



ETHICS AND CLIMATE CHANGE POLICY

Peter Lee

With a foreword by Dr Peter Forster, Bishop of Chester

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About the author

Dr Peter Lee is a principal lecturer in ethics and political theory at the University of Portsmouth. He specialises in the politics and ethics of war and military intervention, the ethics of remotely piloted aircraft (drone) operations, and the politics and ethics of identity. He is the author of *Truth Wars: The Politics of Climate Change, Military Intervention and Financial Crisis*.

Foreword

By Peter Forster, Bishop of Chester

Peter Lee's essay on the ethics of climate change policy is to be warmly welcomed as a substantial contribution to a debate that proponents of the IPCC scientific consensus appear to wish to close down.

My own interest in the scientific and ethical issues surrounding climate change (whatever one means by that deceptively simple phrase) arose from a surprise that climate scientists were so confidently predicting climate conditions several decades hence. My background is as a chemist, and in my subsequent theological and ecclesiastical career I have devoted considerable attention to the history of science as a cultural force, as well as trying to keep abreast of major developments in science itself. The work of Thomas Kuhn and Michael Polanyi had demonstrated the ways in which a theoretical consensus can develop and reinforce itself, precisely in the face of criticism that later proves to be valid. This is a phenomenon that is not confined to the natural sciences, but arises in every area of learning, for example economics, where evidential proof will eventually prove decisive.

While scientific theories are often developed on intuitive and expert speculative grounds, they have ultimately to answer at the bar of experimental evidence. A year or so ago I was fortunate to be present in the physics department of one of our leading universities, when the professors were discussing their current work. A professor of theoretical physics outlined the latest ideas about aspects of fundamental physics, string theory and so on, backed up by complex models embedded in a huge array of computers, which filled a room. The professor of experimental physics wryly commented that if an experiment could be devised to test such theories, he would gladly do so.

That is how scientific certainty, such as it ever is certain, is established. In 2015 we will celebrate the centenary of Einstein's 1915 paper on general relativity, but it was only when Sir Arthur Eddington's 1919 expeditions to the Gulf of Guinea and Brazil to observe a total eclipse of the sun led to experimental confirmation of the bending of light by a heavy object that the theory became widely accepted. Many additional empirical confirmations have followed.

This point reverberates through Dr Lee's essay. Evidence and proof undergird intrinsically moral questions, if hundreds of billions or even trillions of public expenditure are at stake, and many millions of lives would be adversely affected and much avoidable poverty generated by the wrong global policy decisions. What experimental support, beyond sophisticated computer projections, exists of the theories behind the current IPCC consensus? What proof

can exist? It should be acknowledged, of course, that the case for increasing carbon dioxide concentrations having a forcing effect upon global temperatures is very strong, but the quantitative link between carbon dioxide levels and average temperature is very much less certain, as is the effect of other influences on the long-term climate.

In order to predict the future climate a theoretical model is needed, one which encompasses all events on the surface of the planet, events in the ocean depths and in the atmosphere (clouds etc.), levels of carbon dioxide, nitrogen dioxide, water and methane, and also events on the surface of the sun that are determined by its interior. The outputs are then projected forward for many decades.

The level of certainty, admittedly within various envelopes of uncertainty, that has been expressed in the IPCC consensus is surprising, not least in the face of the current, and entirely unpredicted, 18-year global standstill in average surface temperatures. The IPCC coolly refers to this as a hiatus, as if such hiatuses are a rationally understood, normal part of science. They are not. The overconfidence of the IPCC has blended rather easily with, and been reinforced by, the guilt-driven quasi-religious Western fervour to save the planet. It is a short step to label those who question the IPCC certainties as climate change deniers, with unpleasant echoes of holocaust denial.

It is agreed that even if catastrophic global warming does not result from current trends in increases in carbon dioxide concentrations, the possibility that it might do so demands that all necessary measures must be taken to limit carbon dioxide emissions. This is called the precautionary principle. In a central section of this essay Dr Lee demonstrates that invoking such a principle easily becomes a lazy substitute for rigorous argument and empirical evidence.

We are entering a crucial phase of national and international debate, as the clock ticks and successive political initiatives end in failure. The temptation to raise the alarmist hyperbole is reminiscent of preachers and orators who note alongside a weak section of their script: 'Speak louder'.

The UK government has recently strengthened the legal framework to enable the maximum exploitation of its national hydrocarbon reserves, while signed up to an IPCC consensus which, on its own terms, requires most of the currently proven global reserves of oil and gas to remain in the ground. As Martin Wolf concluded in the *Financial Times* on 18 June 2014: 'The world has got itself into an extremely contradictory place'.

Dr Lee's essay explores these matters from the moral and ethical perspectives that might arise. The issues can doubtless be argued in different ways, but that they do need to be opened up for mature debate is vital for the future of our society, given the huge expenditures of public money that are poten-

tially involved. Democratic consent to whatever is decided will not be forthcoming if the debate is not engaged in the depth which Dr Lee demonstrates is necessary.

Rt Revd Dr Peter Forster

1 Introduction

Ethics is about making choices, something everyone does every day. For the idealist it is about choosing between good and evil, while for the pragmatist it means choosing between lesser evils and greater evils. Politics is also about making choices, and even though politicians will attempt as far as possible to present themselves and their policies as ethical, the harsh realities of distributing limited resources, ideological differences and conflicting interests mean that difficult and often apparently unethical choices must be made on a daily basis. Into this morass of ethical aspiration and political realism in the governing of individuals and populations falls almost every activity and interest imaginable, few of which are as contentious as climate change and the policies that are intended to ameliorate its worst effects. Complicating matters further, the literature on climate ethics, like that of every other aspect of climate change, is deeply contested, voluminous, rapidly expanding, and covers an array of fields: moral philosophy, science, economics, public policy, global justice, energy, and human rights, among others.¹ Some, like Henry Shue's 1993 paper on the costs, responsibility for, and allocation and prevention of greenhouse-gas emissions, remain politically relevant after a series of global climate conferences have failed to resolve them; others will remain in obscurity.² Against such a backdrop this essay, necessarily subjective, explores the complexity of ethical decision-making in relation to climate change policy. The breadth of the subject matter precludes a comprehensive engagement with the literature available at every juncture, so my selectivity is acknowledged even as the reader is directed towards further reading.

The very use of the expression 'climate change' is problematic, with an ethical dimension in the scientific and political spheres that goes beyond mere description of a physical phenomenon. Its precursor of the 1980s and 1990s, 'global warming', still sits in the shadows of climate change: a central aspect of the climate models produced on behalf of the Intergovernmental Panel on Climate Change (IPCC) to shape government policy. One difference between global warming and climate change is that – to use the expression of the philosopher of science Karl Popper³ – the former can be falsified while the latter cannot. Popper argued that a scientific theory cannot be proven but it

¹ An excellent starting point in the literature is Stephen M. Gardiner, Simon Caney, Dale Jamieson and Henry Shue (Ed.s) *Climate Ethics: Essential Readings* (Oxford: Oxford University Press, 2010). This book provides a summary of the history of key elements of ethical debates over two decades, not as a definitive text but as a prompt to further study (p. x).

² Henry Shue, 'Subsistence emissions and luxury emissions' in Gardiner et al., *Climate Ethics: Essential Readings*, pp. 200–214.

³ Karl R. Popper, *Objective Knowledge: An Evolutionary Approach* (Oxford and New York: Oxford University Press, 1979) p. 342.

can be disproven. When applied to global warming/climate change, there are circumstances in which it would be theoretically possible to show, through measurement, that over a defined period the phrase 'global surface temperatures are rising' is false (when that temperature stands still or falls). However, there have been no circumstances in the history of planet Earth in which the phrase 'the global climate is changing' can be shown to be false: the climate has always changed, is changing, and will continue to change. 'Global warming' has become a source of frustration, embarrassment even, to some in the climate science community, with actual measured global surface mean temperatures not rising recently in ways consistent with expectations and predictions at the end of the last century.⁴ Climate change, on the other hand, is appealing to activists and politicians specifically because it is all-encompassing and cannot be disproven. Nor can a human contribution to it be precisely measured and articulated. Going further, for some, climate change has developed into a social phenomenon to be used to advance personal and political interests and not a physical problem to be overcome. Mike Hulme, Professor of Climate and Culture at King's College London, captures this trend: 'We will continue to create and tell new stories about climate change and mobilise these stories in support of our projects.'⁵

Accompanying increasing scientific analysis of the physical aspects of climate change has been the emergence of Climate Change (note the capitalisation): an ideology – orthodoxy perhaps – that has emerged since the 1980s and which comprises an interwoven network of scientific, political, philosophical, sociological and cultural claims.⁶ Alongside the emergence and growing political influence of Climate Change (the ideology) has been an increasingly aggressive polarisation of debate, with contending voices each claiming the moral high ground.⁷ On this discursive battlefield it has become accepted practice – often among people who should know better – to foster negative attitudes that are characterised by a failure to recognise or acknowledge where opponents make valid points or ask legitimate questions. The consequence is a dilution of truth on all sides, with claims and counter-claims frequently

⁴ Further details available at 'Global-average temperature records', Met Office, <http://www.metoffice.gov.uk/climate-guide/science/temp-records>, accessed 10 October 2014.

⁵ Mike Hulme, *Why We Disagree About Climate Change: Understanding Controversy, Inaction and Opportunity* (Cambridge: Cambridge University Press, 2011) p. 364.

⁶ For an extended analysis of several of the key points addressed in this article, especially the role of truth in political discourse, see Peter Lee (forthcoming), *Truth Wars: The Politics of Climate Change, Military Intervention and Financial Crisis* (Basingstoke: Palgrave Macmillan, 2014).

⁷ While the terms 'moral' and 'ethical' will be used throughout this work, the former is taken to broadly refer to broad principles or societal codes while the latter concerns individual choices made in relation to those codes or principles.

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being overstated and under-justified, thereby creating ethical dilemmas for everyone who is interested in making decisions about the future of our planet and the welfare of its occupants, human and otherwise. In turn, this leads to a loss of interest and trust in scientific claims on climate issues by citizens around the world who might otherwise be more engaged with a subject that affects everyone.

Every aspect of climate change is shaped by ethical dispute: from scientific practice to lobbying and activism and eventually, at national and international levels, the setting and implementation of climate policy. The protagonists at every stage will claim that theirs is the ethical, or more ethical, position, and for a number of reasons. Some will claim to base their arguments and actions on superior values – secular or religious – than their opponents; others will claim that their motives are somehow purer, better informed and more altruistic than their selfish adversaries. Yet others will resolutely claim to be doing ‘the right thing’, an essentially meaningless catch-all that suggests a moral superiority without supplying persuasive evidence by way of justification. Others again will concern themselves with altering a predicted or imagined future without fully understanding the implications of their actions in the present or the interim.

Further complicating ethical claim and counter-claim is the disputed nature of ethics itself and the numerous, apparently contradictory, competing ethical frameworks that can be applied to climate change policy and every other aspect of life. To highlight these complexities and contradictions, and to offer a range of ethical interpretations, this paper will use two contrasting ethical approaches to show how easy it is to construct an apparently iron-clad ethical argument by either deliberately or inadvertently overlooking alternative perspectives. The two approaches that will be used in making ethical assessments in the sections to follow attach different levels of importance to the ‘ends’ or outcomes that are being pursued – say, saving the world from climate-induced disaster – and the ‘means’ adopted by scientists, activists, vested interests and politicians in the process. The former approach usually seeks the greatest amount of good for the highest number of people in any eventual outcome. In addition, individual motivation will also be considered, arguing that good motives do not always lead to good outcomes.⁸ Motivation is considered, at least in part, because if someone is motivated to ‘save’ the environment – however they articulate such a goal – above all things, he or she might be willing to accept a degree of human suffering as a result of climate change policy that would not be countenanced by someone who is primarily

⁸ See Robert Merrihew Adams, ‘On motives and morals’, *The Journal of Philosophy*, Vol. 73, No. 14 (Aug 1976) p. 470.

motivated to improve the lives of the global poor. This differentiation of motivations is based on the understanding that 'the environment' is represented in different ways in climate change discourse: for some it is the essential habitat of humanity with the future of both being inextricably linked; for others 'the environment' is more like some imagined ideal like, say, a biblical 'Eden' unspoiled by humans, than the harsh landscape of human history. These often unstated assumptions shape attitudes, intentions and behaviour towards the ethical dimension of climate change policy.

The alternative approach is duty- or rule-based and concerned with behaving properly – conforming to laws, policies, codes and so on – in the process of deciding and acting. To give an example of what this might mean, a climate scientist whose priority is to shape government policy in pursuit of the aim of 'saving the planet' may well behave differently to one whose absolute priority is maintaining the purity of long-established conventions of scientific practice, regardless of whether the outcomes advantage or disadvantage a certain policy position on climate change. The extent to which the integrity of science and the scientific method is maintained in relation to climate change will be examined.

One further ethical consideration that will appear in the pages to follow is that of unintended consequences, and it is concerned with the relationship between the intentions of individuals (I will extend this to groups) when they pursue a particular course of action, and the outcomes that result. Where climate change is concerned, good intentions should not immunise any interested party from criticism if their actions lead to deleterious outcomes for communities, countries and the world as a whole.

