

**Nigel Lawson, *An appeal to reason, a cool look at global warming: A critique***

( This is a longer version of Sir John Houghton's Review published by *Nature* online Reports on 20th June 2008,  
[www.nature.com/climate/2008/0807/full/climate.2008.60.html](http://www.nature.com/climate/2008/0807/full/climate.2008.60.html) )

I found Nigel Lawson's book neither cool nor rational. It possesses little of the 'rare breath of intellectual rigour' or the 'hard headed examination of the realities' as promised by Anthony Jay on the back cover. Let me explain why.

Early in the book, showing a surprising ignorance of elementary statistical analysis, much is made of the record of global average temperature in the first seven years of this century. Taken by themselves they show no significant increase. Therefore, it is argued the scientists must have it wrong. But even a casual inspection of the global average temperature record from 1970 shows two things: first a clear increasing trend of about 0.5 °C over the whole period and secondly, a substantial year to year variability of the kind that is well known to climatologists. The latest years are not unusual compared with the rest of the period. In fact, the seven 21<sup>st</sup> century years to 2007 are on average warmer by 0.09 °C than the last seven years of the 20<sup>th</sup> century – even though 1998 holds the overall record. Further, recent scientific understanding connects a good proportion of the interannual variability to phases of the El Niño/La Niña phenomenon, a regular feature of the Pacific climate<sup>1</sup>.

There are three particularly misleading messages emerging from Lawson's book. The first is his questioning of the reality of anthropogenic global warming itself. The 2007 IPCC Fourth Assessment Report devotes a substantial part to a thorough analysis of the 20<sup>th</sup> century climate record that supports its carefully worded conclusion that, "*most of the observed increase in globally averaged temperatures since the mid 20<sup>th</sup> century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations*". Lawson throws doubt on this conclusion, not with any analysis of his own, but just by listing some of the sources of uncertainty that are in any case thoroughly addressed by the IPCC. Indeed one of the greatest strengths of the IPCC is its proper assessment of the uncertainties. The report also addresses in-depth the climate influence of anthropogenic aerosols (e.g. sulphate particles), especially in their cooling of the Earth during the mid years of the 20<sup>th</sup> century. Lawson dismisses this aerosol work as 'pure speculation', again without providing evidence or analysis to support such a dismissive statement. I can only conclude that he has not actually read the IPCC reports.

The second misleading message in the book concerns the impacts of climate change this 21<sup>st</sup> century. Lawson trivialises the rise in global average temperature, of say 3 degrees, and the associated rate of rise, failing to realise how substantial it is in

climate change terms. For instance, the difference in global average between the middle of an ice age and the warm periods in between ice ages is only 5 or 6 degrees – so an increase of 3 degrees is about half an ice age in climate change terms. During ice age periods that amount of change took place over many millennia; now it will occur over a century or less. It is to this rate of change that many ecosystems and humans will find it extremely difficult to adapt.

Lawson points out that some will benefit from climate change – as does the IPCC. However the IPCC also concludes categorically that the adverse impacts much outweigh the beneficial ones. The most critical impacts come from the robust result of the IPCC concerning changes in rainfall patterns, water availability and increases in the number and average severity of floods and droughts. These, although extensively covered in the IPCC volumes, are completely ignored by Lawson. He points out correctly that climate variability is such that damage from an individual flood or drought taken in isolation cannot be laid at the door of global warming. But, floods and droughts cause on average more deaths, more misery and greater economic loss than any other disasters – so their increasing trend is bad news especially for those in the most vulnerable parts of the world. Estimates of the costs of the damage of global warming in the Stern Review allow to some extent for these increases in floods and droughts, although I believe probably not adequately. Partly because until recently few quantitative estimates of increased risk were available<sup>ii</sup> and partly because much of the damage, for instance due to droughts, is not easy to express in monetary terms.

Lawson also trivialises the sea-level rise much of which comes with warming of the ocean – water expands as it is heated. It will take centuries for increased temperature to penetrate to the whole ocean, so the rise in sea level will continue far into the future even if surface warming were halted. Because of the ocean's structure and movement, the rise is not the same everywhere; in some places it is small or even negative, but the average total rise of sea level quoted by the IPCC of up to 60 cm this century (this does not include any rise due to accelerated melting of the Greenland or West Antarctic ice sheets), is enough to create major problems for many low lying regions. For instance, amongst the many seriously affected around the world would be the 10 million or so who live and farm below the 1 metre contour in the delta region of Bangladesh, around 25 million similarly placed in southern China and many in other delta regions around the world or in the low-lying islands of the Indian and Pacific oceans.

