- U.K. Dept. of Trade & Industry Secretary of State's Panel on Monitoring the Economy.

### What consequences are we seeing now, due to rising temperatures?

There is a range of consequences, including:

- Shrinking of glaciers, and the enlargement, and increased number, of glacial lakes;
- Increasing ground instability in permafrost regions;
- Later freezing, and earlier break-up, of river and lake ice;
- Lengthening of high-latitude growing seasons;
- Earlier timing of spring events, such as leaf-unfolding, bird migration, and egg-laying; and
- Declines in some plant and animal populations.

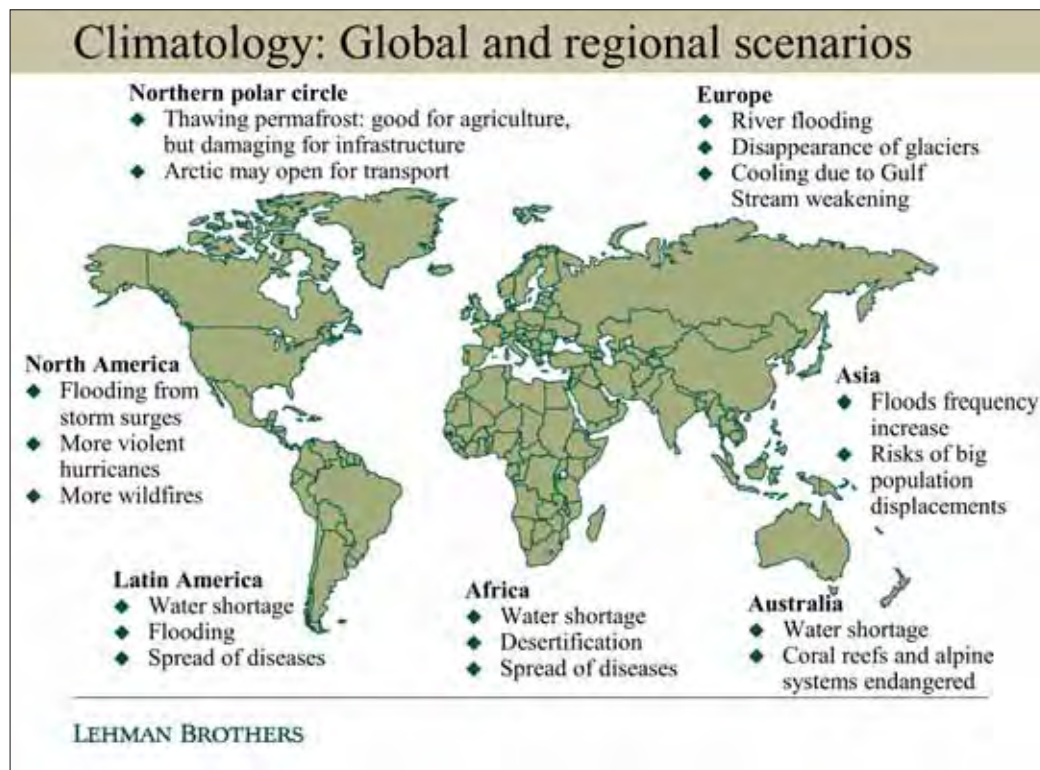
Two particularly striking statistics are that Greenland is losing

around 20% more mass each year than it receives from new snowfalls; and that the Arctic perennial sea ice declined in area by 720,000 square kilometres between 2004 and 2005 - approximately the area of Texas.

### Are the effects the same globally? Or do they vary by countries / regions?

The effects differ considerably, by region and by county. Climate models suggest that regions most at risk include, importantly: Africa (water shortage, desertification, spread of diseases); and Asia (increasing frequency of floods). Europe, given the number of its cities that are at river mouths, is likely to be affected importantly by rising sea levels, and the United States perhaps by storm surges. Conversely some regions, such as parts of Russia and Canada, may benefit, for example from increased productivity of agricultural land, and easier sea communications.

The Intergovernmental Panel on Climate Change (Fourth Assessment Report, Working Group I, the Scientific Basis), judges that, because of its location in the Mediterranean region, Spain is



very likely (with a higher than 90% probability) to face an increase in average temperature, especially in summer. Summer drought is likely (with a higher than 66% probability) to increase, and annual precipitation too is very likely to decrease.

**Why does the pollution problem arise? What is the "polluter pays" principle?**

Most pollution occurs because the polluter does not have to pay for the damage his actions impose on other parties. Greenhouse gas emissions, and hence climate change, are thus a typical case of what economists call an "economic externality": the emission of greenhouse gases imposes costs on present and future generations, yet these costs are not paid by those who are responsible for the emissions.

Greenhouse gases: atmospheric gases which contribute to the greenhouse effect, the process whereby infrared radiation emitted by Earth, is trapped in the atmosphere and re-radiated back down on to Earth's surface. Examples of greenhouse gases include carbon dioxide, methane, ozone, and water vapour.

Because the free market thus fails to limit climate-damaging emissions sufficiently, it has long been recognised - since the days of A.C. Pigou (English economist, 1877-1959), in the 1920s - that a proper role of policy is to "internalise" those costs into emitters' cost structures. This recognition is the basis of the modern *polluter pays* principle, developed by the Organisation for Economic Cooperation and Development (OECD) whereby the polluter pays for the costs he/she imposes on society.