With these considerations in mind, the remainder of this paper will address the ethical dimension of three aspects of climate change policy. Section 2 will examine the ethical aspects of the scientific practice that both prompted the need for, and continues to shape at national and international levels, climate change policies. The tension between scientific activism and established scientific moral codes built on objective disinterest will be considered alongside the implications of unquestioningly accepting or rejecting scientific consensus, before moving on to explore the ethical dimensions of lobbying and activism more broadly. Section 3 will explore several ethical dilemmas involved in shaping climate change policy: the relative importance of human welfare and the environment, especially with regard to the global poor; the trade-off between harms and benefits in the pursuit, or limiting, of economic growth; and the practical difficulties involved in climate change negotiations. The final section will explore some of the ethical challenges in setting climate policy by analysing the costs of a simplistic application of the precautionary principle. Present needs will be considered against the needs of future generations in

both human and environmental terms, highlighting the difficulty of taking an ethical stance. The merits of global-scale mitigation solutions – for example, decarbonisation, carbon trading, and green taxes – will be weighed against targeted and specific adaptation, while the relative ethical claims of idealism (what should be done in a perfect world) will be considered alongside political pragmatism (what can be done in our imperfect world). Further, ethical decision-making amidst differing levels of uncertainty will be considered and then, finally, the dangers of moral hazard: a phenomenon that occurs when the best of intentions, motivations and actions combine to bring about outcomes that make the initial situation worse.

2 Science, ethics and climate policy

Emerging scientific concern

The emergence of global warming/climate change as an area of scientific interest is familiar enough to anyone with more than a passing interest in the subject. However, since science has been at the forefront of both prompting and sustaining climate change as an area of social and political concern it is worth very briefly recalling some early waypoints before turning to an ethical analysis of the contribution of contemporary climate science to climate policy.⁹

The mathematician and scientist Jean-Baptiste Joseph Fourier is usually cited as making the first significant contribution to our understanding of how global mean temperature is influenced by the atmosphere.¹⁰ Though Fourier published an article in 1824 in which he discussed different aspects of the heating of the Earth, James Fleming's history of climate change and human contributions to it shows that Fourier and others had been exploring this field for some years previously.¹¹ The scientific principles and activities that underpinned Enlightenment progress and confidence opened up new conceptual and technological frontiers: observation, measurement, objective analysis, the testing of hypotheses through experimentation, replication of findings, peer review through public lectures and published works. These were applied to the study of climate just as they were applied in every other area of

⁹ For a comprehensive treatment of the history of global warming/ climate change see Rupert Darwall, *The Age of Global Warming: A History* (London: Quartet Books, 2013).

¹⁰ For example, see Hulme, 2011, p. 42 ff.

¹¹ For an extensive study of early scientific explorations of climate change see James R. Fleming, *Historical Perspectives on Climate Change* (Oxford: Oxford University Press, 1998); and James R. Fleming, 'Joseph Fourier, the 'greenhouse effect', and the quest for a universal theory of terrestrial temperatures', *Endeavour* Vol. 23, No. 2 (1999) pp. 72ff.

the natural sciences. In the course of the nineteenth century, understanding of the extent of natural variation in the Earth's climate would eventually lead to the acceptance of early ice ages. Continuous scientific study produced both new understandings and new questions to be explored. By the turn of the twentieth century a link had been established between carbon dioxide levels in the atmosphere and global mean surface temperature.

Disputes still rage over the extent to which fears of a looming ice age dominated climate science in the early 1970s. What is beyond dispute is that by the end of that decade the subject was dominated by concerns about global warming and its potential influence on life on Earth.

Equally indisputable is the gradual merging of climate science with political concern. By 1989 the distinction between the objective pursuit of scientific knowledge about global warming and the politics of science-based climate activism had broken down to the extent that Professor Stephen Schneider, an early lead author for the Intergovernmental Panel on Climate Change (IPCC), could write:

On the one hand, as scientists we are ethically bound to the scientific method, in effect promising to tell the truth, the whole truth, and nothing but – which means that we must include all doubts, the caveats, the ifs, ands and buts. On the other hand, we are not just scientists but human beings as well. And like most people we'd like to see the world a better place, which in this context translates into our working to reduce the risk of potentially disastrous climate change. To do that we need to get some broad based support, to capture the public's imagination. That, of course, means getting loads of media coverage. So we have to offer up scary scenarios, make simplified, dramatic statements, and make little mention of any doubts we might have. This 'double ethical bind' we frequently find ourselves in cannot be solved by any formula. Each of us has to decide what the right balance is between being effective and being honest. I hope that means being both.¹²

Schneider's words have since been fought over, selectively redacted and sometimes misrepresented by climate change advocates and opponents alike – alarmists and sceptics, in their extreme forms. For the latter, the claim that climate scientists 'have to offer up scary scenarios [and] make simplified, dramatic statements,' is taken to be an admission of fraud. On some level it may well be, but it is also a statement of great candour that gets to the heart of the relationship between climate science, ethics and climate policy.

¹² Stephen H. Schneider, October 1989 interview with *Discover* magazine, reprinted in Detroit News Editorial Response, 5 December 1989, http://stephenschneider.stanford.edu/Publications/PDF_Papers/DetroitNews.pdf, accessed 31 July 2014.

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In ethical terms, the two most significant phrases set out by Schneider are these: 'As scientists we are ethically bound to the scientific method', and, 'we'd like to see the world a better place'. The first of these statements acknowledges the ethical code that defines the scientific method which, according to Robert Merton's enduring account, comprises universalism, communalism, disinterestedness and organised scepticism;¹³ in other words that science is conducted using universally accepted practices and criteria, that findings should be shared by all scientists and not narrow communities, that scientists should prioritise the testing, replication and verification of results above any pecuniary or other self-interest, and that findings should be continuously and rigorously scrutinised. This approach considers that scientists conduct themselves ethically when they conform to established scientific codes. In contrast, the second statement articulates a desire to 'see the world a better place' and its ethical concern is with ends: what Schneider and those who support his approach ultimately want to achieve through their scientific endeavour. This approach allows, perhaps incites, scientists to veer away from the traditional standards and practices of science embraced by Merton. There is a danger, however, for those whose priority is achieving what they see as the 'correct' political as opposed to scientific ends (based on personal values, interests and motivations); established scientific processes, codes and balanced considerations can be marginalised or ignored, eventually leading to the ends being used to justify questionable means.

Consequently, Schneider's description of climate scientists being in a 'double ethical bind' is inaccurate. Climate scientists face an ethical choice: do they conform to established ethical standards of scientific practice or do they sacrifice those standards in favour of actions and statements that will be more likely to shape public opinion and climate policy in their preferred direction? For scientists there is no such thing as a balance between 'being effective and being honest'; once scientific honesty is violated it damages trust to the extent that it can undermine any good intentions and negate anticipated effectiveness in the long run.¹⁴ It is theoretically possible to be both, but not in Schneider's terms. Omitting the 'doubts, the caveats, the ifs, ands and buts'¹⁵ is not a morally neutral act; it is a subtle deception that calls scientific practice into disrepute. If such actions took place in any other field, for example pharmaceutical research and the testing of new medicines, the scientists would not only be branded unethical but would most likely be stripped of their positions

¹³ Robert K. Merton, 1942, 'The normative structure of science', in Norman W. Storer (ed.) *The Sociology of Science: Theoretical and Empirical Investigations* (Chicago: University of Chicago Press, 1973) pp. 267–278.

¹⁴ Schneider, 1989.

¹⁵ Schneider 1989.

and potentially face prosecution as well. Similarly, a scientist who was funded by an oil or tobacco company and went on to 'prove' that their products were harmless would be ridiculed and ignored. However, Schneider's words in 1989 have served as an invitation to climate scientists to dilute or violate the ethics of scientific practice while – and this is important to grasp – viewing their actions as ethical because of a desire to make the world a better place. The irony here is that some climate scientists may be undermining their own arguments by adopting such an approach.

For policymakers these details matter, for they need to know if they are acting on the best of scientific knowledge, acquired through the application of the most rigorous of scientific practices and observation of scientific ethics, or whether well-intentioned scientist-activists are shaping climate policy on the basis of less-than-transparent scientific practices – and I refer here to even minor oversights or the exclusion of seemingly trivial caveats that may take on great importance in an unpredicted future – and unstated personal and political aims. Unfortunately for everyone concerned with climate change, regardless of individual views about the degree to which it is prompted by human conduct or a result of natural variation, it only takes a small number of high profile errors or examples of malpractice to undermine everyone's trust: a crucial point when billions, perhaps trillions, of pounds and dollars could be spent erroneously.

Science, normality and ethics

Two ways to get round the 'problem' of the constraints of established science ethics in the shaping of climate policy are, first, to redefine the very meaning of science and, second, to change the moral code on which it rests, replacing 'proof' with 'consensus' in the process.

Four years after Schneider's now (in)famous statement, two philosophers of science, Silvio Funtowicz and Jerry Ravetz, challenged the rigid methodology and codes of science in framing what Ravetz calls, 'the scheme of Post-Normal Science'.¹⁶ The purpose of post-normal science, especially in environmental or climate studies, was to broaden the range of inputs into the policy-making process, so as to include not only accredited scientists and the rigid rules of science but also 'all the stakeholders in an issue' who, in turn, could 'deploy "extended facts", including local and personal experience' and unconventional sources of information.¹⁷ As a result, the science – or rather post-normal science – that would shape climate policy would incorporate subjective dimensions, individual and collective special interests, and ideological el-

¹⁶ Jerry Ravetz, <http://www.jerryravetz.co.uk/work.html>, accessed 31 July 2014.

¹⁷ Ibid.

ements.¹⁸ Facts would be combined with values in driving social change.¹⁹ The attraction of this philosophical approach for some climate scientists is obvious: the old restrictions of the scientific method could be set aside, either fractionally or completely, in the pursuit of personally or ideologically 'higher' goals.

However, what Funtowicz and Ravetz did not make clear is how this ethical sleight of hand would be achieved. The process is simplicity itself and the ideas are as old as philosophy. The emphasis on codes, rules and practices that have shaped ethical scientific practice from the earliest days of the Enlightenment would be relegated in favour of a values-driven, ideologically-motivated philosophy of science that emphasised instead the importance of the 'ends' being pursued (which is itself a value judgement). In other words, the concept of post-normal science provides a post-hoc philosophical justification of Schneider's shift away from the strictures of established scientific norms, all in the name of individualised conceptions of saving the planet or making the world a better place (however these statements are interpreted). It also helps to explain why climate change advocates, especially more extreme alarmists, continue to make the accusation of 'climate change denier' against individuals who might clearly and publicly acknowledge the existence of climate change and the science that underpins it but want to discuss the extent to which it is induced by human behaviour, its likely consequences for planet Earth, and the best way to ameliorate any threat. This phenomenon exists because the dispute is not based on science as it is historically understood but on post-normal science, which includes values, subjective opinion and ideological dimensions. If aspects of the (pure) scientific argument are accepted by critics – that is, climate change is real – those critics can still be constituted as deniers or contrarians because they have not also accepted particular environmental and ideological positions that are frequently associated with climate change, which often have an anti-capitalist emphasis or incorporate an unstated commitment to the global redistribution of wealth. As Hulme, eloquently and transparently put it: 'we need to see how we can use the idea of climate change – the matrix of ecological functions, power relationships, cultural discourses and material flows that climate change reveals – to rethink how we take forward our political, social, economic and personal projects over

¹⁸ Silvio O. Funtowicz and Jerome R. Ravetz. 'Science for the post-normal age', *Futures* Vol. 25, No. 7 (1993) 739–755.

¹⁹ Silvio O. Funtowicz and Jerome R. Ravetz, 2003, 'Post-normal science', *International Society for Ecological Economics*, p. 3–4, <http://leopold.asu.edu/sustainability/sites/default/files/Norton,percent20Postpercent20Normalpercent20Science,percent20Funtowicz.1.pdf>, accessed 10 December 2013.

the decades to come.²⁰ Climate change has moved beyond a physical phenomenon to be addressed to being a sociological phenomenon that has been inscribed with layers of political, ideological, cultural and neo-religious beliefs.

Consensus

In parallel with this philosophical shift emerged the increasingly influential concept of 'consensus' in climate science, which in turn was, and is, a powerful weapon when it comes to shaping climate policy. However, it is difficult to imagine a concept that is less suited to describing scientific processes and output than consensus. The most obvious problems with consensus concern who it is that is agreeing and how that agreement is reached, with each aspect bringing its own ethical challenges.

One of the little-acknowledged truths about climate science is that there is no such thing as a 'climate expert' or a 'climate change expert'; not if 'expert' is taken to refer to someone who publishes internationally recognised research in relevant, world-class academic journals in their field, alongside research and possibly teaching at credible academic institutions. This is not intended as an insult to those who devote their lives to understanding global climate, the way it changes and has changed over time, and the causes of those changes, past, present and predicted future. However, the way that science and scientists work makes the observation accurate. Consider just some of the specialist fields – and that word 'specialist' is at the heart of the problem – involved in understanding climate change: geophysics, biochemistry, marine biology, microbiology, paleoclimatology, geology, crop science, soil science, plant biology, environmental chemistry, physical chemistry, evolutionary biology, biostatistics, bacteriology, environmental bacteriology, parasitology, statistics, solar astronomy, solar physics, geography, oceanography, meteorology, plate tectonics, zoology, botany, computer science, atmospheric science, biogeochemistry, helioseismology, climatology, history of the climate, mathematical modelling, dendrochronology, stratospheric and tropospheric chemistry, volcanology, hydroclimatology, glaciology and hydrometeorology. It can take a lifetime for a scientist to become eminent in one field of study; the chances of becoming eminent today in two or three fields are vanishingly small. A solar physicist is unlikely to also be a pioneering bacteriologist and a world leader in paleoclimatology. Of course, a well-educated scientist will probably have a better appreciation of other fields than non-scientists but that general understanding will never match their expertise in their own speciality. This means that when scientists are reaching consensus on climate change – and there appears to be little alternative to trying to understand what other

²⁰ Hulme, 2011, p. 362.

