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COMMUNICATION

Reconciling growing energy demand with climate change management

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Introduction

More than two billion people in India and China are only now emerging from a life of drudgery and abject poverty.[1] A billion more across sub-Saharan Africa, Latin America and other parts of Asia look set to join them over the next decades. This should be a cause for celebration. Instead, much of the contemporary discussion relating to energy needs and climate change portray these trends as a major problem.

The 2009 United Nations Climate Change Conference in Copenhagen[2] was hailed in advance as reflecting an 'overwhelming scientific consensus' on the assumed problem of a link between carbon emissions and climate change, as well as on what needed to be done about it.[3] But instead of agreement there was discord between the developed and the developing nations. The former argued that the latter should monitor and restrain their growth as they view with a growing sense of alarm the possibility of every Indian and Chinese person expecting Western lifestyles. They pointed to China now being the second largest producer of carbon emissions on earth.

From the perspective of the developing countries, however, as expressed by the Indian premier, Manmohan Singh,[4] their growth and development is to meet internal needs and demands, as well as simply to catch up with the West. Their view is that the advanced capitalist countries had the benefit of industrialising first – thereby releasing into the atmosphere the carbon that is now considered to be a problem. Accordingly, it should be for those countries to lead the way in cutting back on emissions. And anyway, in terms of per capita emissions, it is these developed Western countries that remain the single largest polluters.

It appears, then, that the debate over how to meet growing energy demands and manage climate change has reached an impasse. It is difficult to see how, within the current framework, the different perspectives of developed and developing countries can ever be reconciled or resolved.

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1 See, for example, Kishore Mahbubani, *The New Asian Hemisphere: The Irresistible Shift of Global Power to the East* (New York: Public Affairs, 2008).
2 Details available at: http://unfccc.int/meetings/cop_15/items/5257.php (accessed December 9, 2010).
3 See, for example, the 'G8 + 5 Academies' joint statement' on the matter issued in May 2009 and available at http://www.nationalacademies.org/includes/G8+5energy-climate09.pdf (accessed December 9, 2010).
4 http://www.indianembassy.org/India_Review/2010/Jan%202010.pdf (accessed December 9, 2010).

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Confusion

This 15th 'Conference of the Parties' to the United Nations Framework on Climate Change – or COP15 – led to the Copenhagen Accord,[5] that required the developing nations, including India and China, to accept non-mandatory monitoring of their carbon emissions, along with attempts to implement measures to curb these over the forthcoming period. It was a missed opportunity to argue for an entirely different approach to that currently advocated – that is to pursue growth rather than to curtail it.

The current debate about the supposed links between energy demands and climate change is extremely confused. Much of the effort by governments, as well as propaganda campaigns by non-governmental organisations (although many of these are actually government-organised NGOs) have been focused on encouraging ordinary people to curb their consumption of energy.

Accordingly, the dominant paradigm is one that highlights reducing demand through such measures as raising 'awareness', carbon allowances and smart meters, as well as encouraging localised micro-generation. But the single clearest area where efficiencies could be achieved on a sufficient scale to make a real difference is in the area of production. After all, carbon – assuming it to be polluting at all – is produced there, at the point of production, not at the point of consumption.

There is no necessary link at all between curbing consumption demands and improving production efficiencies. In fact, the reverse is more likely, as any research and development required to achieve such changes in production in the medium to long term are probably going to lead to an increased use of energy in the short term.

And, anyway, it is not clear that reducing energy use is achievable, let alone desirable. Human civilization has advanced alongside, and through, increasing levels of energy consumption. Even when energy is produced more efficiently, the result has usually been to require more of it. In fact, today the biggest energy-related threat to most societies is that of not having enough.

But holding back, for fear of running out, could readily become a self-fulfilling prophecy. After all, developing new energy sources requires using energy now.

Fashion

Of course, nowadays conspicuous displays of energy and environmental 'awareness' have become *de rigueur*, particularly among the so-called chattering classes.

Famously, the Toyota Prius became one of the best-selling fuel hybrid cars, not because of its supposed ecological impact alone, but rather because of its different design that advertised its supposed environmental correctness to its neighbours. Honda had long had a hybrid car on the market when the Prius came out but, as it was the same design as the existing Honda Civic, few among the self-consciously ethically aware deigned to purchase it. It did not come with a message.[6]

In a similar fashion, the media made much of the then Opposition leader, David Cameron, installing a windmill to generate electricity on his London home in 2007. According to some sources, the design – a StealthGen D400 by Eclectic Energy – might just have been sufficient to power the lights in his bathroom . . . when the wind was blowing.[7] Not to be outdone, the then

5 The *Accord* itself is available at http://www.denmark.dk/NR/rdonlyres/C41B62AB-4688-4ACE-BB7B-F6D2C8AAEC20/0/copenhagen_accord.pdf (accessed December 9, 2010).

