

THE TIPPING POINT: Inevitable or Avoidable? **Prof Peter F Smith, University of Nottingham**

There has been much loose talk recently about tipping points. It has almost achieved cliché status like ‘sustainable development’. There is still life in the concept if it is defined as the point at which there will be a step change in the rate of global warming so that it would soon become irreversible. The scientific consensus is that it will be crossed when the concentration of CO₂ in the atmosphere exceeds 450 parts per million by volume (ppm) and *not* the politically corrected 550 ppm. It is said to mark the point at which the average global temperature will have risen by 2 deg C beyond which there are huge climate change uncertainties. At the present rate of annual net increase of 3ppm and rising, this places the tipping point date at between 2015 and 2020.

There are good reasons for believing that the tipping point will be crossed. Here is a summary.

Rising energy demand

- 1) Expansion in air travel and economic growth in India, China and Brazil as the vanguard are causing the rate of CO₂ emissions to increase. The dependency of the developed countries on oil for transport will not diminish. The US especially will not be able or willing to reduce transport related emissions. The rapid growth of economic muscle in developing countries is exemplified by the Indian steel company Tata’s takeover of Corus. Economic growth in developing countries will continue to be fuelled by oil and gas for the foreseeable future. India is constructing the world’s largest oil refinery, mainly to serve the US.

2) Globalization of trade.

This is aimed at committing the world to free market economics. The drivers of the world economy are not consumers but stock exchanges. London, New York and Tokyo are the real centres of denial of global warming effects. The prime mechanism in the market is the share price which is not sensitive to climate change impacts. Driving up share price is more important to transnational corporations than driving up global warming. Only when climate change directly impacts the bottom line and therefore share price will major corporations change their habits.

The transformation in trading happened in October 1986 with the so-called Big Bang when the UK Stock Exchange was deregulated. Before this event, the FTSE100 valued these companies in total at £92bn. Today, just one banking member is valued at £116bn never mind the other 99. The effect of this is to make the UK an increasingly divided nation, with a typical chief executive earning 86 times more than a typical employee. Oliver James attributes this to the spread of the virus ‘affluenza’ under New Labour summed up by Peter Mandelson in 1997: “we are seriously relaxed about people becoming very, very rich” (quoted by James, *The Guardian* 23 Oct 2006). Labour politicians

must now be very very relaxed. Labour has come a long way since its origins in the teachings of John Wesley. This income bi-polarisation is also happening in France and the US, even though, in the case of the latter, the trade deficit is \$800bn, a quarter of which is with China.

The situation is exacerbated by the changing flow pattern of global investment. Now billions are moving *between* developing countries, especially between China and Africa – the new ‘silk road’. China is working vigorously to sweep up natural resources, especially oil from Africa. Investment emanating from the developing world has risen from \$4 billion in 1985 to \$61 billion in 2004. (UNCAD)

3) **Carbon trading**

is seen as the answer. Current evidence is that the industrial sector has succeeded in driving down the international market price of carbon to the point where it is virtually useless in cutting CO₂ emissions. In principle carbon trading is reasonable for the short term, provided it is not manipulated to their advantage by big corporations. At present, the carbon trading regime is totally undermined by exemptions claimed by the biggest polluters.

The message coming through is that the threats from climate change are not taken seriously enough for there to be an international consensus to bring about radical CO₂ abatement policies. Even individual countries are mostly failing to address the problem of rising emissions, not least the UK where emissions are said to be 4.4% higher than when Labour came to power. The 2006 Energy Review merely exacerbated the problem. It acknowledged that the UK would not meet its emissions targets without nuclear, but did almost nothing to address the problem of the reluctance of the market to fund a new generation of plants.

Nor did it consider the problem of the limited reserves of high grade uranium ore due to be rapidly consumed by the 68 nuclear plants planned worldwide over the next 13 years. There are good reserves of low grade ores but the energy cost of milling up to 10,000 tonnes of rock to liberate 1000 tonnes of uranium would place nuclear’s energy balance firmly in the red. What the Review did do was reaffirm the commitment to focus on wind power to meet 75% of its renewables target for 2020, despite the catalogue of problems that has so far blighted the wind-power programme.

A report by Dieter Helm of Oxford University for the Social Market Foundation (23 Oct 2006) claims that ‘The Review provides little by way of concrete policy proposals and it is unclear as to whether it is pro-nuclear’. The report concludes that the market will not be attracted down the nuclear route unless the price of carbon on the international trading market is sufficient to offer an adequate incentive. The Review failed to offer any hope of an appropriate price for carbon. Finally the report accuses ministers of being ‘naïve’ in expecting energy markets to create a secure supply stream in a world of expensive oil and declining UK reserves. Add to these the spectre of

predatory energy giants like Gazprom and the outlook for UK security of supply must cause deep anxiety behind the mask of complacency.

The probability is that, for the UK, the problems of securing sufficient energy following the decline of its offshore oil and gas reserves and the demise of the present generation of nuclear plants and obsolete coal-fired plants will overtake the problems posed by accelerating climate change. The UK is not alone in this respect. Ironically the self-interest of all the developed countries in respect of energy security may achieve more rapid reductions in CO₂ emissions than realizing binding international agreements to cut carbon by the 80% needed to prevent ultimate irreversible climate change. Whilst conventional oil reserves, for example, may not be effectively exhausted until about 2040, the volatility of price and the uncertainty of supplies from unstable countries should inspire a radical shift to near-carbon-neutral energy sources within the next decade. This is not just an economic necessity but also essential if the tipping point is not to be crossed.

Recent research adds further weight to the tipping point hypothesis. Whilst the average global temperature is steadily increasing, the rate rise is not so steady in Arctic and sub-Arctic regions of Siberian and North America. Here global warming is happening three times faster than the global average. Siberian bogs are releasing methane five times faster than predicted. It is estimated that 450 billion tonnes of methane and CO₂ are locked in the world's permafrost. Methane has 23 times the potency of CO₂ as a greenhouse gas. The implication is that Siberia and North America could trigger regional runaway climate change much sooner than expected. This would quickly cascade across the planet as positive feedback systems increasingly feed off each other.

It is the ultimate irony that the world is increasingly under the sway of corporate avarice across continental boundaries at exactly the time it should be collectively diverting the profits of economic growth to combating global warming and widespread ecological collapse. This is a world war which calls for politicians to come out of their money-induced trance and take concerted action to introduce the post fossil energy economy long before reserves run dry. Only this will avoid the doomsday scenario of a 13 degree C rise in average global temperature which would be the consequence of burning fossil fuels to extinction.

For the UK this will be particularly difficult, since it squandered the revenues from its offshore oil and gas assets. Other countries have diverted profits into a contingency fund to finance alternative energy systems. Norway, for example, created an 'oil legacy fund' in the latter 1990s which now stands at £112bn. On the other hand the UK is especially fortunate in opportunities for renewable technologies that deliver predictable power in gigawatt quantities. This is especially true of the marine potential unique to the UK. All it now needs is the politicians with the muscle and courage to bully the bureaucrats across the ministries into urgent action. So, is the tipping point avoidable? Certainly, provided the age of miracles isn't over.