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experts working in the general area of climatology are doing – they do so predominantly from a position of limited knowledge of other disciplines, since theirs is one specialty out of dozens or even hundreds. This makes ethical accountability somewhat difficult. In addition, if large numbers of climate scientists share social, political or ideological values, as well as similar views on how climate change should be ameliorated, there is an unavoidable risk of well-intended groupthink²¹ on a global scale. Problematically, another question emerges concerning the very basis of scientific inquiry: how possible is it for long-established climate scientists to query even the smallest part of a carefully constructed consensus?

Consider two examples of coercive behaviour that specifically sought to maintain scientific consensus over climate change. The first concerns the meteorologist Professor Lennart Bengtsson, Head of Research at the European Centre for Medium-Range Weather Forecasts in Hamburg, a scientist of more than 40 years experience, who accepted an invitation to join the Academic Advisory Council of the Global Warming Policy Foundation on 27 April 2014. Within two weeks he tendered his resignation, stating:

I have been put under such an enormous group pressure in recent days from all over the world that has become virtually unbearable to me... I had not expecting [sic] such an enormous world-wide pressure put at me from a community that I have been close to all my active life. Colleagues are withdrawing their support, other colleagues are withdrawing from joint authorship etc. I see no limit and end to what will happen. It is a situation that reminds me about the time of McCarthy.²²

Bengtsson had not abandoned his life's work to consort with a climate-change denying 'enemy', he had decided to engage positively with an organisation that is as committed to and supportive of, the enduring principles of science and their application in climate research as the most assiduous climate researcher. However, those involved with the organisation tend not to be wedded to the same ideologies and policy solutions as many within what might

²¹ For an introduction to the phenomenon of groupthink and how it becomes extremely difficult for members of a group to challenge collectively owned ideas see Irving L. Janis, *Victims of Groupthink: a Psychological Study of Foreign-Policy Decisions and Fiascoes* (Boston: Houghton Mifflin, 1972); and Irving L. Janis, *Groupthink: Psychological Studies of Policy Decisions and Fiascoes* (Boston: Houghton Mifflin, 1982). For an environmental application of groupthink see Mark Pelling, Chris High, John Dearing, and Denis Smith, 'Shadow spaces for social learning: a relational understanding of adaptive capacity to climate change within organisations', *Environment and Planning A*, Vol. 40, No. 4 (2008) pp. 867–884.

²² Lennart Bengtsson, 14 May 2014, Letter of resignation to the GWPF Academic Advisory Council, <http://www.thegwpcf.org/lennart-bengtsson-resigns-gwpcf-voices-shock-and-concern-at-the-extent-of-intolerance-within-the-climate-science-community/>, accessed 2 August 2014.

be termed the IPCC scientific consensus. Bengtsson was prepared to keep an open mind, in the best of scientific traditions. However, science is not at the root of the emotional blackmail, career threats and personal abuse that he received: his treatment is more akin to that meted out to heretics of old. He did not violate the principles of science but in the eyes of a number of hostile individuals he betrayed the values, ideology and community cohesion of a particular worldview that is expressed in what is for some the 'climate cause'.

A tension exists at the heart of climate policy ethics: does climate consensus emerge purely from the application of science, traditionally understood, which then shapes policy, or does political and ideological agreement about what climate policy should be encourage scientists to depart from the strict methods that maintains the integrity of science? Hulme's statement about using 'the idea of climate change – to rethink how we take forward our political, social, economic and personal projects over the decades to come' highlights the risk to established scientific method.²³ This ideological aspect of climate change was largely overlooked when the Climategate emails were leaked and critics poured over the texts looking for evidence of scientific fraud. Such critics looked in vain for a 'smoking gun' that proved global-scale cheating. It was not in the measuring, calculating and experimenting that the moral codes of science were violated, it was in the politicising of scientific actions, as historical scientific disinterestedness was sacrificed in what was intended by some, perhaps many, climate scientists as the pursuit of a noble, ethical cause.

In 2004 Michael Mann, the scientist behind the now (in)famous 'hockey stick' graph,²⁴ which showed fluctuations in the Earth's temperature over the last millennium, emailed Phil Jones at the Climatic Research Unit, University of East Anglia, about an even longer historical temperature reconstruction. The leaked email records him as writing: 'By the way, when is Tom C going to formally publish his roughly 1500 year reconstruction??? It would help *the cause* to be able to refer to that reconstruction as confirming Mann and Jones, etc.'²⁵ The science – the temperature reconstruction – supports Mann's cause, opening him and other like-minded scientists to the charge that the cause also shapes their science. This interpretation of Mann's climate activism is reinforced in his published writings where he states: 'Scientific truth alone is not enough to carry the day in the court of public opinion. The effectiveness of one's messaging and the resources available to support and amplify it play a

²³ Hulme, 2011, p. 362.

²⁴ The graph was published in the Summary for Policymakers in the 2001 report of the Intergovernmental Panel on Climate Change, see http://www.grida.no/publications/other/ipcc_tar/?src=/climate/ipcc_tar/wg1/005.htm, accessed 1 August 2014.

²⁵ Michael Mann, 3 August 2004, email to Phil Jones located at <http://www.ecowho.com/foia.php?file=3115.txt>, accessed 19 July 2014, (my emphasis).

far greater, perhaps even dominant role'.²⁶ In ethical terms we see another example of a climate scientist who holds a strong ethical commitment to the policy dimension of climate change and its associated end of shaping public opinion and behaviour, appearing to prioritise the pursuit of those ends above the narrower moral codes of scientific discovery.

Science, consensus and politics

The matter of consensus and the degree to which it has been fully and freely reached and continues to be fully and freely held by scientists involved in climate research is impossible to ascertain. The possibility of climate consensus in the scientific domain being extended to the political domain is even more problematic. Consider a number of statements from one United Nations debate. On 17 April 2007 the UN Security Council hosted a debate on climate change and its future implications, with the issue of 'consensus' appearing repeatedly. Jan Kubis, the Slovakian representative, gave consensus an early mention in the debate, stating that 'there was now an effective consensus among the world's leading scientists that there was a discernible human influence on the climate and a link between the concentration of carbon dioxide and the increase in temperature [and that it] was time to consider the policy dimensions of climate change'.²⁷ Kubis suggested that the scientific aspects of climate change consensus was distinct from any suggested policy dimension that climate scientists put forward. However, in that same year the IPCC acknowledged: 'The quantitative and mechanistic explanation of...CO₂ variations [over time] remains one of the major unsolved questions in climate research'.²⁸

L.K. Christian of Ghana grasped that the science and politics of climate change were not distinct, asking: 'What sorts of compromises would developing countries be obliged to make, in line with the emergent international consensus on energy, security and climate change?'²⁹ The inference here was that emerging climate change consensus is something that is 'done to' devel-

²⁶ Michael E. Mann, *The Hockey Stick and the Climate Wars* (New York and Chichester: Columbia University Press, 2012) p. 254.

²⁷ UN Security Council Debate on the Impact of Climate Change, 17 April 2007, located at <http://www.un.org/News/Press/docs/2007/sc9000.doc.htm>, accessed 31 July 2014.

²⁸ Jansen, E., J. Overpeck, K.R. Briffa, J.-C. Duplessy, F. Joos, V. Masson-Delmotte, D. Olago, B. Otto-Bliesner, W.R. Peltier, S. Rahmstorf, R. Ramesh, D. Raynaud, D. Rind, O. Solomina, R. Vittalba and D. Zhang, 2007: 'Palaeoclimate'. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 446.

²⁹ UN Security Council Debate, 17 April 2007.

oping countries by developed countries. The Summary for Policymakers of the 2014 IPCC Fifth Assessment Report acknowledges the imbalance of contributions to climate science between developed and developing countries, highlighting that the number of climate-science publications from the latter 'still represents a small fraction of the total'.³⁰

Bezlan Ishan Jenie, representing Indonesia, urged the international community to 'seize the opportunity to reach a global consensus on ways to adapt and mitigate climate change in the relevant fora'. These fora included the United Nations Framework Convention on Climate Change, the Kyoto Protocol, and the thirteenth Conference of the Parties of the Climate Change Convention in Bali later that year. These policy-shaping fora have one thing in common: a reliance on the claimed scientific consensus on climate change. However, consensus can only be reached – bearing in mind that everyone is a non-expert in every field but their own – through simplification, the marginalisation or exclusion of outlying views, and a tendency to some lowest common denominator that the maximum number of scientists can sign up to: a political, not a scientific process.

In the light of Schneider's early urgings to 'make simplified, dramatic statements, and make little mention of any doubts we might have',³¹ climate scientists who want to stick rigidly to the core practices of science are put in a difficult position when caveats and cautions are downplayed. As recently as the 2014 IPCC Working Group III Summary for Policymakers the limitations of climate models in planning mitigation policies are relegated to a footnote:

The long-term scenarios assessed in WGIII were generated primarily by large-scale, integrated models that project many key characteristics of mitigation pathways to mid-century and beyond...They are simplified, stylized representations of highly-complex, real-world processes, and the scenarios they produce are based on uncertain projections about key events and drivers over often century-long timescales. Simplifications and differences in assumptions are the reason why output generated from different models, or versions of the same model, can differ, and projections from all models can differ considerably from the reality that unfolds.³²

³⁰ IPCC WGII AR5 Summary for Policymakers, 31 March 2014, p. 4.

³¹ Schneider, 1989.

³² IPCC, 2014: Summary for Policymakers, In: Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p. 10, Footnote 14 (Italics for emphasis), http://report.mitigation2014.org/spm/ipcc_wg3_ar5_summary-for-policymakers_approved.pdf, accessed 30 July 2014.

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There is nothing surprising or controversial in this statement; it conforms to standard academic practice across all fields by being included as a footnote, providing additional, relevant detail that would otherwise disrupt the flow of the main argument. However, this is no mere academic article. It is a summary for policymakers that will guide them in their planning and execution of key national and global policies to mitigate and adapt to climate change, with potential costs of hundreds of billions or trillions of pounds over the rest of the century. Given the vast potential costs involved and the subsequent impact on current and future generations – especially the poorest – relegating the important question of who will bear that cost to a footnote on page 10 is not simply an academic convention, it is a political act with ethical consequences. Its relevance and impact would be very different if it was presented as the opening statement in the Summary document. However, its positioning is part of the ‘consensus’ reached in the policy document; it did not happen by accident.

That is why the scientific consensus on climate change and the way it is reached and sustained has such crucial ethical implications for climate policy-making. It is not just scientific measurements, calculations, projections and so on that inform policymakers. The additional layers of often unacknowledged personal values, ideologies and collective aims are now part of the claimed scientific consensus too and these factors make it difficult to have robust but respectful disagreements: to question the science is to question the values of the scientists behind it; to question related ideological aspects of climate science held by scientists is deemed as questioning the science. What is not clear is how individuals or groups within the consensus can question or challenge the consensus in keeping with time-honoured scientific practice. If such challenges cannot be made and sustained without the abuse and coercion faced by Lennart Bengtsson, for example, then what is taking place is a political rather than a scientific process.

Lobbying and activism

The final link between climate science, climate policy, consensus and associated ethical considerations to be considered here takes the form of activism and political lobbying. There are no established codes to govern either and the guiding ethics, if they can be described this way, appear to be driven either by the pursuit of an anticipated ‘good’ (in the case of activism) or in support of the customer’s goals (in the case of lobbying). For the climate activist the anticipated ‘good’ – which may well turn out not to be so ‘good’ in due course – will necessarily be ideologically informed and is not some automatic side effect of scientific discovery. Meanwhile, political lobbyists are paid to get results:

policy shifts in favour of the corporations or interests they represent, whether that is for Greenpeace or BP. Such activities can be considered morally neutral, insofar as they provide policymakers with information and arguments about which they may not be aware, unless they result in harm, subvert the political process or are actively misleading.