6 Keith Naughton, 'A Case of Prius Envy', *Newsweek*, September 3, 2007, http://www.newsweek.com/2007/09/02/a-case-of-prius-envy.html (accessed December 9, 2010).

7 See 'Green Cameron's Wind Turbine that will take 40 Years to Pay for Itself', http://www.dailymail.co.uk/news/article-395311/Green-Camerons-wind-turbine-40-years-pay-itself.html (accessed December 9, 2010).

Prime Minister, Gordon Brown, let it be known that he had long had solar panels installed on his own house too . . . in Scotland, where the sun rarely shines, and at a home he hardly occupied due to the demands of his job in Westminster.[8]

Such statement-making by public figures is part of a growing trend today of conspicuously displaying one's 'awareness' of major issues through what are largely futile gestures that may indeed cost more overall. They are the more visible element of what some have described as a morality of low expectations,[9] a self-limiting acceptance of the world as it is assumed to be, rather than an attempt to transcend and transform it for the benefit of humanity.

This reveals another confusion – over what a resource actually is. It is a common refrain nowadays to suggest that resources are not limitless and that fossil fuels in particular are likely to run out in the not-too-distant future.[10]

But to accept this view is to fail to understand the meaning of the word 'resource'. Four hundred years ago, bauxite was not seen as being a resource. Today it is the essential raw material in the production of aluminium which, amongst other things, has replaced the use of tin in the making of cans.[11] Likewise, one hundred years ago, uranium was not perceived to be a resource either. Now, it may become the essential element in the future of meeting our immediate energy supplies.

What we consider a resource is a socially-mediated thing, independent of any material constraints. Indeed, the one resource that truly matters is that between our ears, which allows us the insight into what apparently useless materials might be turned into. Often, discarded waste can become a resource, as with old tyres that become components of children's playgrounds.

We have hardly scratched the surface of the earth and yet the clamour for restraint by some is emerging loud and strong.[12] Indeed, the deepest well that has ever been sunk into the ground has the equivalent depth on the planet as that of two postage stamps adhered to a standard sized football.[13] And it is just a pin-prick too.

Our time and ingenuity are the only resources that truly matter. And yet time is precisely what we are asked to waste when – for example – having to sort through rubbish. That real waste (of time) is never factored into the recycling equations so favoured by environmental organisations. In short, resources depend on our resourcefulness, rather than upon our confronting any inherent natural limits today.

Polarised

It is unfortunate that the important debate about climate change has become so polarised today. Those who point to the presumed causes and effects of so-called anthropogenic global warming,

8 See 'Green Gordon Takes on Cameron's Wind Turbines with £15,000 Solar Panels', http://www.dailymail.co.uk/news/article-501815/Green-Gordon-takes-Camerons-wind-turbines-15-000-solar-panels.html (accessed December 9, 2010).

9 Frank Furedi, *Culture of Fear: Risk-Taking and the Morality of Low Expectations* (London: Cassell, 1997).

10 See, for example, 'Earth "Will Expire by 2050"', *The Observer*, July 7, 2002, reporting on a Worldwide Fund for Nature study to this effect. The debate about 'peak oil' is a sub-set of these concerns.

11 The 1980 wager between the Malthusian ecologist Paul Ehrlich (author of *The Population Bomb*) and the academic economist Julian Simon, over the future value of various essential commodities, touched on just this problem. Ehrlich predicted their values would increase as they became depleted but lost on every count as they were simply replaced by alternatives. See, for example, reference materials at http://en.wikipedia.org/wiki/Simon%E2%80%93Ehrlich_wager (accessed December 9, 2010).

12 For examples, see Austin Williams, *The Enemies of Progress: The Dangers of Sustainability* (Exeter: Imprint Academic, 2008).

13 The Kola Superdeep Borehole in Russia reached just over 12 km in depth in 1994. See, for example, http://en.wikipedia.org/wiki/Kola_Superdeep_Borehole (accessed December 9, 2010). This is about 0.2% of the Earth's radius. Stamps, which normally have the same thickness as banknotes, are 0.1% of the radius of a standard sized association football.

often hold that what has been coined 'the science' proves their case.[14] But there is not, nor has there ever been, such a definitive thing as 'the science' about anything.

