



CLIMATE POLICY AND THE POOR

Anthony Kelly

The Global Warming Policy Foundation

GWPF Note 9

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Obituary

By Professor Michael J. Kelly, University of Cambridge

Professor Anthony Kelly CBE FREng FRS died on 3 June 2014 aged 85. He is regarded by many as the father of composite materials in the UK. In 2011, after a career spanning more than 60 years, he was honoured with the President's Medal of the Royal Academy of Engineering for his significant contributions to the Academy's aims and work through excellence in engineering.

After an early career in Cambridge, where he was a founding Fellow of Churchill College, Tony Kelly was director of the National Physical Laboratory and subsequently Vice-Chancellor of Surrey University before returning to Cambridge and Churchill College on his retirement in 1996. He was research active all his life.

He was a scientist of the old school, who took 'Nullius in verba' as a matter of daily practice. He was properly sceptical until the real world data confirmed his or others' ideas. He was not impressed by the modern tendency to use incomplete data to weave elaborate stories that could be undone by hard data or, worse, were not capable of falsification. He led the successful effort to get 43 Fellows to petition the Council of the Royal Society to modify its public stance on climate science in 2011, and was unhappy with the most recent announcements of that body on the subject. He played a key role in helping the Global Warming Policy Foundation get set up and was a founding and active member of its Academic Advisory Council. He spent his later years as a critic of some aspects of climate science where the consequential actions seemed to him to be doing more harm than good to humanity, as he concludes in this, his last paper.

I first met Tony at a meeting at the Royal Society on Advanced Materials in the mid-1980s, where he told me that a recent paper of mine on semiconductor super-lattices had answered a long-standing question of his own as to what was the ultimate in lamination. He recruited me to the University of Surrey in 1991, where I spent 10 great years under the leadership of Tony and his successor. During my time as Chief Scientific Advisor at the Department for Communities and Local Government, he challenged me to re-examine the basics of climate science as used for the Climate Change Act, and I came to share his opinion of the unwisdom of long-term climate predictions based on incomplete science as a guide to action. Put simply, even if one had £10 trillion to spend mitigating climate change over the next decade, what would be the measurable outcome in terms of a changed climate? What other sphere of human endeavour would proceed with commensurate ignorance? Eliminating poverty, living more simply, reducing resource use and producing less waste are better targets for human endeavour and have measurable outcomes. Tony says it better.

Summary

This paper aims to show that the measures currently being taken to reduce emissions of carbon dioxide from fossil fuels are directly harming the poor, both in the developing and in the developed world. Energy sources that are not based on fossil fuels make power and food – both of vital importance for the poor – more expensive and more difficult to obtain. The world is being urged to go much faster than necessary to combat the exhaustion of fossil fuels. The environment may be preserved by many actions without placing prime emphasis on the reduction of carbon dioxide emissions. In the long term the human race may have to replace fossil fuels as an energy source, but not at present.

1 Introduction

It is being taught in some schools that carbon dioxide pollutes the atmosphere and that strenuous international efforts must be made to reduce emissions.¹ The reason given is as follows. According to our understanding of the Earth's climate, the amount of carbon dioxide in the atmosphere is one of the main factors controlling the temperature at the surface of the Earth. The measured rate of increase of carbon dioxide in our atmosphere is a little above 2 ppm/year. This corresponds to the amount of carbon dioxide emitted due to the known worldwide consumption of fossil fuel to within a factor of 2. It is the opinion of many climate scientists that this continual rise of 2 ppm may lead to an increase in the mean global average temperature, which will result in an irreversible change of climate and that this change of climate will not be benign but will lead, for example, to an increased frequency of storms, to major periods of drought, and to unmanageable increases in sea level.

These opinions constitute what may be called the anthropogenic global warming (AGW) hypothesis of climate change.² However, we should note two indisputable facts about climate change:

1. That man has always undoubtedly changed his environment due to his own behaviour – see below.
2. That the Earth's climate has always changed naturally, and did so long before man appeared on the scene.