In 2010 David Cameron predicted, before he became Prime Minister, that political lobbying would be the next major scandal in British politics, and this is an ethical and legal time-bomb that is still ticking. In this ethically uncertain terrain we find climate change lobbyist-activists who seek to reinforce 'climate consensus' in the public imagination with the aim of shaping human behaviour and the enactment of climate policy. The Institute for Public Policy Research (IPPR) published a report in 2006, 'as part of its project on how to stimulate climate-friendly behaviour in the UK,'³³ which raises ethical questions about the relationship between climate science, activism and policy making. It suggests how individual attitudes and behaviour in relation to climate change might most effectively be influenced:

Much of the noise in the climate change discourse comes from argument and counter-argument, and it is our recommendation that, at least for popular communications, interested agencies now need to treat the argument as having been won. This means simply behaving as if climate change exists and is real, and that individual actions are effective... The 'facts' need to be treated as being so taken-for-granted that they need not be spoken... Where science is invoked, it now needs to be as 'lay science' – offering lay explanations for what is being treated as a simple established scientific fact, just as the earth's rotation or the water cycle are considered.³⁴

For the IPPR there is no ethical case to answer here: it was commissioned to prepare a report that would advise its customers how best to get a particular 'climate friendly' message across in such a way as to change behaviours. In delivering such a report its contractual and moral obligations – such as they existed – were fulfilled, even if the language is troubling in places for anyone concerned with scientific accuracy and the cautions and caveats that accompany ground-breaking scientific research. The IPPR urged the use of 'non-rational approaches like metaphor as well as more rationalistic approaches to enable people to engage emotionally and make desired behaviours appear attractive.'³⁵ Even the terminology – 'non-rational' – is anti-scientific.

³³ Gill Ereaut and Nat Segnit, 'Warm Words: How are we telling the climate story and can we tell it better?' (London: Institute for Public Policy Research, 2006) p. 5.

³⁴ Ibid., p. 25.

³⁵ Ibid., p. 9.

If climate consensus can only be achieved through negotiation, compromise and acceptance of the lowest scientific denominator, promoted through a further layer of simplification and explicit appeal to emotion over reason, it is difficult to avoid the charge of propagating disinformation, even when done with the best of intentions. Not only is the established moral code of normal science violated by overlooking scientific disinterestedness, but the promotion of that consensus depends on techniques of 'selling' rather than persuading. Even the IPPR report acknowledges: 'It amounts to treating climate-friendly everyday activity as a brand that can be sold'.³⁶ Should anyone seek to ignore or diminish the significance of the IPPR approach, or deny that such activities have never taken place, events at the BBC undermine their argument.

A 2007 report stated: 'The BBC has held a high-level seminar with some of the best [climate] scientific experts, and has come to the view that the weight of evidence no longer justifies equal space being given to the opponents of the consensus'.³⁷ The BBC, when challenged over the veracity of this statement went to inordinate lengths, including legal action, to prevent an accurate description of the attendees from becoming public knowledge. Far from being a gathering of 'scientific experts', the seminar was eventually shown to have been a gathering of 28 BBC staff, a maximum of four scientists, and 26 others whose climate-related interests ranged from activism and campaigning to lobbying and journalism.³⁸ The real ethical dispute arises when climate change advocates take the view that avoiding one specific, apocalyptic vision of the future for our planet is so important and so urgent that 'trivial' inaccuracies in detail and argument such as those pointed out above can be overlooked for the sake of some anticipated greater good: the ends justifying the means.

3 Shaping climate policy

Competing priorities

In 1995 President Bill Clinton met with President Jiang Zemin of China in a high-profile summit. Clinton is said to have informed the Chinese Premier that his biggest fear for the United States was not war or trade imbalance with China but that all Chinese people would want to live like Americans with everything that such consumption implied for the environment and climate

³⁶ *Ibid.*, p. 28 (Original italics).

³⁷ BBC Trust Report, June 2007, *From Seesaw to Wagon Wheel: Safeguarding impartiality in the 21st century*, p. 40, located at http://www.bbc.co.uk/bbctrust/assets/files/pdf/review_report_research/impartiality_21century/report.pdf, accessed 28 July 2014.

³⁸ For a more detailed outline of events see Peter Lee, *Truth Wars*, pp. 45–48.

change.³⁹ The Chinese leader, in contrast, was concerned with feeding a billion people and raising living standards. Further highlighting the distance between the two leaders in terms of climate concern, in describing the meeting Mark Hertsgaard quoted a Chinese official as saying: 'Global warming is not on our agenda.'⁴⁰

Superficially at least, the two dynamics at play here are first, concern for people, especially people in poverty and facing hunger, as well as wider economic and social deprivation, and second, concern for the natural environment, notably where it is harmed by human behaviour. Of course everyone can and should be concerned for both other people and for the natural environment, especially since human existence necessarily depends on an environment that will support and sustain the global population. However, climate change and the setting of climate policy may call for decisions to be made about the relative importance of human welfare and the welfare of the natural environment on which we depend. While it is theoretically possible to apply equal weight to each it is more likely that greater priority will be given to one over the other. Such a decision is not only a political choice, it is an ethical choice as well since it involves placing higher or lower relative values on people and the natural world and setting policy accordingly. (I accept that they are inherently connected and that a reduction in Beijing's smog will improve the lives of the city's inhabitants, for example.) While this may seem a rather esoteric concern in a paper that is interested in the ethics of climate policy, the connection is one of competing priorities.

In the 1970s the ecological movement began to gather a momentum that would eventually bring it to global prominence through advocacy and activism in addressing climate challenges and helping to advance pro-climate change messages. Blunt sentiments from within the ecological movement at that time left no doubt about where its priorities stood and where, for many, they still stand. Edward Goldsmith, founder of *The Ecologist* in 1970, stated in the first edition of the journal that the relationship between people and the natural environment is akin to that of parasite and host: a 'disease [that] has spread exponentially'.⁴¹ Twenty years later the Club of Rome, a green collective, published a report that echoed Goldsmith's sentiments:

In searching for a common enemy against whom we can unite, we came up with the idea that pollution, the threat of global warming, water shortages, famine and the like, would fit the bill. In their totality and their interactions these phenomena do constitute a common threat which must

³⁹ An account of the meeting can be found at Mark Hertsgaard, 'Is your stomach too full', in Bill McKibben (Ed.) *The Global Warming Reader* (New York, Penguin Books, 2011) p. 160.

⁴⁰ Ibid.

⁴¹ Edward R.D. Goldsmith, Editorial, *The Ecologist*, Vol. 1, No. 1 (July 1970) p. 3.

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be confronted by everyone together. All these dangers are caused by human intervention in natural processes, and it is only through changed attitudes and behaviour that they can be overcome. The real enemy then is humanity itself.⁴²

To those who view humanity as 'the enemy' it is easy to see why increased energy costs and fuel poverty are ineffective arguments against some climate change policies: humanity is getting what it deserves for what it has done to the environment. Contrast those sentiments with a statement by Pope John Paul, leader of the Roman Catholic Church, who, while identifying ecological crises as 'a moral problem', said in 1990: 'In the words of the Second Vatican Council [which clarified and re-asserted Roman Catholic doctrine in the 1960s], "God destined the earth and all it contains for the use of every individual and all peoples"'.⁴³ While the Catholic and other churches have more recently voiced concerns for the natural environment, the history of scientific, economic and technological advancement – especially in the West – has seen the natural environment as a resource to be used for the benefit of the humans who occupy it.

It should immediately be clear that individuals, organisations or governments who adopt an ideological stance that heavily prioritises the environment will be more prepared to enact climate policies that have a deleterious impact on human beings than groups, religious or otherwise, whose ideological roots prioritise human welfare. The greater the tendency to prioritise the environment the more likely it is that the environment is viewed in romantic or mythical terms completely separate from the people who live in it. People, on the other hand, cannot be logically separated from the environment that sustains them. However, when climate policies are proposed, debated and decided upon by governments, observers will make more sense of decisions if they can detect, even subtly, what the underlying philosophical or ideological priorities are. With this crucial underlying consideration in mind, the remainder of this section will explore two areas where choices must be made: the ethics of economic growth and how it affects the poor, and in negotiating, even discussing, climate policy.

⁴² Alexander King and Bertrand Schneider, *The First Global Revolution: A Report by the Council of the Club of Rome* (Orient Longman, 1991) p. 75.

⁴³ Pope John Paul II, 1 January 1990, Message for the Celebration of the World Day of Peace, http://www.vatican.va/holy_father/john_paul_ii/messages/peace/documents/hf_jp-ii_mes_19891208_xxiii-world-day-for-peace_en.html, accessed 1 August 2014.

The ethics of growth and sustainability

Growth, or decline, in a nation's economy is usually measured, annually, in small percentage points of Gross Domestic Product, the total value of goods produced and services provided over that period. In times of boom or recession, positive or negative growth might reach double figures, and measuring those figures in pounds, dollars, euros or yen is the easy part. Calculating the value of economic growth is another challenge entirely and is informed by personal, political and cultural influences. For some, economic growth is inherently unethical: it harms the environment, is fuelled by the worst excesses of human greed and selfishness, and the wealth it creates is unfairly distributed. For others, economic growth is the key to meeting desperate needs by creating the wealth that will raise billions of people out of poverty. Complicating matters, at every point on the political spectrum the notion of sustainability is raised and disputed by environmentalists on the one hand and industrialists on the other. Further, 'sustainability' as a concept is an important factor in this discussion of ethics and climate change policy because it has been co-opted into the ever-expanding doctrine and ideology of Climate Change,⁴⁴ and also serves as a key argument for those who see the financial crisis of 2007–8 and beyond as a signal that the end of economic growth is nigh.⁴⁵

The UNFCCC and the earlier IPCC Summaries for Policymakers present an apparently ethical ideal to the world that somehow enables the mitigation (reduction) of greenhouse gases, facilitates sustainable economic growth and eradicates poverty at the same time. The IPCC's Fifth Assessment Report in 2014 goes further than its predecessors in identifying the competing ethical claims and methodologies.⁴⁶ Simon Caney, for example, has used human rights and a combination of the 'polluter pays' and 'ability to pay' principles in allocating the burden of costs and responsibilities.⁴⁷ These approaches, in turn, have been challenged by Martin Weitzman, who argues that 'deep structural uncertainty lies at the heart of climate change economics'.⁴⁸ Robert Pindyck goes further, factoring in potential future damages in his modelling.⁴⁹

⁴⁴ See Hulme, 2011, p. 248ff.

⁴⁵ See Richard Heinberg, *The End of Growth* (Forest Row, Clairview Books, 2011) p. 222ff.

⁴⁶ See IPCC WGIII AR5, Ch. 2, p. 28.

⁴⁷ From an extensive author literature see Simon Caney, 'Climate change, energy rights and equality. Climate change', in *The Ethics of Global Climate Change*. D. Arnold, (ed.), (Cambridge: Cambridge University Press, 2011) pp.77–103; Simon Caney, 'Climate change and the duties of the advantaged', *Critical Review of International Social and Political Philosophy*, Vol. 13, Issue 1 (2010) pp. 203–228.

⁴⁸ Martin L. Weitzman, 'Fat-tailed uncertainty in the economics of catastrophic climate change', *Review of Environmental Economics and Policy* Vol. 5, Issue 2 (Summer 2011) p. 286.

⁴⁹ Robert S. Pindyck, 'Fat tails, thin tails, and climate change policy', *Review of Environmental*

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The idea of sustainable development is not new and has been revisited regularly since Thomas Malthus wrote *An Essay on the Principle of Population* in 1798. The concept emerged in the lexicon of environmental politics in 1987 as 'a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change' are all in harmony and enhance both current and future potential to meet human needs and aspirations.⁵⁰ The idealism of *Our Common Future* and its authors, revealed in these few words, does little to address the practical challenges and ideological tensions the world faces now and will face in the future. The Chairman of the World Commission on Environment and Development behind the report began by fudging the question of sustainability and its associated ethical dimension by calling for 'a new era of economic growth – growth that is forceful and at the same time socially and environmentally sustainable.'⁵¹ As a goal this aspiration appears ethically indisputable: who would not want economic growth that is both forceful and non-harmful. However, in order to pursue that ethical ideal the proposer and any supporters have to side-step two ethical implications of the means to achieve that goal. First, 'forceful growth' is not what the author suggests and actually means, or at least suggests; 'curtailed growth' – another burden to be borne primarily by the poor – would be more accurate. Second, the target of social and environmental sustainability locates ethical priority with the natural environment over people.

This message became a founding principle of the United Nations Framework Convention on Climate Change and is articulated in Article 2:

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.⁵²

The Convention starts off by articulating a concern about how human be-

Economics and Policy, Vol. 5, Issue 2 (Summer 2011) p. 260.

⁵⁰ Report of the World Commission on Environment and Development: *Our Common Future*, 1987, Chapter 2, Part I, para. 15, <http://www.un-documents.net/our-common-future.pdf>, accessed 2 August 2014.

⁵¹ *Ibid.*, Chairman's Foreword.

⁵² United Nations Framework Convention on Climate Change, 1992, Art. 2, http://unfccc.int/essential_background/convention/background/items/1353.php, accessed 4 August 2014.

haviour has led to increased output of greenhouse gases which, in turn, 'will result on average in an additional warming of the Earth's surface and atmosphere and may adversely affect natural ecosystems and humankind'.⁵³ However, it soon moves on from scientific concern about global warming to the more political and politicized issue of sustainability, all without articulating the obvious consequence that some people, somewhere, are going to be disadvantaged by the process. The political realities of compromise texts when international treaties are framed has fixed the paradox of economic growth and sustainability in the UNFCCC and other climate change organisations and documents in a way that consistently stresses limits on economic growth – with its implications for the poor – for the higher priority of the environment. Having fudged the matter so consistently for so long, the ideal is perceived by some, perhaps many, as 'real' because it is in the UNFCCC founding articles. Consequently, many environmental campaigners repeatedly seem surprised that when it comes down to hard-nosed climate-oriented economic negotiations such as the 2009 Copenhagen conference, binding agreements cannot be reached.