Science is a process. It is a continuously evolving project and, as such, it is inherently open to question. Indeed, it can only ever advance through being ruthlessly interrogated. The attempt to put the definite article 'the' in front of it has symbolised an attempt to put any debate off-limits – and, as such, is inherently unscientific. It is done to make it sound like 'the Bible' – or some other closed book – that some hold cannot be debated any further.

Sadly, many leading scientists – who ought to know better – as well as officials and politicians, have used this formulation to attempt to close down discussion. They then accuse any critics of being 'deniers' – an equally self-conscious attempt to draw parallels between these sceptics and those who continue to question one of the worst atrocities in human history – the Nazi holocaust of the Jews.[15] This is far from being a scientific approach. Rather it is a shrill politicisation of science – or 'scientism' – that is likely to backfire on all concerned – both politicians and scientists alike.

On the other hand, of course, it is true that many of the critics of the supposed science of global warming have been equally infantile in their own approach and arguments. They suggest that 'the science' of the establishment is wrong and attempt to counterpose it with their own evidence and data, which is held to prove the opposite.

The resulting debate is like listening to a playground spat between children, each with a competing version of what science supposedly says. In fact, any debate about what we should do as a society in relation to climate change – which is a straightforward fact – will have to be carried out in the sphere of politics rather than science. Evidence can guide, but should never determine, social action.

There have, however, been some quite severe set-backs recently for those who uncritically advocate humanity as the source and victim of global warming. These have included the revelation that the supposed retreat of Himalayan glaciers (a presumption that was used in a World-wide Fund for Nature report and then simply uncritically repeated elsewhere) had never been scientifically established in the first place.[16]

The revelation that scientists at the United Kingdom's University of East Anglia Climate Research Unit conspired to keep key evidence, as well as individuals that questioned their assumed thesis, out of the public domain also inflicted considerable damage on the mainstream view, irrespective of the subsequent inquiry staged to rehabilitate and reassert the dominant narrative.[17]

In fact, the debates about energy and climate change should not be understood as technical or scientific – or as operational or economic. Rather, they are political and moral debates regarding the future of human development. They should engage all of us on important questions of principle. Science can inform this debate. It can tell us something very important about the state of the world that we live in. But scientists should never seek to tell us what to do.

14 See, for instance, the World Bank, *World Development Report 2010*, an extract of which is at http://siteresources.worldbank.org/INTWDR2010/Resources/5287678-1226014527953/Focus-A.pdf (accessed December 9, 2010).

15 See, for example, George Monbiot, 'The Threat is from those Who Accept Climate Change, Not Those Who Deny It', *The Guardian* (UK), September 21, 2006. Available at; http://www.guardian.co.uk/commentisfree/2006/sep/21/comment.georgemonbiot (accessed December 9, 2010).

16 See, for example, 'World Misled Over Himalayan Glacier Meltdown', *The Times* (London), http://www.timesonline.co.uk/tol/news/environment/article6991177.ece (accessed December 9, 2010).

17 See, for instance, Frank Furedi, '"Climategate": What a Pointless Investigation', *spiked* (online), March 31, 2010, http://www.spiked-online.com/index.php/site/article/8368/ (accessed December 9, 2010), as well as the other articles linked there.

Fortunately, there are still some who understand this essential point, such as the Intergovernmental Panel on Climate Change (IPCC) contributor Dr Susan Solomon who, when asked by the media at the launch of the 4th IPCC report summary what urgency the report should convey to policymakers, replied:

> I can only give you something that's going to disappoint you, sir. And that is that it's my personal, scientific approach to say that it's not my role to try to communicate what should be done. I believe that it is a societal choice. I believe that science is one input to that choice, and I also believe science can best serve society by refraining from going beyond its expertise. So I do not feel that it would be in the best interests of society making this decision in the most responsible way for me to push for urgency or action.[18]

The problem is that these debates have become 'scientised' in order to suggest that the evidence is incontrovertible, the debate is closed and that the cause and victims of any changes are human beings, thereby confirming our supposed hubris and folly.