I have only mentioned some of the more serious adverse impacts. But considering both climate extremes and sea level rise, there is likely to be pressure from hundreds of millions of refugees from the parts of the world most affected. Where could those

people go in our increasingly crowded world? Lawson denies there is any problem. He repeats a number of times his summary of the damage as the difference between people in the developing world being 8.5 times better off than they are now compared with 9.5 times that they would be in the absence of global warming. Slight of hand with gross numbers of possible economic growth must not be allowed to hide the magnitude of the very real problems. Many millions of people will suffer loss of resources, loss of livelihoods and loss of land when a proper analysis of the impacts of global warming is made. When I lecture about climate change, I emphasise these substantial near-term problems that are very likely to occur rather than the possible longer term events about which we know much less, such as changes in the ocean circulation or the release of methane from under the ice or the ocean – although in due course they may well become only too real.

The third misleading message concerns the need for, and the cost of, mitigation. The Objective of the Framework Convention on Climate Change (FCCC) agreed by all world governments at the Earth Summit in Rio de Janeiro in 1992 is to stabilize the concentration of greenhouse gases (i.e. especially carbon dioxide) in the atmosphere and thereby slow and eventually stop climate change – within the overall context of sustainable development. To achieve stabilization this century, emissions of greenhouse gases have to be reduced by a substantial amount from today's levels by mid-century. Because carbon dioxide emitted into the atmosphere remains there on average for around 100 years, there is an urgent need to begin emissions reductions now. Lawson writes about this being difficult, inconvenient and very costly. Regarding difficulty, both the International Energy Agency and the Shell company have recently presented scenarios of changes in energy generation and use by 2050 that could move substantially towards the stabilization required. The largest hurdle is finding the will and determination to do it. But how big is the cost? The Stern Review indicates, supported by the IPCC, a few percent of loss of GDP at most by 2050 and argues that this will be much less than the cost of doing nothing. Of particular importance in both scenarios is progressing as quickly as possible the installation of carbon capture and storage (CCS) associated with coal fired power stations whether in China or in the USA.

Lawson rightly points out that mitigation must involve all nations, both developed and developing. But the rich, developed world has a particular responsibility. We have already benefited over many generations from abundant fossil fuel energy. Only recently have we realised the damage it is causing, damage that falls disproportionately on the poorer nations. There is therefore a strong moral imperative for us to do everything we can to reduce our carbon emissions while also sharing our wealth and our skills with poorer nations to assist them in developing sustainably.

In the later part of the book, when writing about energy policy, Lawson begins to leave invective behind and write more comfortably and analytically. Here I found myself agreeing with some of his arguments, for instance those advocating taxation as opposed to carbon trading. But I question his discussion of what discounting rate is appropriate when calculating the cost of future investment for the mitigation of global warming. The distinguished economist Partha Dasgupta has pointed out that the negative perturbations of carbon emissions on future economies threaten the basis on which discount rates for future investment are set<sup>iii</sup> – a point that adds strength to the arguments in the Stern Review for applying a low or zero discount rate. Further, we are faced not just with a judgement of how much in principle we should spend now to avoid damage in the future, but addressing how the energy industries of the world can overcome their system's inertia and turn around in time to meet the targets that the international community is likely to set.

At the end of the book, Lawson, with rhetorical flourishes, addresses those of us who see more than a 'grain of truth' in global warming and wish to take responsible action towards its mitigation. He lumps us together with a motley mixture of those he labels as eco-fundamentalists or anti-globalization lobbyists. All of us are connected with what he calls a 'mountain of nonsense' for which it appears the IPCC is responsible. May I urge Lord Lawson to espouse himself the cool reason and rigour for which he appears to be campaigning and respectfully suggest that he might begin with a course of reading of the IPCC documentation.

Sir John Houghton CBE, FRS, Honorary Scientist Met Office Hadley Centre

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<sup>i</sup> D Smith et al, Improved Surface Temperature Prediction for the Coming Decade from a Global Climate Model, *Science*, **317**, 796-799, 2007

<sup>ii</sup> Examples of estimates of risk can be found for floods in T. N. Palmer and J. Raisanen, 2002, *Nature* **415**, pp 512-514, and for droughts in E. J. Burke et al, 2006, *J. Hydrometeorology*, **7**, pp 1113-1125.

<sup>iii</sup> P Dasgupta, *Human Well-Being and the Natural Environment*, OUP, 2001 page184, see also W. D. Nordhaus, 2007, A Review of the Stern Review on the Economics of Climate Change, *Journal of Economic Literature*, **45**, pp 686-702, for a discussion of the basis for applying discount rates in the context of global warming.