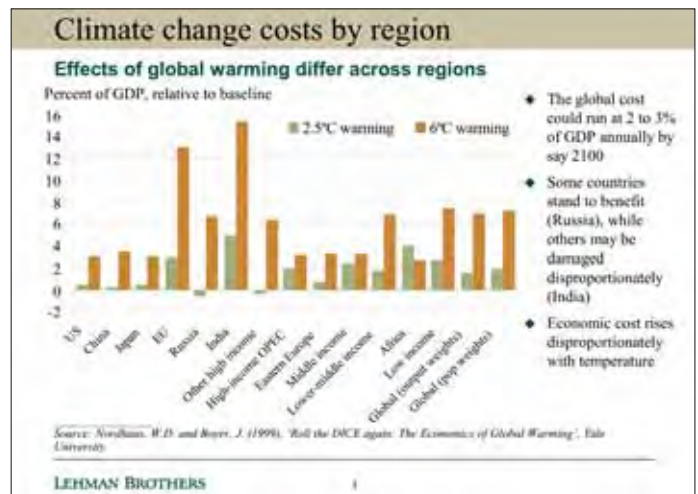
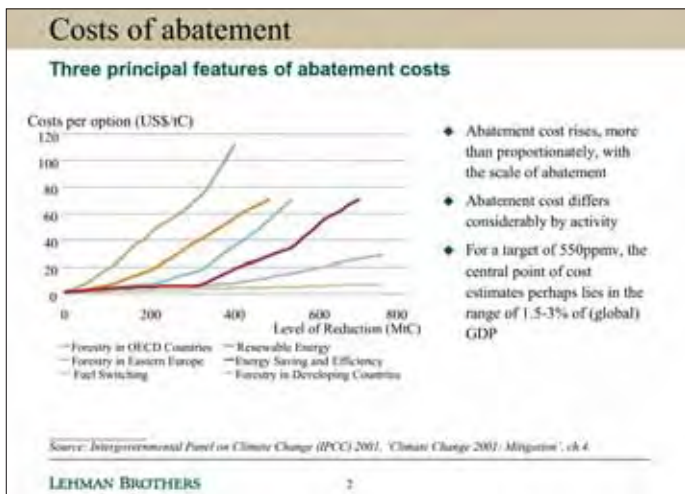
**What is required to achieve an optimal abatement policy?**

To the extent that climate change can be regarded as an economic issue, then the task of policy is to internalise those costs into emitters' cost structures. And this requires policies be implemented: not arbitrarily, but in such a way as to use resources as productively and efficiently as possible. The technique of cost-benefit analysis, when applied to this question, stipulates that abatement should take place up to the point where incremental benefits of emission reduction (i.e. the damage is avoided) just equal the incremental cost of achieving it.

Thus, in principle, the optimal price and the optimal abatement level are determined simultaneously. This optimal abatement policy can be achieved by taxing carbon emissions, by issuing volume permits and trading them, or by implementing more complex hybrid instruments. But, whatever the precise form that the instrument takes, the price mechanism is central to all policies that seek to achieve their ends at the lowest possible resource cost.

**What are the prospects for international cooperation?**

There are a number of hurdles to international cooperation. Climate change gives rise to the *free-rider* issue, whereby countries may be tempted to sign up but then not to cooperate, and wait for the other countries to take action from which the free-rider benefits. However, the importance of this problem should not be overstated: it is an inherent risk in all international agreements, and many ways have been developed over the years to ensure that countries live up to their obligations. Moreover, some international cooperation on climate change has already taken place - the



European Emissions Trading System is a particularly important case in point.

However, it is also the case that a number of the big polluters are still missing from the international cooperation scene, most notably the United States, China, and India. All that said, we are not particularly pessimistic: we reckon that, within five years, there is a fifty percent chance that some sort of international agreement will be in place to limit greenhouse gas emissions. Perhaps that will take the form of a global emissions trading scheme, though more likely it will be a more complex web involving regulations and standards policies as well.

**What are the opportunities and challenges for sectors? Pls provide some examples.**

Climate change can be likened to globalisation, technical change, or population ageing: a slow but powerful force that inexorably changes the economic landscape in which firms operate.

Businesses are likely to be affected both by climate change itself and, even more immediately, by policies to address it, through exposure: regulatory, physical,

competitive, and reputational. Many - perhaps most - sectors are likely to be particularly affected, including for example:

- Automobile: at risk of regulations in Europe (potential emission target of 120g/km by 2012). To meet objectives of further reductions in emissions, various hybrid and other technologies continue to develop;
- Utility: plants in some regions are likely to be put at risk by extreme weather events, but there are also manifold business opportunities in new energy sources, such as nuclear and renewables;
- Insurance: unpredictability of physical climate change consequences makes it difficult for insurers to price insurance risk accurately, but new instruments and assessment techniques are being developed; and,
- Supermarkets: the reputational risks can be important, but also present opportunities - chains have been trying to "out-green" each other, and to show how they cut down on carbon emissions. In the process, some have been able to cut their costs much more than they had expected.

**And the implications at company level? What are the determining factors?**

The ultimate consequences of climate change, as with almost any change, are manifested at the level of the consumer and the firm. In the environment of perpetual change in which we all live and operate, the firms that prosper are those with the best management practices. In a climate-changed world those that will prosper will tend to be the ones that: early to recognise its importance and inexorability; foresee at least some implications for their industry; and take appropriate steps well in advance.

Applicable across scenarios, good management practices which may help firms to prosper are likely to include:

1. Inculcating in management a constructive culture of adaptation to a changing economic landscape;
2. Encouraging employees to embrace change, and equipping them to do so;
3. Undertaking the requisite R&D;
4. Translating this R&D into appropriate investment in physical and human capital.

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