But science, like any other activity, whilst aspiring to objectivity, is also a product of its time. Climate science in particular is relatively new as a discipline. It emerged largely in the post-1960s period marked by a growing disenchantment with politics and business, as well as by various social crises and the emergence of a counter-culture. Many of its early adherents emerged from campaigns against nuclear weapons and the pesticide DDT, as well as having been influenced by the Club of Rome report,[19] *The Limits to Growth*.[20] The impact of these cultural trends on this new area of work is evident.[21]

The nascent study of climate change was then further propelled by the growing uncertainties that marked the end of the Cold War era. Nuclear accidents at Three Mile Island in the USA in 1979 and Chernobyl in the former USSR in 1986 encouraged the German sociologist Ulrich Beck to write his bestseller *Risk Society*, which captured the mood of the time.[22] The IPCC itself was first established – with considerable support from the US government – in 1988, just before the Berlin Wall came down the following year.

Much of the early enthusiasm for this agenda was also marked by a loss of direction and purpose that affected the elites in this period as the old certainties no longer applied and new agendas were sought to galvanise audiences. For instance, although the former British Prime Minister Margaret Thatcher expressed interest in environmentalism quite early on,[23] her advisor on these matters, Crispin Tickell, was only sent to attend the 1992 Rio Summit after her administration's, and its successor's, initial thrust to demolish the remnants of the trade union movement had come to an end.[24]

18 Cited in 'Scientist At Work: Susan Solomon; Melding Science and Diplomacy to Run a Global Climate Review', *New York Times*, http://query.nytimes.com/gst/fullpage.html?res=9C06E3DA133FF935A35751C0A9619C8B63 (accessed December 9, 2010).

19 It should be noted that the so-called Club of Rome, despite its grandiose name, was founded, and largely driven by, just a few individuals. See, J.C. Hanekamp, G. Vera-Navas, and S.W. Verstegen, 'The Historical Roots of Precautionary Thinking: The Cultural Ecological Critique and "The Limits to Growth"', *Journal of Risk Research* 8, no. 4 (June 2005): 295–310.

20 Donella H. Meadows, Dennis L. Meadows, Jørgen Randers, and William W. Behrens III, *The Limits to Growth: A Report for The Club Of Rome's Project on the Predicament of Mankind* (New York: Universe Books, 1972).

21 Josie Appleton, 'Measuring the Political Temperature', *spiked* (online), May 17, 2007, http://www.spiked-online.com/index.php/site/reviewofbooks_article/3366 (accessed December 9, 2010).

22 *Risk Society: Towards a New Modernity* (Nottingham: Sage, 1992). This was originally published in German in 1987 as *Risikogesellschaft: Auf dem Weg in ein Andere Moderne*, but only became a best-selling sociological text after its translation into English.

23 See, for instance, the interview on this with Crispin Tickell, http://www.chu.cam.ac.uk/archives/collections/BDOHP/Tickell.pdf (accessed December 9, 2010).

24 Tony Gilland, 'Digging up the Roots of the IPCC', *spiked* (online), June 28, 2007, http://www.spiked-online.com/index.php?/site/article/3540/ (accessed December 9, 2010).

Apocalypse

There is today, across many quarters in society, a growing tendency to inflate the scale of the problems that we face and to use the language of apocalypse to describe many different phenomena. We are continuously advised by 'experts' and officials that the planet faces epidemics and extinctions, crises and catastrophes.[25]

In raising the World Health Organization's Pandemic Alert Level from 4 to 5, in relation to the outbreak of H1N1 influenza in 2009, for example, the director-general, Margaret Chan announced 'It really is all of humanity that is under threat'.[26] This particular verbal formulation could equally be applied to any of the countless security risks and threats that are held to confront society – from global warming to food shortages, and from international terrorism to economic meltdown.

It should come as no surprise then that, in picking on climate change predictions with a view to engaging public action on the matter, numerous authorities and civil society groups seem to prefer to highlight the more extreme projections. So whereas the IPCC itself proposes a temperature change of between 1.8 and 4.0 degrees Celsius over the next century – noting that anything below 1.1 degrees or above 6.4 degrees is unlikely – many opt to cite the figure given by the former British banker Nicholas Stern in his report on the matter, where he suggests a figure of 11.5 degrees.[27]

Similarly, when it comes to possible sea-level rises accompanying such change, the IPCC provides a range between 18 and 59 cm. Many activists and official reports, however, prefer to cite former US vice-president Al Gore's suggestion of 6 metres, whilst others still concur with British environmental journalist Mark Lynas, who proposes a figure of 70 m![28]

Presumably, this tendency to err towards the worst possible – and indeed worse than possible according to the relatively more authoritative IPCC figures – is justified on the basis of having to imagine the worst and then act accordingly. This is the basis of the so-called 'precautionary principle'.[29]

Non-science

Upon closer scrutiny it becomes clear that the supposed 'overwhelming consensus' about climate change is not scientific, but political. Indeed, those upholding 'the science' to argue for the recognition of our assumed human hubris and the concomitant need for restraint are – when pressed – far less interested in science than may at first appear.