The most recent example of sustainability being co-opted into the climate change agenda – a political desirability rather than a scientific necessity – can be found in the Summary for Policymakers of the IPCC's Fifth Assessment: 'Sustainable development and equity provide a basis for assessing climate policies and highlight the need for addressing the risks of climate change'.⁵⁴ Unlike the more overtly idealised statement in Article 2 of the UNFCCC, there is at least a hint that compromises will need to be made somewhere if sustainability – which I take to mean limiting growth, underpinned by some degree of unspoken anti-capitalism – is to flourish. Potentially major costs are acknowledged, the report stating that mitigation activities could well come at the cost of the goals of sustainable development and poverty reduction.⁵⁵ This is weighed against the risk that 'sufficiently disruptive climate change could preclude any prospect for a sustainable future'.⁵⁶ 'Sustainability' discourses often discount the future impacts of technological advances – which have happened consistently throughout human history – and the effects that increasing scarcity has on innovation and the pursuit of alternative resources. However, in the Fifth Assessment document, the potential benefits of technical innovation are acknowledged in 'labour and resource productivity' in support of economic growth and reduced emissions.⁵⁷ All of which adds layer upon layer of uncer-

⁵³ Ibid., Preamble.

⁵⁴ IPCC WGIII AR5 Summary for Policymakers, 31 March 2014, p. 5.

⁵⁵ Ibid.

⁵⁶ IPCC WG III, 'Mitigation of Climate Change, AR5, Chapter 4, p. 4.

⁵⁷ Ibid., Technical Summary, p. 19.

tainty to the ethical dimension of climate change policy, compounded by issues such as self-interest, national interest, ideological conviction, prioritising of the present poor over the future poor or vice versa, the reliability of predictive models (given that the current surface temperature warming 'pause' was not loudly forecast in the 1990s) and the political constraints that manifest most clearly during climate negotiations.

Negotiating climate policy

The UNFCCC and IPCC approach appears to have been that if the ethical ideal of simultaneous sustainable growth and climate change mitigation and alleviating poverty is written and spoken of frequently enough it will somehow become 'real' without ever having to explicitly identify or make the tough policy choices it demands. For when real-world political positioning is examined it becomes very clear, very quickly that an ethical illusion has been constructed and sustained through a lack of complete scientific honesty – publicising the ifs, ands, buts, caveats and doubts surrounding climate research as loudly as every other aspect – and political transparency of the part of policymakers.

Political practicalities quickly emerge when the hard policy discussions begin and leaders conduct a cost-benefit analysis of climate change threat, mitigation and/or adaptation against every other economic, social, security, medical and educational concern they face – in both the short and long terms.⁵⁸ Revisiting the 2007 UN Security Council debate on climate change is revealing. For example, Johan Verbeke of Belgium repeated the UNFCCC/IPCC ideal while calling for the international community to 'address the issue in an integrated manner, which dealt with the need to promote growth, while, at the same time, protecting the environment and reducing fossil fuel consumption'.⁵⁹ In contrast, L.K. Christian of Ghana cut to the heart of the matter, saying that 'the issue of climate change in Africa should be framed in terms of how to combat the phenomenon without compromising the targeted 8 per cent growth rate needed to reduce poverty'.⁶⁰ Eight percent growth represents a target of doubling the African economy in 9 years, emulating the growth rates achieved in China over the past two decades.⁶¹ Christian also set out his challenge to the developed countries of the world, asking what compromises developing countries would be 'obliged to make, in line with the emergent international

⁵⁸ Like every other aspect of climate change, cost-benefit calculations are heavily contested because they are value judgements rather than objective measures. See IPCC WGIII AR5 Technical Summary, p. 4 as a helpful starting point in IPCC considerations.

⁵⁹ UN Security Council Debate on the Impact of Climate Change, 17 April 2007.

⁶⁰ Ibid.

⁶¹ 'GDP Growth Data', The World Bank, <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?page=4>, accessed 15 August 2014.

consensus on energy, security and climate change?' The word 'obliged' is significant. Would that be a moral, legal, social or political obligation or a combination thereof? And what does the emergent consensus look like?

Christian's words echoed the confidence of then UK Prime Minister Tony Blair, which would preface a clear shift in tone in climate change discourse by his successor David Cameron. In 2006, Blair told a conference on climate change and governance in Wellington, New Zealand:

I think in terms of the long term future there is no issue that is more important than climate change...Climate change is not just an environmental challenge, but is a threat to the global economy and to global security. The projected rise in the global average temperature will have catastrophic effects, increasing the frequency of extreme weather events (floods, cyclones and hurricanes). Tackling climate change requires a sustained global effort to reduce emissions of greenhouse gases through cleaner energy, transport and changes in technology and behaviour.⁶²

Blair's confidence in the priority of climate change and the urgency of mitigation appeared absolute, and in the long term (centuries rather than five-year electoral cycles) he may be proved correct. He was also clear in setting out the all-encompassing extent of the global effort needed. It would be reasonable to say that in the short term – the eight years since Blair's speech – climate change and environmental stress has not harmed the global economy and security to any great extent. If anything, the opposite has occurred: the economic crisis of 2007–8 and its fallout, together with concerns about energy security and the developmental needs of the poorest in the world, has set back climate change as a political force in recent years. I have expressed the view elsewhere that it was around 2006 or so that Climate Change reached its zenith as an ideologically-informed and scientifically-supported political force. After this the global financial crisis focused the world's attention on the difficult political choices to be made: between tackling immediate and definite economic emergencies and possible, ill-defined future climate-induced emergencies.⁶³ This view has been recently reinforced by absence of China's President Xi Jinping, Indian Prime Minister Narendra Modi and German Chancellor Angela Merkel from the September 2014 UN Climate Summit in New York. Between them, these three represented the leaders of two of the world's three largest GHG-emitting nations and the leader of Europe's largest economy.⁶⁴

⁶² Tony Blair, 26 March 2006, Statement to the Climate Change and Governance Conference, Wellington, located at <http://tna.europarchive.org/20061101025041/http://www.fco.gov.uk/servlet/Front/TextOnly?pagename=OpenMarket/Xcelerate/ShowPage&c=Page&cid=1107298302322&to=true> accessed 3 January 2014

⁶³ See Peter Lee, *Truth Wars*.

⁶⁴ *The Guardian*, 24 September 2014.

Their priorities lay elsewhere.

David Cameron's rise to prominence as, initially, leader of the Conservative Party from 2005 and later as British Prime Minister from 2010 was accompanied by strong and repeated declarations that environmentalism had become a significant priority for him and that he wanted to preside over the 'greenest government ever'.⁶⁵ By the end of 2013, as rising 'green' taxes were becoming increasingly unpopular and helping to put more households into fuel poverty, Cameron was widely reported as having told his advisers to 'get rid of all the green crap' from energy bills.⁶⁶ By 2014 Cameron's government set out plans to cut subsidies to the owners of wind farms, reducing the financial support for electricity produced in this way to such an extent that planned wind farms were scrapped by the companies involved.⁶⁷ Concern for the poor – or at least concern for the votes of the poor – had begun to take priority over concern for the environment: a theme which will be explored further in the final section.

Meanwhile, in the United States President Obama has been a consistent supporter of climate change (the scientific phenomenon) and Climate Change (its ideological offshoot) for many years. His set-piece major speeches have been as forceful, elegant and eloquent on this subject as every other that the great orator expounds. In his 2014 State of the Nation speech he boldly stated:

'[T]he debate is settled. Climate change is a fact. And when our children's children look us in the eye and ask if we did all we could to leave them a safer, more stable world, with new sources of energy, I want us to be able to say yes, we did'.⁶⁸

Like the UNFCCC Obama holds out an idealised vision of the future of the Earth's environment expressed in emotive terms around the mental image of the vulnerable children of future generations; surely the ethical ideal. However, also like the UNFCCC charter, several IPCC Summaries for Policymakers and statements by many other major climate change advocates, back to the Schneider remarks and beyond, Obama's use of science is oversimplified and the political challenges are minimised or ignored. 'Climate change is a fact,' he says. The words of paleoclimatologist Robert Carter highlight the irrelevance of such a comment: 'Change is simply what climate does'.⁶⁹ An accurate summary – if one existed – on the relative contributions of natural vari-

⁶⁵ *The Guardian*, 14 May 2010.

⁶⁶ *The Guardian*, 21 November 2013. See also the *Daily Mail*, *The Telegraph*, and *The Sun* on the same day.

⁶⁷ *The Sunday Telegraph*, 2 March 2014.

⁶⁸ Barack Obama, 28 January 2014, State of the Union Address, <http://www.whitehouse.gov/the-press-office/2014/01/28/president-barack-obamas-state-union-address>, accessed 8 August 2014.

⁶⁹ Robert M. Carter, *Climate: The Counter Consensus* (London: Stacey International, 2010) p. 47.

ation and human behaviour to climate change would be much more helpful. Stating the obvious is not. Furthermore, holding out an idealised vision of the future while minimising or ignoring the economic costs, practical difficulties and political obstacles is less than honest, an approach that can only be deemed ethical if such minor deceptions or omissions are acceptable in pursuit of some perceived higher good. Much more interesting and illuminating were less guarded comments Obama made following his re-election in 2012:

There's no doubt that for us to take on climate change in a serious way would involve making some tough political choices, and you know, understandably, I think the American people right now have been so focused and will continue to be focused on our economy and jobs and growth that, you know, if the message is somehow we're going to ignore jobs and growth simply to address climate change, I don't think anybody's going to go for that.⁷⁰

Economy, jobs and growth: President Obama's priorities, and the priority of every other leader in the world. This rare outbreak of political honesty concerning climate change gets to the heart of the ethical challenge of responding to climate change: the choice between immediate, tangible economic threats, with all of the negative consequences that poverty brings, or intangible, undefinable potential future threats. If the contrast between Obama's unscripted comments on climate change to journalists, and his public, polished reference to climate change in his speeches is obvious, it merely echoes the changing public climate discourse of recent British prime ministers and other leaders. As well as highlighting the political choices that are required from national leaders it also maps out the ethical decision-making terrain that must be negotiated as those hard choices are made.

4 Setting climate policy

The precautionary principle

Any discussion about the ethical aspects of setting climate policy must address the primary philosophical argument used by Climate Change advocates to advance their cause: the precautionary principle. The Wingspread Conference on the Precautionary Principle described the principle as follows:

When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context

⁷⁰ Barack Obama, 14 November 2012, Press Conference, transcript located at http://www.nytimes.com/2012/11/14/us/politics/running-transcript-of-president-obamas-press-conference.html?pagewanted=10&_r=0, accessed 5 January 2014.

the proponent of an activity, rather than the public, should bear the burden of proof. The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.⁷¹

Depending on one's political perspective, trust in science, and personal values, the precautionary principle can be viewed as one of the great achievements of human thought, or an ideological fraud posing as environmental concern, or something in between. It has also spawned a huge literature in its own right, one that would require a separate article to thoroughly review.⁷²

On the positive side, the principle expresses concern for the future of the planet and the people who will occupy it. Further, the burden of proof falls on those who want to undertake significant and costly activities to mitigate future harms. In addition, it is inclusive of all potentially affected parties and all-encompassing in its range of considered options, although the use of the word 'democratic' connotes a Western liberal influence that may not hold sway in some parts of the world. More negatively, the 'burden of proof' concept is not quite what it appears. The previous clause of the principle states that it does not rely on the establishment of scientific evidence to underpin claims of cause and effect: in other words, proof. Consequently, suggestion of a potential threat appears to be sufficient to trigger the precautionary principle without the need for scientific evidence of the precise extent of an actual threat. Climate models are used as the basis of potential threat despite the latest IPCC Summary for Policymakers explicitly stating that actual events may prove quite different to the forecasts they provide.⁷³

Hulme takes the idea a step further, adding: 'Applied to climate change [the precautionary principle] means that since there is prima facie evidence that a change in climate would induce some harm (maybe a lot of harm), then those who would resist efforts to reduce the growth in greenhouse gas emissions have to demonstrate that those avoidable emissions are harmless.'⁷⁴ So, on this view not only does the precautionary principle reject the need for established evidence when it is invoked, anyone who wishes to challenge the

⁷¹ Statement on the Precautionary Principle, Wingspread Conference on the Precautionary Principle, 26 January 1998, <http://www.sehn.org/wing.html>, accessed 10 August 2014.

⁷² For a brief introduction to the issues see Stephen M. Gardiner, 'A core precautionary principle', *Journal of Political Philosophy*, Vol. 14, Issue 1 (2006) pp. 33–60; Michael S. Carolan, 'The precautionary principle and traditional risk assessment: rethinking how we assess and mitigate environmental threats', *Organization & Environment*, Vol. 20, No. 1 (March 2007) pp. 5–24; John Quiggin, 'Complexity, climate change and the precautionary principle', *Environmental Health*, Vol. 7, No. 3 (200) pp. 15–21.

⁷³ IPCC, 2014: Summary for Policymakers, p. 10, Footnote 14.