So although climate change has become widely accepted as reality, how much of the observed change is due to the carbon emissions is a real question. Respected climate scientists and many other scientists of grave repute doubt the certainty of the AGW hypothesis as advanced by the IPCC,³ noting the influence of natural variability, in particular the action of the sun. Similarly, they note the possibility of an increase in carbon dioxide without dire effects.

So when we discuss the ethical issues concerning mitigation of climate change or dealing with any of the other problems that afflict mankind – eradication of poverty or the threat of nuclear war or protection of the environment, all of which are real and pressing problems of the present – we must remember that with global warming we are discussing the *possibility* that there will be a problem *in the future*, and considering to what extent observed changes to the climate are due to mankind and the extent to which climate scientists – or the IPCC's interpretation of their findings – are correct.

2 Poverty and its alleviation

Some 2.7 billion souls go to bed hungry each night, a third of the total population of the planet, and 8.7 million people die each year from malnutrition, more than the number

¹ A Montford and J Shade. Climate Control: Brainwashing in Schools. GWPF Report No 14. <http://www.thegwpf.org/content/uploads/2014/04/Education-reducedportrait-5.pdf>.

² L Alexander. Working Group 1-Contribution to the IPCC Fifth Assessment Report Climate Change 2013: The Physical Science Basis.

³ For example: <http://www.therightclimatestuff.com/> This is very up to date and apparently will be kept so.

dying of cancer.⁴ These numbers are facts. People are dying in great poverty, now and all the time. Moreover, poverty is not confined to the developing world.

Over a year the population of our Earth increases by some 60 million,^{5,6,7} the great majority of these in the developing countries. There is therefore little doubt that by 2020 the world population will have increased substantially, perhaps by as much as by 600 million souls. All of these people must be fed and nurtured, and given the hope of a decent life, meeting all the basic human needs of food, water and sanitation, shelter, education and information. To do this, requires extraneous energy.

Many years ago power was provided by animals and fire, together with some water – and windmills for specific tasks – but it is now mostly provided by electricity. But at the present time 1.4 billion people are without access to electricity,⁸ and 2.6 billion people are without hygienic cooking facilities. More than 95% of these people are either in sub-Saharan African or developing Asia and 84% are in rural areas. In order to improve the plight of the poor in both the developed and the developing world we need energy and most of that in the form of electricity. An adequate supply of energy is not all that is needed, but those without it will undoubtedly be poor.

Electricity may be produced in a variety of ways but the cheapest and most abundant approach for large-scale production is the burning of fossil fuels. Research on the timescales involved in the introduction of new technologies for the large-scale production of energy shows that decades are required. The introduction of natural gas as a major component of world energy supply took more than half a century. Apart from innovations in the mix of fossil fuels, nuclear is the only completely new source of energy that has been introduced over the last hundred years. Nuclear sources produce 17% of the world's electricity supply at present (20% in the USA) some 60 years after its first introduction.

The conclusion is therefore that fossil fuels will remain vital and will be the major source of energy for mankind for at least the next forty years – the widely accepted estimate is that fossil fuels will provide 60% of world primary energy in 2050.

It is against this background of the fact of the grinding poverty of millions, an increasing population and the impossibility of meeting the needs of either without the use of fossil fuels that we must assess what may turn out to be the mere fancy of global warming and against which we must judge the moral rectitude of the measures in the Climate Change Act.

⁴AR Webb private communication: quote from World Health Organisation and Save the Children.

⁵RV Short. Population growth in retrospect and prospect. *Phil. Trans. R. Soc. B*, 2009; 364: 2971–2974, and references therein.

⁶JJ Speidel, DC Weiss, SA Ethelston and SM Gilbert. Population policies programmes and the environment. *Phil Trans R Soc B*, 2009; 364: 3049–3065.

⁷J Sulston *et al.* People and Planet. Royal Society Report, April 2012. Available at: https://royalsociety.org/~media/Royal_Society_Content/policy/projects/people-planet/2012-04-25-PeoplePlanet.pdf

⁸M Brinded and H Mercer. New Frontier: engineers and the global energy challenge. Royal Academy of Engineering lecture, 24 November 2011.