Often, their interest is limited to hailing science as revealing a problem, rather than using it to shape a solution. So, for example, many technological responses to the problems we face – such as carbon capture and sequestration (CCS), or cloud seeding and encouraging algal blooms in the ocean to increase the reflection of the sun's rays – are almost invariably and universally held by the critics to be too 'expensive', 'controversial' or 'damaging'.[30]

Even existing technologies that could offer a degree of remediation are dismissed in similar fashion. Talk of nuclear energy is immediately confronted by a debate about nuclear waste, presented not as a scientific challenge but as an insurmountable moral objection. Bio-fuels are held

25 Bill Durodié, 'Apocalypse Now', *The European – Security and Defence Union*, no. 2 (May 2010): 24–6.
26 Margaret Chan, *Press Announcement at Emergency WHO Meeting*, Geneva, April 29, 2009, http://news.bbc.co.uk/2/hi/8025931.stm (accessed December 9, 2010).
27 For example, George Monbiot, *Heat: How to Stop the Planet Burning* (London: Allen Lane, 2006) or *Review on the Economics of Climate Change*, HM Treasury, Part 1, 2007, 12–13.
28 Mark Lynas, 'Global Warming: The Final Warning', *The Independent*, February 3, 2007.
29 For an interesting set of critiques of this, see, for instance, Julian Morris, ed., *Rethinking Risk and the Precautionary Principle* (Oxford: Butterworth-Heinemann, 2000).
30 See, for instance, 'Can Science Really Save the World?', *The Observer*, October 7, 2007.

to lead to a shortage of land and concomitant food shortages. Hydroelectricity is held to have a damaging impact when built on a suitably large scale. Clean coal and more efficient gas are lambasted as an oxymoron. Even wind and solar energy are viewed as too slow in their advent and unreliable in their output.

In other words, what we can be sure of is that there is no concerted attempt – or desire it would seem – to find a solution … only problems. Indeed, solutions could put many of the voices of environmental doom out of business.

Yet there are many examples of developed and nascent technologies that have considerable promise. The Paul Sherrer Institute in Switzerland, for example, is examining ways to convert long-life radiation to short-life, stable isotopes.[31] While still highly experimental and speculative, the Sandia National Laboratory in New Mexico has been exploring methods to use sunlight to combine air and water into basic hydrocarbon fuels. The Counter Rotating Ring Receiver Reactor Recuperator, or CR5, is a prototype that would generate hydrogen from rust on its rotating discs, combining this with CO_2 split from the atmosphere.[32] The list goes on.

But developing solutions would destroy the very *raison d'être* of many of the critics who now, consciously or not, describe technology in the derogatory language of drugs. There are, according to these critics, not going to be any technological 'fixes' to the problems we face. They argue that a bigger 'dose' of technology will not resolve our immediate difficulties.[33] Indeed, for some, society is literally suffering from some form of 'addiction' to technology, or it is even described as a 'junkie'.[34]

The fact that no technological solutions are anticipated – and, accordingly, looked for – is reflected at the level of the IPCC itself, which has no working group looking into technological solutions at all. In other words, and despite the shrill rhetoric, science is out and we are left with our own personal responsibility and action, or international-level exhortations for states to regulate or limit growth, as the supposed solutions. It is, accordingly, a largely moral agenda. But moralising over climate change is far from being a path towards developing an effective solution to it.

Caricatures

Unfortunately, activists and officials alike often present a caricature of people as mere consumers. But, as everything that is consumed must be produced in the first place, so this one-sided view that portrays the public as simply shallow 'shopaholics' captures, at best, only half of what people are really about.[35] In fact, as most of us spend more time upon reaching adulthood at work – producing for the economy, rather than consuming from it – so the balance between the two is not even necessarily fifty–fifty.

Rather than viewing people as simply being sources of problems – as is increasingly the image presented by those who fear development and its consequences – it might be worth recognising that people are historically, and first and foremost, problem-solvers.

What's more, the sphere of production is where they are at their most social and connected – at least to the world economy, and accordingly to other people, even if it does not feel that way

31 Cited in James Woudhuysen and Joe Kaplinsky, 'The World Needs Abundant, Cheap, Clean Energy', *spiked* (online), January 30, 2009, http://www.spiked-online.com/index.php/site/reviewofbooks_article/6163 (accessed December 9, 2010).