⁷⁴ Hulme, 2011, p. 124.

principle takes on the burden of proof. Further, Hulme and supporters of his approach narrow down the parameters of what makes an acceptable challenge to the precautionary principle approach to mitigation: proof that carbon dioxide and other greenhouse gas emissions cause no harm. This is a false argument. It is possible, probable even, for someone to accept that the current and rising levels of carbon dioxide and other GHG emissions are potentially harmful (though some benefits may accrue, to global vegetation for example) while still rejecting the precautionary principle as the basis of climate change policy, and then on ethical grounds.

Once more in this paper, the basis of the ethical choices to be made can be traced back to the relative importance attached to the natural environment and the people who occupy it. The precautionary principle has been an ever-present element of global warming and climate change discourse since the 1980s and was formally incorporated in, for example, the Rio Declaration:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.⁷⁵

Again, the lack of proof is not to be used as an excuse to avoid action to prevent 'environmental degradation'. However, this and similar statements reveal a definite shift in bias over time from concern for humans towards the concern for the environment. Compare the Rio Declaration's clear prioritisation of the environment with the more balanced – between humans and nature – text of the 1972 Stockholm Declaration, which says:

Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind.⁷⁶

The common good of mankind was given at least equal billing four decades ago, though that no longer appears to be the case in much climate change activism and literature. A forceful criticism of this shift in priorities was articu-

⁷⁵ Rio Declaration on Environment and Development, The United Nations Conference on Environment and Development, 3-14 June 1992, Principle 15, <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=78&ArticleID=1163>, accessed 8 August 2014.

⁷⁶ Declaration of the United Nations Conference on the Human Environment, The United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972, <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=97&articleid=1503>, accessed 8 August 2014.

lated by Dr Patrick Moore, an early member of Greenpeace⁷⁷ who said on BBC Radio 4: 'The "green" [in Greenpeace] is the environment and that's good as well, but they lost the concern for humans', before going on to add, 'they have turned in, basically, to an evil organisation'.⁷⁸

The remainder of this section will explore some ethical implications of the precautionary principle in the choices it advocates, bearing in mind the realpolitik of the global need for energy, the apparent unwillingness of any developed or developing economy to make significant sacrifices in favour of a speculative, uncertain future, and the needs of the poorest people on Earth to economically grow themselves out of starvation, disease and want. Furthermore, even in the richest nations there are millions who are classified as, and classify themselves as, 'poor' and who bear the brunt of the economic and social costs of decarbonisation policies.

The ethics of decarbonising

Here are several competing elements of the carbon dioxide dilemma:

- anthropogenic greenhouse gas emissions are at record levels;
- the climate is changing;
- the global economy assumes or aspires to both continued and continual growth;
- populations demand higher living standards;
- wealth creation emits carbon dioxide;
- renewable energy sources require significant financial subsidies and reduce economic competitiveness against those who do not use them.

These conflicting elements are further complicated when assessing the ethics of climate policy by the following:

- democratically elected leaders cannot sustain unpopular climate policies in the face of opposition from voters;
- the global economy has not recovered from the 2007–8 financial crisis;
- wealthy countries use more energy than poor ones but the growth of energy use is greatest in developing countries;
- in 2010 one fifth of the global population was living on less than \$1.25 per day (down from two fifths in 1990);⁷⁹

⁷⁷ See <http://www.greenpeace.org/international/en/about/history/founders/>, accessed 16 October 2014.

⁷⁸ Patrick Moore, BBC Radio 4 *Today* programme, 15 October 2014.

⁷⁹ World Development Indicators 2014. Washington, DC: World Bank. doi:10.1596/978-1-4648-0163-1. p. 2.

- fossil fuels are much cheaper to use than renewables;
- new technologies like fracking have vastly increased the amount of potentially available oil and gas over the next century;
- fracked gas has significantly reduced America's carbon footprint in recent years⁸⁰;
- many environmentalists and environmentalism groups, especially in Europe, are vociferously opposed to fracking regardless of any potential economic or energy security benefits.

The UNFCCC and other global institutions minimise the harsh choices that must be made – each of which includes ethical as well as political and economic elements – in addressing the competing interests I have just identified. The 2014 World Bank report, for example, sets out two goals: 'ending extreme poverty by 2030 and promoting shared prosperity'.⁸¹ The humanitarian aim of poverty eradication is non-controversial even if the desire for increasingly shared prosperity expresses as much a political as an economic goal, since it would require a rewiring of the global market-based economy. In keeping with the unwillingness of global institutions to admit the difficulty of the choices to be made and to identify those who will be made to pay, the World Bank reports the steps that have been made towards the Millennium Development Goal of environmental sustainability, which it describes as 'improving people's lives without depleting natural and humanmade capital stocks'.⁸² Yet again the impression is given that poverty can be eradicated without creating more carbon dioxide. Further, with mitigation of greenhouse gas emissions or adaptation to climate change being the available tools to deal with the problem, the precautionary principle and its supporters prioritise the former.

So what are the ethical considerations? Global institutions, especially the UNFCCC and the IPCC, hold out an idealised ethic where the poor can be made less poor, economies can develop and resources can be sustained, all with huge costs in the present and in the future. This ethic is based on a precautionary principle that disavows the need for fully established scientific evidence. However, to consistently hold out an imagined, improved (or less worse) environmental future as the ethical ideal without being more direct and honest about who will pay and how much – the overlooked ethical choices that will happen at every stage – is intellectually dishonest. Furthermore, it is difficult to see how such an apparent lack of transparency can support any ethical position except that of 'the ends justify the means'.

⁸⁰ See <http://www.eia.gov/environment/emissions/carbon/>, accessed 12 October 2014.

⁸¹ *Ibid.*, p. iii.

⁸² *Ibid.*, p. 8.

Radical decarbonisation of the world economy is bound to involve heavy costs. It requires reduced global economic growth, or that at least a proportion of all growth go towards mitigation. The Stern Review of the economics of climate change was published in 2006 at the behest of the UK's then Chancellor of the Exchequer and is one, and possibly the most influential, attempt to frame an economic policy response to climate change.⁸³ The executive summary of the review states: 'Such a modelling framework [to reduce the risks of climate change] has to take into account ethical judgements on the distribution of income and on how to treat future generations.'⁸⁴ Stern goes on to link these risks to health (of humans) and the natural environment. The Stern Review has been persuasively criticised on many grounds, including its treatment of ethical issues.⁸⁵ The report places a considerably higher value on the future of the environment and the lives of the future poor in relation to current values than would be found in either government or industry forward-looking calculations in fields such as health, education or infrastructure investment. This is not a hypothetical ethical judgement to be made in the future, it is an actual ethical judgement made when setting out a preferred model for making plans in the present. It is also a judgement that was made at a time of perceived wealth in developed countries, but just as the banking crisis was hitting the world and the financial bubble that created the perception was about to burst. Furthermore, the price of oil and gas was on a rapid upward trajectory that peaked two years later and which has not been matched since.

Stern's is a perfectly valid position to take, although it would help the lay observer to position themselves ethically if the relative value of the poorest in the world in the present, near future and far future were clearly articulated. The matter is complicated further, ethically speaking, when we consider that the report originated in a wealthy developed nation, albeit one that has not felt wealthy to its inhabitants since the financial crisis struck and whose share of citizens in fuel poverty has risen each year since the Stern Review was published. This observation raises one final ethical criticism of the Stern Review: how ethical can its proposals actually be when they are manifestly undeliverable at a political level, its short-term assumptions about the price of oil and

⁸³ 'Stern Review Report on the Economics of Climate Change: Executive Summary', 30 October 2006, http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/media/4/3/Executive_Summary.pdf, accessed 17 June 2014.

⁸⁴ *Ibid.*, p. 9.

⁸⁵ For examples see Ian Byatt et al., 'The Stern Review: a dual critique', *World Economics*, Vol. 7, No. 4 (2006) pp. 1-68; William D. Nordhaus, 'A review of the Stern Review on the Economics of Climate Change', *Journal of Economic Literature*, Vol. XLV (September 2007) pp. 686-702; and the response, Simon Dietz and Nicholas Stern, 'Why economic analysis supports strong action on climate change: a response to the Stern Review's critics', *Review of Environmental Economics and Policy*, Vol. 2, Issue 1 (2008) pp. 94-113.

gas skew the calculations, and the climate models on which it relies have repeatedly shown themselves to be inadequate for policy purposes? An idealised, expensively achieved future holds little ethical appeal for those primarily concerned for the current hundreds of millions who live, and whose offspring will continue to live, in life-threatening poverty.

Idealists – and most of the world’s population cannot afford the time or the money to be one of those – point out that if the rich countries of the world would agree to be less rich then the poor could be less poor. Part of me shares those ideals. I would do it as long as everyone else agrees to do likewise, and therein lies the problem. Pragmatically, electorates in countries where green policies have been pursued (Germany and the UK, for example) are now telling their leaders that they will either no longer pay or they want to reduce the amount they are paying for mitigation schemes. In December 2011 Canada withdrew from the Kyoto agreement because it would cost the country \$14 billion or \$1600 from every Canadian family to comply with a policy that would not lead to global reductions in emissions or reduction in harm to the environment because of the behaviour of heavily polluting nations like China and India. Somehow the climate change community – scientists, activists, economists, politicians – have managed to produce mitigation policies that cost huge sums in the present for no discernible current benefit because so many countries refuse to take targets seriously despite the oft-repeated dire threats and warnings from the IPCC.

Every indicator I can imagine suggests that a mitigation policy will not work in practice. For me – and there is no escaping the subjective dimension of ethics – to ask those living on less than \$1.25 per day to remain poor for even one day longer than necessary is unethical. Only people who have not lived in or close to drought, famine, starvation and negligible healthcare could even contemplate such a demand. Prioritisation of concern for the environment above concern for the poor (to repeat, I know the two are interconnected but relative priorities must be chosen) would appear to be related to the wealth of the individuals and nations concerned. Increases in carbon dioxide emissions are a necessary accompaniment to acceptable growth rates for poor countries.

At the other end of the global wealth spectrum the fat are getting fatter – literally – while at the same time, in the same developed and developing countries, fuel poverty is on the increase.⁸⁶ Confusing the picture somewhat is the presence of at least hundreds of millions of desperately poor people in China

⁸⁶ I refer to fuel poverty as defined in the UK’s Hills Review, where households are deemed to be ‘fuel poor’ if their fuel costs are ‘above average’ and residual income after paying for fuel is below the official poverty line. See <https://www.gov.uk/government/organisations/department-of-energy-climate-change/series/fuel-poverty-statistics>, accessed 10 August 2014.

and India, two rising economic powerhouses whose annual growth of carbon dioxide emissions is greater than the UK's total output. Further, the relatively poor exist in every country. For governments to act ethically in the setting of climate policy, especially with regards to the effects of mitigation on the poorest nations in the world and on the poorest people in the richer nations, there should be greater transparency over the scientific doubts that underpin the advice they receive. Further, they should let their people understand not only the national targets that are being pursued but the global impact these will or will not have. Canada withdrew from Kyoto because its previous policy called for huge costs to be paid with no discernible global decrease in GHG emissions associated with it. If such costs cannot, or will not, be borne by a relatively prosperous country like Canada, it is not reasonable to expect them to be met by poor countries.

Ethics and uncertainty

There is a degree of uncertainty about the extent of temperature increase rising carbon dioxide emissions will bring⁸⁷ and not all climate scientists will even acknowledge the current 'pause' in global mean surface temperature rises, despite this being clear in the figures used by the IPCC.⁸⁸ Amidst this uncertainty the IPCC advocates a 'mix of strategies [to counteract global warming] that includes mitigation, adaptation, technological development (to enhance both adaptation and mitigation) and research.'⁸⁹ However, obfuscation and avoidance of publicising doubts by scientists and politicians, together with the political unwillingness of governments over two decades to agree substantial binding mitigation targets, suggests that adaptation is the more

⁸⁷ Two perspectives from climate change proponents illustrate this point: James Hansen, Makiko Sato, Gary Russell and Pushker Kharecha, 'Climate sensitivity, sea level and atmospheric carbon dioxide', *Philosophical Transactions of the Royal Society. A*, Vol. 371, No. 2001 (September 2013) pp. 1–31; Benjamin M. Sanderson, 'A multimodel study of parametric uncertainty in predictions of climate response to rising greenhouse gas concentrations', *Journal of Climate*, Vol. 24 (2011) pp. 1362–1377. In contrast, Professor Murry Salby argues that rising temperatures force carbon dioxide emissions and not vice versa: Murry Salby, 18 April 2013, Hamburg lecture, 'Relationship between greenhouse gases and global temperature', https://www.youtube.com/watch?v=2ROw_cDKwc0, 12 October 2014.

⁸⁸ In March 2014 Michel Jarraud, the Secretary General of the World Meteorological Organization Secretary General, said: 'I really refuse to accept that we can talk about a pause.' <http://www.theguardian.com/environment/2014/mar/31/climate-change-report-ippcc-governments-unprepared-live-coverage>, accessed 7 April 2014.

⁸⁹ 'Climate Change 2007: Impacts, Adaptation and Vulnerability', Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report, Summary for Policymakers, 13 April 2007, p. 19.

realistic option.⁹⁰ If mitigation is the preferred course of action for ideologically convinced Climate Change proponents, then adaptation is the pragmatic choice, practically and ethically. Humans have, for millennia, adapted to climate change, whether those changes be in response to local extreme weather events or widespread global climate change. Consequently, the idea of 'doing nothing' is a fallacy. Humans have never done 'nothing' about climate change. They have always sought to adapt, individually and communally, privately or through commercial or political collectives.