3 The Climate Change Act

The widespread acceptance of the AGW hypothesis led to the Kyoto Protocol, which followed from the agreements under the United Nations Framework Convention on Climate Change. Nations adhering to the protocol were supposed to reduce their aggregate anthropogenic carbon dioxide equivalent emissions by at least 5% below 1990 levels by 2012.

In general these targets have not been met, but many countries have set in train policies in accord with the spirit of the protocol. Among these the UK is one of the leaders and is the only country to have set itself a legally binding target. The vehicle for this target, the Climate Change Act, received royal assent on 26 November 2008, and required that by 2050 emissions of greenhouse gases, principally carbon dioxide, be reduced by at least 80% compared to 1990 levels. By 2020, UK emissions should come down by 42% as part of a legally binding international agreement. Until such an agreement is reached the UK should unilaterally commit to a 34% reduction.

4 Consequences of the Climate Change Act

In the next subsections, the results of the Climate Change Act are examined.

Raising the price of fuel

Despite the pressing need for cheap energy to alleviate the plight of the poor, policy measures introduced under the Climate Change Act and their equivalents in other countries have led to a marked increase in the price of energy. In the case of the United Kingdom, the specific ways in which the cost of energy is driven up are as follows.

The Renewables Obligation (RO) This is a mechanism designed to support an obligation on all licensed electricity suppliers to support large-scale renewable electricity generation. Through the RO, the government places an obligation on all licensed electricity suppliers to source a proportion of the electricity sold from renewable sources. All suppliers in England, Wales and Scotland are affected.

The EU's Emissions Trading Scheme Companies such as electricity generators must buy permits to emit carbon dioxide or face fines. Lately the UK has put a minimum carbon price floor because it was felt that the carbon price was too low.

The Carbon Reduction Commitment This is an energy efficiency scheme that applies to non-energy-intensive organisations. About 5000 organisations using 6000 MW of electricity per year are required each to pay a tax of £12 per ton of carbon dioxide emitted. This adds about £1 million to the electricity bill of, say, a large university.

Feed-in tariffs These encourage households to generate electricity themselves and, where there is a surplus, to feed it into the grid, from where it is supplied back to other consumers.

What are the effects? The principal one is the increase in cost: the sale of emissions permits makes a deal of money for many while increasing the price of energy for consumers. There have also been many cases of illegal practice; carbon trading has become notorious. Moreover, the existence of the carbon market, completely artificial as it is, gives many wealthy and influential people a vested interest in maintaining that the Climate Change Act is necessary 'to save the planet'.

Raising the price of food

Another deleterious consequence that follows from the measures taken to meet the requirements of the UK's Climate Change Act is the Renewable Transport Fuel Obligation (RTFO). An equivalent measure in the USA is known as the Renewable Fuel Standard (RFS). These regulations require that a certain fraction of fuel from renewable sources be blended into petroleum-based fuels: RFS-2 calls for a 10% blend of cellulosic fuel by 2022. Another quite compelling incentive has been provided by the US Navy, which has announced that by 2020 one half of the fuel it uses (60 billion litres/year) will be from renewable resources.

Most renewable transport fuel comes in the form of ethanol, which, when blended with conventional fossil fuels, is adequate to power a car. However, since ethanol, is a partially oxidised hydrocarbon, it has a lower energy density than hydrogen or a pure hydrocarbon and there is therefore some loss of efficiency. The powerhouse for the production of a motor car fuel from a non-fossil resource has been Brazil, which produces ethanol by distilling the pulp left when sugar has been extracted from its cane. Sugar grows plentifully in Brazil without the need for irrigation and making ethanol in this way from sugar residues may or may not affect the price of food. However, in the USA sugar has not been available at suitable prices and so ethanol has been made from maize sourced from the corn belt, sometimes referred to as the granary of the world. The result has been to pit the biofuel industry against the interests of the poor, who require the output of the land for cheap food.

Many attempts are being made to reduce the adverse impacts. One approach being tested is to use genetically engineered bacteria to produce alkanes (containing just carbon and hydrogen), which can be used as fuels. However, the main raw materials for such processes are sugars and sugar residues, and so would still tend to raise the price of food. The use of single-cell algae as a raw material has also been suggested, seemingly avoiding direct competition with human food production, but in fact the algae may well be fed on sugar or starch, so competition is not avoided; it is only made less obvious. Other projects involving raw materials such as wheat are more obviously in direct competition with those wanting to make bread.