32 See, 'Synthetic Fuel from a Solar Collector', *IEEE Spectrum*, January 7, 2008, http://spectrum.ieee.org/energy/fossil-fuels/synthetic-fuel-from-a-solar-collector (accessed December 9, 2010).

33 See, for instance, the *Observer* article 'Can Science Really Save the World?', where both of these terms appear.

34 'Is this what it Takes to Save the world?', *Nature* 447 (10 May 2007): 132.

35 See, for instance, Benjamin Barber, *Consumed: How Markets Corrupt Children, Infantilize Adults and Swallow Citizens Whole* (London: W.W. Norton & Co., 2008), as an example of a burgeoning literature making similar allegations.

sometimes. Consumption, on the other hand, is something that usually takes place largely in private. In reality, the caricature of people as mere consumers appears to fit the fragmented worldview of those who put it forward.[36]

Many of the critics of consumption come from Western countries whose manufacturing has largely been outsourced to India, China and elsewhere in the East.[37] As they cannot see production on a large scale occurring in their own countries, they simply generalise from their own experience and fail to recognise that production must still be happening somewhere.

Carbon

The United Kingdom hopes to meet the ambitious carbon emission targets it has set itself and expects others to do likewise.[38] But looking at how these goals have been achieved thus far, as well as how it is expected that they will be achieved in the future, suggests that whilst the goals may be laudable, the methods for achieving these may not be easily replicable, or even desirable.

Much of the reduction has been achieved through the closure of businesses that were the most polluting and by the effective exportation of these businesses to developing economies. This has primarily occurred as an unconscious process rather than as a state strategy. So, for instance, it is quite clear that the end of the coal industry in the UK contributed by far the most to its hope of achieving its ambitious targets.

The next step on the path to reaching these goals appears to be a relentless propaganda process of demanding that individual consumers curb their household use of, and demand for, energy. As indicated earlier, this takes the form of small-minded campaigns to install so-called smart meters,[39] to issue individual allowances – or rations – for energy, and to encourage micro-generation schemes, such as those installed on the houses of David Cameron and Gordon Brown.

The fact that 25 million British households all contributing individually and erratically to the national grid through their wind turbines and solar panels may well complicate the grid so much that failure is effectively built in has not been much of a discussion point. What's more, as these power sources are unreliable there will always have to be a full capacity provision on stand-by, as real power stations can not be turned on and off like a light switch.[40]

Finally, it seems that the third element used to reduce carbon emissions has been simply to buy up permits for emissions from developing countries that are not yet in a position to use their allowances.[41] This might appear to provide easy money to the recipient countries that are often in need of such liquidity but, further afield, it will also constrain their development through having effectively sold off their allowances to release carbon to the more advanced nations. These latter can both afford to pay off poorer nations in this way and, accordingly, continue with their existing lifestyles without troubling themselves too much about solving the problem.

In other words, knowing that our economies will be held back from growing over this period due to the strategy adopted, the best we can hope for is to hold others back too.

36 One of the earliest in the genre was Naomi Klein, *No Logo* (New York: Fourth Estate, 2000).
37 See also Oliver James, *Affluenza* (London: Vermillion, 2007).
38 See http://www.decc.gov.uk/en/content/cms/what_we_do/consumers/saving_energy/cert/cert.aspx (accessed December 9, 2010).
39 See, for example, http://www.bbc.co.uk/news/business-10779638 (accessed December 9, 2010).
40 For a discussion of these points see Bill Durodié, 'Securing Electricity: Blackout', *The World Today* (August–September 2008): 37–9.
41 See, for example, Josie Appleton, 'The Rise of the Carbon Fat Cats', *spiked* (online), 29 November 2009, at: http://www.spiked-online.com/index.php/site/reviewofbooks_article/7758/ (accessed 9 December 2010).

Demoralisation

This constant concern about the minutiae of energy consumption, promoted through the incessant hectoring over, and monitoring of, personal use, reveals how petty and limited this outlook really is. It appeals to the narrow audit mentality of regulators, but is unlikely to inspire a generation about the human potential to address, and solve, complex social and scientific problems.

A recent government-backed leaflet in the UK encouraging all households to 'do their bit' by switching off their mobile phone chargers when they are not being used, reveals perfectly the limitations of this outlook.[42] The stand-by consumption of such devices – it advises – amounts to 1 Watt. However, multiplied across 25 million British households this amounts to 25 Megawatts. And when scaled up over a year is in excess of 200 Gigawatts or, it argues, sufficient power to run 66,000 homes.