Adaptation, the pragmatic ethical choice, is the one I suggest the world will eventually gravitate towards, possibly after hundreds of billions of pounds have been wasted on failed attempts by politicians to agree serious mitigation targets and cost commitments. It is at least an attainable ethical option. Even if the IPCC's scientific forecasts are correct and rising carbon dioxide emissions lead to the upper range of modelled temperature rises, even if vastly expensive mitigation activities and costs are somehow agreed, despite all the indications that they will not be, even if mitigation actually limits emissions and the associated temperature rises, and if it transpires that solar and other non GHG-related activities are not significant factors in global warming and anthropogenic climate change, adaptation will still be necessary anyway. Prioritising adaptation will provide the greatest likelihood of using global resources most efficiently.

With all of the uncertainties that characterise the frequently claimed consensus on climate change it is beyond the realms of the possible for scientists to predict whether – even in the event of massive mitigation efforts in the coming decades – the Bosna River in Bosnia Herzegovina, for example will or will not catastrophically flood again like it did in 2014.⁹¹ They cannot reassure the Bosnian people that if they spend billions of Euros in mitigation every year for 20 or 30 years that the Sava River will be safe or that the Orahovacko River or some other river will not burst its banks and cause deadly mud slides. Similarly, they can give Africans no comfort as to whether previously fertile parts of the Sahel region to the south of the Sahara will avoid desertification, and so on. Demonstrable, uncontested proof – rather than suspicion or even informed

⁹⁰ There are no universally agreed definitions of the terms 'mitigation' and 'adaptation'. A comprehensive overview can be found at Dale Jamieson, 'Adaptation, Mitigation, and Justice' in Stephen M. Gardiner, Simon Caney, Dale Jamieson and Henry Shue (eds) *Climate Ethics: Essential Readings* (Oxford: Oxford University Press, 2010) pp. 263–283. From an extensive literature see also John Smithers and Barry Smit, 'Human adaptation to climatic variability and change', *Global Environmental Change*, Vol. 7, Issue 2 (July 1997) pp. 129–146.

⁹¹ The Budapest Beacon, 13 June 2014, <http://budapestbeacon.com/featured-articles/bosnia-herzegovina-struggles-to-recover-from-devastating-floods-landslides/>, accessed 10 August 2014.

opinion – that events like these are becoming more frequent compared to the sweep of human history is not available.

The IPCC Fourth Assessment Report acknowledges climate uncertainties, stating: 'Costs and benefits of climate change for industry, settlement, and society will vary widely by location and scale,' although it goes on to add that the greater the change in climate the more negative the net effects will be.⁹² However, some claims go much further, based on the assumption 'that human activity causes climate change; that climate change harms people.'⁹³ Even if the claim that human behaviour causes climate change is accepted, the role of natural climate variability is often overlooked and complexities are oversimplified. The global climate has changed hugely since the last ice age, yet many of the changes have been largely beneficial for the human race and for countless non-human species. Overstatement complicates the already difficult challenge of ethical decision-making in relation to climate change policy.

Consider a positive example. On a visit to South Luangwa, Zambia I asked a 55-year-old indigenous, non-commercial farmer how climate change was affecting his crops. He told me he had just enjoyed the best decade of rainy seasons in his lifetime and that his few small fields had produced their best crops ever. 'If this is climate change I want more!' was his rather, to me, surprising response. Was it true? I do not know – and even if it was it was unlikely to be representative of every area of that large country. However, further research shows that in every year between 2009 and 2014 Zambia has produced more maize than in any year since 1961;⁹⁴ a lot more maize. The 2014 total of 3.35 million metric tonnes is four times greater than the highest production in any year in the 1960s and 1970s before the late twentieth century global warming. It is eight times greater than production in 1964, 1972 and 1974.⁹⁵ If the farmer's comment was true, will it remain true for future decades? Nobody can know that either. These statistics on Zambian maize production are shock-

⁹² 'Climate Change 2007: Impacts, Adaptation and Vulnerability', WGII AR4, Summary for Policymakers, p. 7.

⁹³ Elizabeth Cripps, 'Climate change, collective harm and legitimate coercion', *Critical Review of International Social and Political Philosophy*, Vol. 14, No. 2 (March 2011) p. 171. Cripps offers a philosophical analysis from a liberal perspective that has significant merit on theoretical grounds but faces significant practical implementation obstacles.

⁹⁴ Zambia Corn Production by Year, <http://www.indexmundi.com/agriculture/?country=zm&commodity=corn&graph=production>, accessed 12 August 2014. Figures from the US Department of Agriculture. In addition see statement by Zambian Agriculture and Livestock Minister Wilbur Simuusa, 5 May 2014, <http://www.lusakatimes.com/2014/05/05/zambia-bumper-harvest-20132014-production-estimates-show-23-jump-maize-output/>, accessed 12 August 2014. Numerous factors will have contributed to these increases but it goes without saying that maize cannot be grown without adequate rainfall.

⁹⁵ *Ibid.*

ing: shocking because of the scale of the increase and shocking that I had not previously come across this positive news amidst the disaster and foreboding of climate change literature generally. Anecdotes are not evidence but they can remind us of the complexities of climate-related studies and the importance of honest and transparent public climate change discourse that does not downplay any potential benefits in a drive to scare people into action.

There will still need to be adaptation no matter what level of mitigation takes place in the coming years. At least adaptation will have one advantage: the problems will be before people's eyes and it will be easier to motivate a response than when asking for major financial sacrifices on the unseeable and precisely unknowable. In turn, this leads to another philosophical choice, and it is a choice that will tilt the ethical preference towards mitigation or towards adaptation: whether ethical priority should be attached to actual events or anticipated events, especially bearing in mind the uncertainties involved and the health warning the 2014 IPCC Summary for Policymakers gives the climate models it uses in its forecasts.⁹⁶

So how are ethical decisions to be made in the face of repeated claims to scientific and political consensus, unknown unknowns within that claimed consensus, known unknowns (the ifs, buts, doubts and caveats) that are minimised by the consensus for presentational purposes, and also many known knowns that are either model-based (caveats apply) or suffused with subjective ideological, social, political or other environmental interests? There is not the space here to fully explore the idea, but suggest that there needs to be some link maintained between ethics, truth and politics, or ethics, knowledge and politics.

Some individuals on the range of climate concern – from agnostic to cautious to alarmist – may be able to justify to themselves an ethical position on climate change and climate change policy that will overlook error, ignorance, oversight, less than full disclosure or even downright untruths, as long as it is in support of a long-term future ideal in which they have a sufficiently strong belief, for example, that deep mitigation measures will lead to the best outcome for the environment and possibly for the highest number of people as well. The operative word here is 'belief', a word that belongs more to the realms of faith, religion or ideology rather than to science and proof. However, I would suggest that the strongest, most practical ethical approach is that which balances the pursuit of 'good' or idealistic goals with appropriate conduct along the way, namely a commitment to truth and knowledge, and openness about the extent of our knowledge. However, this approach may limit the ambition and scope of climate change policy because of the uncertainties and the po-

⁹⁶ IPCC, 2014: Summary for Policymakers, p. 10, Footnote 14.

litical interests involved.

Put more crudely, setting mitigation policy goals that cannot and will not be met, either because they are aiming beyond the scope of the knowable and do-able or because national political interests make them unrealistic and unattainable, is itself in practice less ethical than setting goals that are lower, but more readily achievable. I assume here that the greater the speculation and uncertainties involved, the weaker the ethical claim. Conversely, as the certainty increases, the stronger the ethical claim. If it is not apparent already, I am suggesting that a commitment to mitigation policies has a reduced ethical claim because of the unknowns and unknowables involved, whether those unknowns concern the future of the environment or the future of the poorest citizens on Earth. An ethical commitment to adaptation is at least rooted in actual events as they occur. To be clear, this is a commitment to actively preparing to respond to major climate-related events as they occur: developing technologies and skills as well as setting monies aside in dedicated funds, both nationally and globally. Governments and individuals have always done this through, for example, contingency funds.

As I have previously argued, adaptation will need to happen anyway, regardless of any mitigation activities and costs. National leaders have already decided that they cannot afford the degree of mitigation recommended by the IPCC, the Stern Review and others, either financially or politically. They are just delaying the moment of truth by fudging the outcomes of a series of climate change summits, with Paris 2015 already looking likely to end with obfuscation, recriminations and an earnest commitment to future talks about talks about doing something, as soon as everyone else does more.

The approach of the IPCC, UNFCCC and other institutions is to demand, or at least to try and scare people and governments into, global mitigation policies. Even Kyoto did not come close to meeting that aspiration, and it has been left to wither on the political vine. Mitigation policies can only be agreed at national levels, with each country deciding what it can and will do. A much more realistic approach would be for the IPCC and other climate change bodies to formally abandon mitigation. Practically and politically it is happening already in slow motion. That leaves countries to prepare for adaptation, with the wealthier helping the poorer as circumstances dictate. Every country, community, industry, business and individual that has ever been struck by natural disaster has adapted as best they could with the resources available, and even the most expensive insurance policy on the market does not protect against every conceivable danger.⁹⁷ The ethics of this approach to climate

⁹⁷ Matthew Rendall explores the related moral considerations in 'Climate change and the threat of disaster: the moral case for taking out insurance at our grandchildren's expense,'

policy are pragmatic rather than idealised. They will not satisfy those who are true climate alarmists and who have unstated ideological ambitions such as anti-capitalism or wealth redistribution enmeshed with their ideas for the mitigation of climate change, though they may be acceptable to the merely climate concerned. Because of the political capital that has already been invested and the limits of what is politically achievable, one practical outcome is likely to be a combination of 'thin' global climate change mitigation policies where they can be agreed (so that governments are not seen to be completely backtracking), and 'thick' domestic adaptation. I maintain my argument that lower, achievable and practical climate policy goals are inherently more ethical than idealised, unachievable climate policies whose basis is shot through with uncertainty, wishful thinking and unstated ideological pursuits.

The moral hazard warning

Good intentions and motivations provide no protection against bad outcomes in any field, including the implementation of climate change policies. Worse, financial incentives have been used in climate change mitigation policies – implemented with the best of intentions and under scientific advice – that have actively contributed to environmental and individual harms, which they are surely meant to avoid. Moral hazard has resulted. Consider two examples: the German shift to renewable energy, and the encouragement of biofuel as a replacement for fossil fuels.

In the latter half of the 2000s, motivated by concerns about climate change and the reliability of future energy supplies as 'peak oil' was widely declared to be near, and under the influence of green lobbying, Germany embraced renewable energy technologies to a greater extent than any other country in Europe and possibly the world. Ambitious plans for a renewables-based economy were set out for a country whose economic might and manufacturing base is built on energy-intensive industries. To encourage investment in renewables, the German government was an early implementer of generous subsidies for wind and solar power. When in September 2010 Angela Merkel committed Germany to highly ambitious renewable energy targets she was seen by some, perhaps many, to be pursuing the green ideal. The goals became even more ambitious when in 2011, in response to the Fukushima nuclear disaster, Merkel and Germany opted to take nuclear electricity generation out of its energy mix by not extending the lives of its operating reactors and closing any that were under repair or due for repair. Major investors were happy to embrace the green dream and German consumers seemed happy to play their part.

Political Studies Vol. 59 (2011) pp. 884–899.

The costs of this energy gamble would be borne by industry and individual consumers. This was a necessary price to pay in pursuit of a good and important cause, or so ran the argument. However, the aftermath of the global financial crisis began to impact upon Germany's seemingly indestructible economy and a bonanza in fracked oil and gas in the US lowered energy prices significantly on the other side of the Atlantic. Voters began to protest about the subsidy escalators that would automatically increase their energy bills above any commercial or inflationary increases. Worse, energy intensive industries began to look to the US as a cost-effective, more profitable location to do business. Between 2009 and 2013 BASF, the German chemicals giant, moved \$5.7 billion in investments to America.⁹⁸ As subsidies became more generous so more companies invested, up to the point at which the German government sought to reduce the increasingly unaffordable tariffs paid to vendors of solar power. Since 2011 the installation of solar panels has fallen markedly, in parallel with reduced tariffs; simultaneously, major solar panel producers and installers have gone bankrupt. One survivor, SMA Solar, Germany's largest solar company, announced major job cuts and profit warnings in 2014.⁹⁹

However, the environmental news gets worse. Germany now has an energy gap, partly caused by the withdrawal of nuclear power, partly by the sun and wind not blowing and shining enough in northern Europe necessitating conventionally-generated backup power, partly because the energy sums never properly added up in the first place, and all exacerbated by increasing tensions with Russia, a key gas supplier. This gap has been filled by coal, the most carbon-intensive of the conventional energy options. In 2013 Germany's generation of electricity from lignite – brown coal – reached its highest level since 1990, counteracting reductions in the carbon footprint achieved through renewable energy use. Perversely, German households will pay a surcharge of €220 in 2014 to provide the €23.5 billion in subsidies that incentivise investment in renewable energy, while at the same time electricity manufacturers are incentivised to keep burning coal to maximise profits and keep the lights on.¹⁰⁰ David Buchan's detailed analysis of what he calls 'Germany's gamble' concludes that the country might manage to meet one of its targets

⁹⁸ Michael Birnbaum, 1 April 2012, *The Washington Post*, 'European Industry Flocks to U.S. for Cheaper Natural Gas', http://www.washingtonpost.com/world/europe/european-industry-flocks-to-cheap-us-gas/2013/04/01/454d06ea-8a2c-11e2-98d9-3012c1cd8d1e_story.html, accessed 12 August 2014.