Another approach is the use of the residues of food production:

- bagasse, from cane sugar production
- stover, from corn
- straw from wheat.

This approach could avoid competition with those requiring the crops for food, but the present reality is that such efforts have so far proved commercially unviable.

Wood, a biofuel and a construction staple, is usually produced without competing with food production. It is plausible that wood-based crops could contribute to fuel production without affecting food production. But this is for the future.

In summary, efforts to make biofuels are raising the cost of food and act against the interest of the poor and the hungry in both the developed and in the developing worlds. The increase in food prices has increased the number of people suffering from chronic hunger.⁹ It has also added to the number of people living in 'absolute poverty' worldwide, particularly in developing countries.¹⁰

This view is supported by many international organisations. The United Nations Food Agency recently called on the US government to suspend its production of biofuel ethanol because it could contribute to a food crisis throughout the world.¹¹ Meanwhile, a World Bank policy research working paper, in an analysis covering 90% of the world's population, estimated that the number of people living in absolute poverty in developing countries would decline from 1,208 million in 2005 to 798 million in 2010 because of economic development.¹² But it also estimated that higher food prices induced by increased biofuel production over the 2004 level would drive an additional 32 million into absolute poverty by 2010. In other words, biofuel policies are retarding humanity's on-going battle against poverty.

The contribution of diseases of poverty (e.g. underweight babies, malnutrition, unsafe water, poor sanitation and hygiene) to the global burden of death and disease is currently 70–80-fold larger than anything that could reasonably be attributed global warming. Deaths from diseases of poverty and excess winter mortality are real,¹³ whereas those from global warming are based on hypotheses and models which have not been tested rigorously.¹⁴

Damaging the environment

It is noteworthy that the purported alternatives to fossil fuels, namely wind, solar, tidal, geothermal and biomass, are not without grave environmental consequences of their own. For example, in the case of wind a million turbines covering an area nearly that of France would be necessary in order to generate 10% of global electricity by 2030 and that would still amount to less than 2% of total primary energy.⁸ The production of energy from fossil fuels, even without carbon capture and storage, is the method least destructive of the environment compared to the alternatives: nuclear with its potential radiation hazards, wind with its masts on all beautiful landscapes, the obtrusive panels

⁹Food and Agricultural Organisation. State of Food Insecurity. FAO, 2009. <http://www.fao.org/economic/es-policybriefs/multimedia0/presentation-the-stateoffoodinsecurity/en/>.

¹⁰World Bank. Global Economic Prospects. World Bank, Washington DC, 2009.

¹¹US biofuel production should be suspended, UN says. BBC News Online, 10 August 2012. <http://www.bbc.co.uk/news/business-19206199>.

¹²RE de Hoyos and D Medvedev. Poverty effects of higher food prices: a global perspective. Policy research working paper 4887, World Bank, Washington DC, 2009.

¹³ME Falagas, DE Karageorgopoulos, LI Moraitis, EK Vouloumanou, N Roussos, G Peppas, PI Rafailidis. WHO Global Health Risks 2009. Seasonality of mortality: the September phenomenon in Mediterranean countries. *Canadian Medical Association Journal*, 2009; 181: 484–6.

¹⁴AJ McMichael, RF Woodruff and S Hales. Climate change and human health: present and future risks. *Lancet*, 2006; 367: 859–869.

associated with solar power, and the huge barriers at sea that are required to provide tidal power.

5 Preserving the environment

We are changing the face of the planet; man is certainly a geological agent. This has been recognised since the 1930s. In order to improve our stewardship of the planet there are many very useful things that we could, and indeed should, be doing, but which are not connected with the reduction in carbon dioxide emissions. We can recycle more,¹⁵ we can reuse,¹⁶ we can reduce the pollution of rivers by excess nutrients, we must increase the insulation of our houses and buildings. We must be careful over haze and detritus and not travel too often. We can live condignly without excess. These observations draw attention to the environmental effects of human activities such as land cover changes, freshwater pollution, over-fishing, loss of biodiversity due to human population growth and the ensuing growth in consumption, transport of goods and services and personal travel.