Yet whilst these figures appear impressive at first sight – certainly 200 GW is a lot for any individual to consider – when examined on a national scale they amount to very little indeed. And worse, they cost a huge amount of wasted time and effort that again has not been accounted for.

First, we should note that 66,000 homes is 0.25% of the national housing stock so, at best, what we have here is an energy tactic, not an energy strategy. Then, assuming it takes us all about ten seconds on average to remember to turn off our chargers and to go over and do it, that, multiplied by 25 million households and scaled up over a year amounts to a really staggering 25 million hours of time spent on this menial task – time which, some suggest, could better be spent focusing on more efficient power generation.

This audit approach to large-scale social and economic problems is not a solution to climate change. It simply moralises the debate. It also echoes the generally negative and apocalyptic mood of the times by presenting a model where there are only inputs and waste in an economy. Apparently there are no benefits at all to the activities we engage in. Counting units of carbon in this way – or for the even more dubious concept of auditing carbon miles – does not distinguish the purpose for which energy has been used.

This model ignores the real meaning of human action as, for instance, a flight taken to tend to a sick relative costs exactly the same in carbon miles, or produces the same 'human footprint', as one to go on a party weekend overseas. Everything in the petty carbon-counting mentality is reduced to just that – carbon. Nothing is judged on the basis of its worth or purpose any more.

Worse, by moralising the issue of climate change we are clearly no closer to developing an effective solution to any of the supposed problems caused by it that we may face.

Production

In fact, as the IPCC's own data shows (see Figure 1), carbon is released at the point of production of energy and, accordingly, this is where we should invest our time and effort in trying to achieve greater efficiencies. It is a revolution in production – not in consumption – that is needed, and that is most likely going to require big investments in large-scale solutions.

Everything else is largely a moral agenda, designed more to engage what is widely perceived in government circles to be a disengaged public, and to make people feel good that they can contribute by apparently being more aware and virtuous – if possibly unproductive – in their actions and activities. This is especially so in the West, which seems particularly keen to export this mode of thinking and doing – or *not* doing, to be precise – elsewhere.

42 See, The Energy Saving Trust, *The Rise of the Machines*, 10, available at: http://www.theenergysavingtrust.com/Media/node_1422/node_18662/Rise-of-the-machines (accessed 9 December 2010).

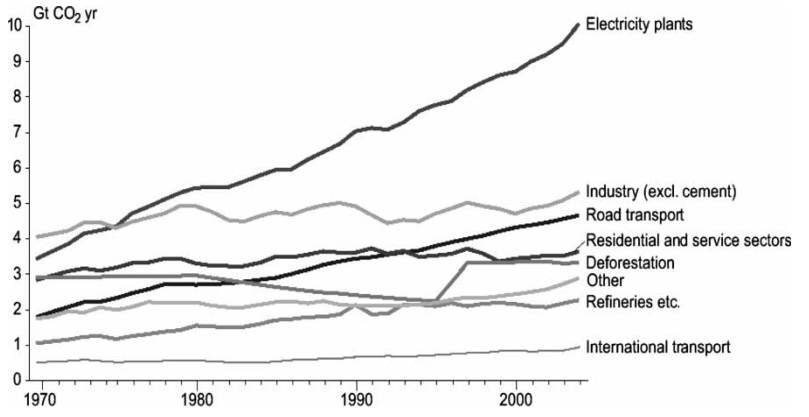

Figure 1. Sources of global CO_2 emissions, 1970–2004 by sector, IPCC.
Source: H. Holger Rogner et al., 'Introduction', in *Climate Change 2007: Mitigation*, Contribution of Working Group III to the Fourth Assessment Report of the IPCC, ed. B. Metz et al., 104, http://www.ipcc.ch/ipccreports/ar4-wg3.htm (accessed December 9, 2010).

Nor do Western campaigners try to hide their crusading messages from the public. Al Gore, the former vice-president of the United States, views the agenda almost entirely in terms of being a historic challenge that should yield moral lessons:

> The climate crisis also offers us the chance to experience what very few generations in history have had the privilege of knowing: a generational mission; the exhilaration of a compelling moral purpose; a shared and unifying cause; the thrill of being forced by circumstances to put aside the pettiness and conflict that so often stifle the restless human need for transcendence; the opportunity to rise . . . When we do rise, it will fill our spirits and bind us together. Those who are now suffocating in cynicism and despair will be able to breathe freely. Those who are now suffering from a loss of meaning in their lives will find hope.[43]

In effect, for advocates and proselytisers such as Gore, the campaign against global warming provides answers so that we no longer have to think too hard about the questions. And, by imbuing the most banal act – such as buying a new refrigerator or travelling by train – with deep moral meaning, it is ironically they who, by giving purpose to consumption, end up encouraging people to become trapped in the shallow identity of consumers.