⁹⁹ Reuters, 30 July 2014, <http://uk.reuters.com/article/2014/07/30/uk-sma-solar-warning-idUKKBN0FZ1A720140730>, accessed 12 August 2014.

¹⁰⁰ 'Green Revolution? German Brown Coal Power Output Hits New High', 7 January 2014, Spiegel Online International, <http://www.spiegel.de/international/germany/researchers-alarmed-at-rise-in-german-brown-coal-power-output-a-942216.html>, accessed 14 August 2014.

– producing one third of its electricity demands from renewables by 2020 – but it is unlikely to cut energy consumption by its target of one fifth or reduce overall emissions by that time.¹⁰¹

Consider these actions from an ethical perspective. The policy to switch from conventional fuels to renewable energies has an ethical basis in wanting to reduce environmental harm – through mitigation – both now and in the future. It would do so by reducing emissions of carbon dioxide into the atmosphere in response to Climate Change scientific recommendations and lobbying by activists pursuing their ethical ideal of a cleaner environmental future. Further, the decision to close or not reopen German nuclear power stations after the Fukushima disaster was also, at some level, no doubt based on well-intended concern for the environment. At another level, however, it was a politically-motivated compromise response to effective green activism and opposition, as Merkel and her government sought to reinforce their positions. In addition, Germany's decision to ban fracking until 2020 marked another victory for environmental campaigners and their commitment to preserving 'the environment'. How could all of those idealistic, mostly well-intended actions and policies be anything other than ethical? Answer: if, when combined, they increase the greenhouse gas emissions that they were meant to prevent in the first place. Ironically, the IPCC has acknowledged that the use of clean-burning gas of the kind obtained through fracking can help to reduce emissions if it replaces more carbon-intensive coal.¹⁰² Consequently, the pursuit of green policies that end up not reducing carbon dioxide emissions, while charging the poorest in German society for the privilege, creates a moral hazard.

A second example, and one with more immediate impact upon the global poor, emerges from the push towards the use of biofuels as more environmentally friendly alternatives to fossil fuels. In 2005 the United States passed the Energy Policy Act (EPAAct), which implemented the Renewable Fuel Standard (RFS) and required, initially, 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012.¹⁰³ This was upgraded in 2007 by RFS2, which required that 36 billion gallons of renewable fuel be blended into gasoline and diesel by 2022.¹⁰⁴ Where government targets are set and legislated for in this way, a predictable market is created and the conditions are therefore in place for investment and transition to the required economic output. Further, if biofuel

¹⁰¹David Buchan, 'The Energiewende – Germany's gamble', The Oxford Institute for Energy Studies, June 2012, p. 1, <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2012/06/SP-261.pdf>, accessed 12 August 2014.

¹⁰²*The Times*, 13 April 2014.

¹⁰³'Renewable Fuel Standard', United States Environmental Protection Agency, <http://www.epa.gov/otaq/fuels/renewablefuels/>, accessed 13 August 2014.

¹⁰⁴*Ibid.*

production pays better than food production then commercial farmers are incentivised towards growing crops for the former rather than the latter.

If crops are funnelled into vehicle engines they are not funnelled into human stomachs, which is not a problem if there is sufficient food to go round and at a price the poor can afford. By 2007 grain prices were rising and the UN's World Food Programme issued warnings about not being able to afford to feed 90 million of the most desperate people in the world. It also voiced concern about a further 850 million people who were suffering from hunger.¹⁰⁵ In 2008 UN Secretary-General Ban Ki-moon called for a review of biofuel policies as a result of their impact on global food prices.¹⁰⁶ The 'moral dilemma' continued, however, although it is not a moral dilemma for anyone who thinks the starving should be fed before carbon emissions are reduced, whether biofuels achieve that or not.

Events in 2012 caused a rethink about the relative priority of emission mitigation or feeding the global poor. That year a major drought hit both the US and Russia, causing major disruption to grain production and by July 2012 45% of the US corn crop was rated between poor and very poor condition.¹⁰⁷ Consequently, global food prices spiked upwards as demand outstripped supply and commodities traders saw an opportunity to maximise profits. A well-intended policy that aimed to reduce carbon dioxide emissions, but the effectiveness of which was disputed, managed to definitely push millions more people into hunger. The 2012 Global Food Policy Report confirmed that the drought, together with the use of crops for biofuel, resulted in a 25% increase in corn prices between June and August that year.¹⁰⁸ In 2013 the organisation ActionAid launched a 'Food not Fuel' campaign in an attempt to stop Members of the European Parliament from voting in new regulations that would have required an increasing amount of food to be burned as fuel.¹⁰⁹

The 2014 IPCC Working Group III Summary for Policymakers acknowledges that the use of biofuels raises questions of its sustainability as well as of its negative impacts on food security and prices:

Bioenergy can play a critical role for mitigation, but there are issues to consider, such as the sustainability of practices and the efficiency of bioen-

¹⁰⁵UN warns it cannot afford to feed the world', *Financial Times*, 15 July 2007.

¹⁰⁶UN chief calls for review of biofuels policy', *The Guardian*, 5 April 2008, <http://www.theguardian.com/environment/2008/apr/05/biofuels.food>, accessed 14 August 2014.

¹⁰⁷'Agricultural Weather and Drought Update' 23 July 2012, United States Department of Agriculture, <http://blogs.usda.gov/2012/07/23/agricultural-weather-and-drought-update-%E2%80%93-72312/>, accessed 14 August 2014.

¹⁰⁸2012 Global Food Policy Report, International Food Policy Research Institute, p. 3, <http://www.ifpri.org/sites/default/files/publications/gfpr2012.pdf>, accessed 14 August 2014.

¹⁰⁹'Food Not Fuel', ActionAid, <http://www.actionaid.org.uk/food-not-fuel?slide=1>, accessed 14 August 2014.

ergy systems...Barriers to large-scale deployment of bioenergy include concerns about [greenhouse gas] emissions from land, food security, water resources, biodiversity conservation and livelihoods. The scientific debate about the overall climate impact related to land-use competition effects of specific bioenergy pathways remains unresolved.¹¹⁰

The politics of climate change policy are interesting when these words from the Summary for Policymakers are set alongside concerns raised about biofuels in the main Technical Report:

[C]ommodity prices remain high and volatile despite sluggish economic growth in major parts of the world economy. High costs for food have amplified concerns about competition between food production and efforts to mitigate emissions, notably through the growing of bioenergy crops.¹¹¹

The Summary for Policymakers appears to have toned down the concerns about high food costs and the relative priority of food production against the mitigation of emissions. While it is encouraging that the IPCC have acknowledged this ethical dilemma, there still appears to be a bias towards helping the environment by mitigating climate change through the use of biofuels (again, a contested concept) over helping the hungry poor. A leaked draft of the assessment was reported to have been even more critical, apparently stating: 'Increasing bioenergy crop cultivation poses risks to ecosystems and biodiversity.'¹¹² Ethical choices are to be made not only between the relative importance of the poor and the environment but also on the degree to which such concerns are brought to the attention of governments and populations by the IPCC.

What is beyond question, however, is that the shift towards biofuels has had damaging consequences, both for the poor and for the environment, and there is no convincing evidence that it has achieved any significant lowering of carbon emissions once all the variables have been taken into account. Further, deforestation of crucial areas of the world, especially the Amazon, in order to grow biofuel crops cannot be the basis of a long-term solution to the problem of greenhouse emissions. Again, when a policy exacerbates the very thing that it is meant to be solving then a moral hazard occurs: only in this case with direct impact on the hungry poor as well as on the natural environment.

¹¹⁰IPCC WGIII AR5 Summary for Policymakers, 2014, p. 26.

¹¹¹IPCC Working Group III, Mitigation of Climate Change: WGIII Assessment Report 5 Final Draft, p. 11. Located at http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_full.pdf, accessed 10 August 2014.

¹¹²*Sunday Telegraph*, 23 March 2014, <http://www.telegraph.co.uk/earth/energy/10716756/Biofuels-do-more-harm-than-good-UN-warns.html>, accessed 11 August 2014.

5 Conclusion

Ethical considerations have arisen and continue to arise at every stage of climate concern, from the climate science that first identified global warming as a potential problem for the world to the current and future implementation of proposed climate change mitigation and adaptation policies. Since the 1970s climate change scientists have been encouraged to choose an ethical priority: conform to the long-established norms and moral codes of scientific practice – especially disinterestedness – or relegate those concerns below a perceived higher ‘end’ of saving the world from global-warming-induced catastrophe. Many climate scientists, though not all, have opted to some degree for the latter, adopting a post-normal scientific paradigm that overtly includes personal, ideological and political elements and limits public exposure to the ifs, ands, buts, doubts and caveats that inevitably characterise all scientific research. Such an approach, perhaps necessarily, prioritises consensus over hard-to-come-by definitive proof, although what consensus exists is predicated on computer models whose findings, the IPCC concedes, may not match actual climate events in the future. Furthermore, that consensus is protected by a willingness on the part of some, hopefully just a small minority, to resort to clearly unethical methods to coerce scientists like Lennart Bengtsson away from questioning any aspect of the climate consensus that has so far been reached, and despite the appearance of intriguing anomalies like the current 16–18-year pause in global mean surface temperature rises.

In the framing of climate mitigation or adaptation policies a choice may eventually have to be made between prioritising the environment or prioritising concern for the people who live in it, especially the global poor. This ethical choice has been consistently and repeatedly underplayed in global institutional climate change discourse for more than two decades. The oft-repeated ideal of mitigating climate change while at the same time achieving strong economic growth and feeding the poor has obscured the realities of the harsh political and ethical choices to be made at individual, national and global levels. However, close examination of IPCC and other key reports indicates a preference for protecting the environment even at the cost of increased or extended poverty for millions of vulnerable people in the present and near future in particular. For some this is motivated by a genuine belief that the better the environment is protected the better the quality of life for all people in the future. For others, however, there is an antipathy towards the human race, captured in the phrase: ‘The real enemy then is humanity itself.’¹¹³

Furthermore, recent mitigation policies in the UK and Germany, for example, have burdened the poor in those countries with increased energy costs

¹¹³King and Schneider, 1991, p. 75.

and enriched individual and institutional investors in the attempt to constrain greenhouse gas emissions. Meanwhile the increases in carbon dioxide output in China and India overwhelm what now seem like token mitigation efforts elsewhere. Ironically, a combination of good ethical intentions – in Germany in particular – has resulted in the worst of all worlds. A moral hazard has emerged whereby an aggressive push towards renewable technologies has resulted in both increased poverty, climbing carbon emissions through the increased burning of brown coal, and rising costs to industry that are sending companies with high energy requirements overseas. Even worse, the pursuit of biofuels has prompted the UN Secretary General, the World Food Program and numerous NGOs to express concern about using food to run engines, with the associated demand-led price rises, instead of feeding the global poor. The impacts of biofuels on world food availability and cost violate the UNFCCC Article 2, which requires ‘that food production is not threatened’.¹¹⁴ Only an individual or organisation who places a distinct or absolute ethical priority on protecting the environment at any cost could deliberately countenance this extended human poverty and suffering. This should not be taken as a charter for unconstrained environmental harm, only a plea for balance, transparency, honesty and achievability in the selection of climate change policies.

Finally, the degree of uncertainty to be found in all IPCC predictions has a direct impact on the strength of associated ethical claims. The stronger and more accurate the truth or knowledge concerning climate harm, the more credibility the ethical choices associated with it. The uncertainties surrounding mitigation policies – what exactly will they stop, where, and for how long – suggest that adaptation policies will be needed in addition anyway. I have argued in this paper that the ethical choice to be made is not between an imagined climate ideal and a decision to do nothing. Every climate negotiation so far has fallen far short of achieving the mitigation espoused by its advocates and falls increasingly short with every new round of discussions as political and economic realities bite. The pragmatic ethical choice is to enact adaptation policies – with wealthier nations supporting poorer nations – while recognising that the future will bring as-yet unidentified challenges. Governments have traditionally operated contingency funds for use in responding to emergencies. Some climate-concerned citizens may be more reassured if part of this money is specifically allocated to climate or weather adaptation. Caution is needed however. If every economic, social and nature-related problem in the world is blamed on climate change then the very definition will become

¹¹⁴United Nations Framework Convention on Climate Change, 1992, Article 2, http://unfccc.int/essential_background/convention/background/items/1353.php, accessed 4 August 2014.

useless. Indeed this may well be the case already. If everything is the fault of climate change then, to all intents and purposes, nothing is the fault of climate change. In all of this, ethically robust climate science should be continuously challenging itself and its consensus from the inside. The best, most ethical and enduring policy outcomes will be achieved through the protection and application of the scientific norms that have achieved so much in recent centuries and still define science beyond the realms of climate change.

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Ethics and Climate Change Policy

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For further information about GWPF or a print copy of this report, please contact:

The Global Warming Policy Foundation
10 Upper Bank Street, London E14 5NB.
T 020 7006 5827
M 07553 361717

www.thegwpf.org

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