Carbon dioxide is not a pollutant, although, as noted above, school children are now taught that it is. In fact, it is an important industrial chemical. Concentrations far in excess of the average in the present day atmosphere (circa 390 ppm) are present in submarines (3500 ppm) without disadvantage to the crew. Concentrations as high as 8000 ppm are tolerated. Present-day commercial greenhouses maintain a concentration of 1500 ppm in order to promote plant growth, which is generally increased by some 20–30%.¹⁷ Such an atmosphere also leads to the plant being more resistant to disease and to its requiring less water for efficient photosynthesis. Carbon dioxide is also used to preserve food, particularly to inhibit the growth of microorganisms in low-fat products.

A very good example of a specific measure which reduces our destruction of the environment with no mention of reducing carbon dioxide emissions is the reduction or complete elimination of black carbon (soot), a product of the incomplete combustion of diesel and other fuels. In contrast to carbon dioxide, black carbon is extremely damaging to human health.¹⁸ It is estimated that 1.8 million people die each year from cardiovascular and other respiratory diseases due to the emission of black carbon by indoor fires.

Black particles such as soot decrease the albedo of the earth and on the surface of snow or ice encourage melting. Some evidence exists that black carbon is responsible for a large fraction of Arctic warming.¹⁹ So by decreasing aerosol pollutants, including sulphates and light-coloured soot particles as well as black carbon, the environment

¹⁵V Steinbach and F-W Wellmer. Consumption and Use of non-renewable mineral and energy raw materials from an economic geology point of view. *Sustainability*, 2010; 2: 1408–1430.

¹⁶A Kelly. The changing cycle of engineering materials. *Interdisciplinary Science Reviews*, 1994; 19: 1–12 (1994)

¹⁷See for example 'Industrial gases; carbon dioxide' a brochure from AG Linde, or the 'Hydroponics' brochure from Hydroponics, Fen Road, Cambridge.

¹⁸AP Grieshop, CO Reynolds, M Kandalar and H Dowatabadi. A black carbon mitigation wedge. *Nature Geoscience*, 2009; 2: 533–534.

¹⁹D Shindell and G Faluvegi. Climate response to regional radiation forcing in the 20th century. *Nature Geoscience*, 2009; 2: 294–300

may be greatly improved without any thought to the reduction of carbon dioxide emission. And unlike carbon dioxide, which stays in the air for a long time (some estimates suggest for centuries), black carbon particles remain in the air for only a few weeks, so the effects of any clean-up will be very rapid.²⁰

Another sensible measure to reduce our global foot print without worrying about carbon dioxide would be to extend the Montreal Protocol to include HFC gases.²¹

It may be useful in the longer term to reduce carbon dioxide emissions, but the present-day excitement is too exaggerated. Each and every time that a drought or a very hot summer or a cyclone of large severity occurs there are claims that this is due to anthropogenic effects, principally warming, and such claims are immediately followed by articles in the reputable scientific journals emphasizing that such links are quite uncertain – there has often been little change in these weather extremes²² over the past half century while the carbon dioxide concentration has increased by 30%. But what is important is that the damage (both physical and financial) done for a given strength of event, a flood or a prolonged drought, can be much larger nowadays because of the economic development over the years.

6 Ethics

The intention of this paper has been to detail how pursuit of policies to counteract global warming leads to disadvantage of the poor. I am not familiar with the stance of the Eastern religions but am familiar with those of the western world and the span of opinions on the necessity for development and sustainable living from, say, the American Humanist Society to those of the Christian Church in the UK to those of the Universal Catholic Church. Most such organisations prioritise the urgent needs of the poor and the vulnerable over the longer-term and risks of climate change. For example, the Humanist Manifesto (2012 edition) of the American Humanist Association states that world poverty must cease and abhors ecological damage but makes no mention of climate change. The UK Christian Church states:²³ ‘concern for the vulnerable is our lodestar as we respond to the challenges of sustainability and climate change’ and again ‘the acid test for biblical derived policies (in any area not just sustainable living) will not be how they affect the better off but how they protect, help and transform the lives of the vulnerable.’