The simplistic presentation of these debates is one that knows the price of everything and the value of nothing. The worth of an activity is no longer to be assessed on the basis of whether it provides pleasure or pain, or helps people to become more virtuous or independent, but rather simply as a number – the amount of carbon released. It is in danger of becoming a campaign that effaces all human meaning.

Conclusion

In 1952, at the height of the post-Second World War economic and reconstruction boom, smog was a perennial problem in major world cities like London. On one occasion, the smog there is held to have cost the lives of up to 12,000 people.[44] At the time, this was understood as the price necessary to restore production in the aftermath of the Second World War and to place the UK on

43 Al Gore, *An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It* (London: Bloomsbury, 2006), 11.
44 See, for instance, http://news.bbc.co.uk/2/hi/2545747.stm (accessed December 9, 2010).

a better footing for the future. Nevertheless, governments also took note and took action, by introducing new legislation on air pollution and relocating industries beyond the city.

Imagine if, at the time, instead of introducing the *Clean Air Act*[45] the British government had simply asked people to curb their consumption needs – to move around less and maybe even to do with less food. It is in fact unthinkable. It was understood then, but seems to have been lost in much of the recent discussion, that the best way forward for society is to increase productivity, not to reduce consumption.

Even if we imagine developing a technology like electric vehicles further, the problem will remain that to do so will require the release of carbon – at least in the short to medium term – until new technologies have been developed that may get around this problem. In the long run, the vested interests of those who profit from existing technologies are unable to sustain their position once a new technology becomes both viable and profitable. It is only through growth that we can hope to cure the problems of growth.

In a similar vein, others have noted how the development of such technologies will probably be more successful if we focus on their primary aims, such as effective mobility, rather than secondary benefits such as reduced emissions. If we aim for a good vehicle we may actually achieve this and some unexpected benefits too, rather than simply by aiming for a low-carbon emitting vehicle, which may produce neither.[46]

The world actually benefits from an unlimited supply of energy, from the sun, from the heat at its core, and from other sources. The problem is that much of this reaches us in a chaotic and un-usable form. The key is to transform the world and order it to our needs, rather than to step back in the face of a supposedly vengeful nature.

The Singaporean academic and former diplomat Kishore Mahbubani notes in one of his books how many of the benefits of development are sometimes missed if we focus simply on the numbers: 'What all these statistics fail to capture is the transformation of the human spirit that takes place when people experience this kind of rapid economic growth.'[47] It is high time the leaders of India and China reminded people of this. We may also note, in passing, how it is those very same countries which, two hundred or so years ago, colonised territories in the East, that now seek to colonise their minds with a negative attitude to change and development.

The solution to the Copenhagen impasse which developing countries such as India and China should be advised to take up is to demand more energy, not to accept less, and to point to the West's failure of imagination in this regard.

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This paper was prompted by an invitation from Dr Iftekhar Chowdhury to speak at the Institute of South Asian Studies (ISAS) of the National University of Singapore (NUS). I first met Dr Chowdhury, the former Foreign Minister of Bangladesh, at a meeting he was chairing at NUS,[48] whereupon in a short conversation I suggested to him that developing countries had missed an opportunity to lead energy and climate policy, rather than follow the West's agenda, at the then very recent Copenhagen Summit. Dr Chowdhury was sufficiently intrigued to give me the opportunity to expand upon my views to his colleagues in ISAS. I am most grateful to him and to Dr Amitendu Palit, the Head of Development and Programmes there, for their facilitation. I am also grateful to numerous colleagues and friends who have, over the years,

45 V. Guissani, *The UK* Clean Air Act 1956*: An Empirical Investigation*, Centre for Social and Economic Research on the Global Environment, University College London and University of East Anglia, 1994.

46 Dr Lee Schipper of Stanford University's Prescourt Institute of Energy Efficiency, cited by James Woudhuysen, in 'Who's Afraid of Electric Vehicles?', *spiked* (online), July 21, 2009, http://www.spiked-online.com/index.php/site/article/7174/ (accessed December 9, 2010).

47 Mahbubani, *The New Asian Hemisphere*.

48 'China and India: Towards Greater Engagement' on 19 January 2010, organised by the East Asia Institute (EAI) and the Institute for South Asian Studies (ISAS) of the National University of Singapore (NUS).

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