The ‘official’ attitude of the Catholic Church is covered in the papal encyclical *Caritas in Veritate*,²⁴ which covers much ground and contains many recommendations. For instance Section 17 notes that ‘people in hunger are making a dramatic appeal to those

²⁰T C Bond *et al.* Bounding the role of carbon black in the climate system: a scientific assessment. *Journal of Geophysical Research: Atmospheres*, 2013; 118: 5380–5552. This recently published article suggests a considerable role for carbon black in producing any climate change.

²¹GJM Velders *et al.* Preserving Montreal Protocol climate benefits by limiting HFCs. *Science*, 2012; 335: 922–923.

²²See for example (a) J Sheffield, EF Wood and M Roderick. Little change in global drought over the past 60 years. *Nature*, 2012; 491: 435–438 (b) SI Senevirate. Climate science: Historical drought trends revisited. *Nature*, 2012; 491: 338–339 and (c) for hurricane frequency, Pielke Jr, R. Hurricanes and human choice. *Wall Street Journal*. 31 October, 2012.

²³See for example N Spencer and R White. *Christianity Climate Change and Sustainable Living*. SPCK, London, 2007

²⁴Pope Benedict XVI. Encyclical letter *Caritatis in Veritate*, 2009.

blessed with abundance', while Section 22 makes the point that new forms of poverty are emerging. The document also emphasises the need for solidarity among people (Section 38), in other words calling for a sense of responsibility on the part of everyone for everyone else, and emphasises subsidiarity so that the human person is assisted via the autonomy of intermediate bodies (i.e. small groups in preference to governments). Section 71 mentions the type of man and woman necessary, in its view, for successful development.

We must set about solving the problem of abject poverty now and mitigation of any adverse effects is therefore the only sensible course for dealing with climate change. Such measures require energy and raising the cost of the fuel which is necessary to provide this energy appears irresponsible.

7 What actions should be taken?

The Kyoto Protocol overuses the precautionary principle to enforce a rapid and radical transition to a low-carbon economy. The effects are an extremely serious issue for the whole world. In particular Kyoto has resulted in very large scale malinvestments in alternative energy and biofuels, as described above, resources that would better have been spent on development in poorer areas of the world and keeping the price of fuel as low as possible. Attempts to make food from renewable resources should therefore be discontinued until such time as better technologies exist.

Further, even if the AGW hypothesis is correct and is a cause of climate change then the world at present is doing very little to reduce it. Emissions of carbon dioxide are increasing at an accelerating rate whether we like it or not. It is politically correct gesture politics to have the UK reduce its carbon dioxide emissions while the *annual increase* of emissions in China has for each of the last 10 years been equal to the *total emissions* in the UK! Such unilateral action should therefore cease too.

8 Conclusions

Over the last 17 years the experimental data on climate have shown that the climate models have exaggerated what might happen in the future.²⁵ It is precisely these erroneous models that are used to back calls for radical changes in our way of life. The changes imposed thus far have not dealt with the risks of climate change through a sensible, steady and sustained improvement in energy and other technologies and have therefore failed to address the problems of the here and now, of which the abject poverty of large numbers of people is perhaps the most pressing. In this, the consequences of the Kyoto Protocol have been immoral.

²⁵A Watts. The real IPCC AR5 draft bombshell Ū plus a poll. <http://wattsupwiththat.com/2012/12/14/the-real-ipcc-ar5-draft-bombshell-plus-a-poll/>.

Acknowledgements

I am grateful to Glynis Breakwell, Michael J Kelly, LC Squire and Alex Webb for helpful comments, and to John Loughlin for kind provision of important references. Thanks are also due to Andrew Montford for editorial advice.

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Our main focus is to analyse global warming policies and their economic and other implications. Our aim is to provide the most robust and reliable economic analysis and advice. Above all we seek to inform the media, politicians and the public, in a newsworthy way, on the subject in general and on the misinformation to which they are all too frequently being subjected at the present time.

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Published by the Global Warming Policy Foundation

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