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A Call to Truth, Prudence, and Protection of the Poor: An Evangelical Response to Global Warming

**By E. Calvin Beisner, Ph.D., Paul K. Driessen, Esq.,
Ross McKittrick, Ph.D., and Roy W. Spencer, Ph.D.**



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Preamble

As evangelicals, we commend those who signed the Evangelical Climate Initiative's "Climate Change: An Evangelical Call to Action" for speaking out on a public issue of ethical concern. We share the same Biblical world view, theology, and ethics. We are motivated by the same deep and genuine concern they express for the poor not only of our own nation but of the world. That very concern compels us to express our disagreement with their "Call to Action" and to offer an alternative that would improve the lot of the poor more surely and effectively.

It is important to speak directly to the issue of motive. We do not question the motive of those who produced or signed the ECI's "Call to Action." We assume that they acted out of genuine concern for the world's poor and others and considered their action justified by scientific, economic, theological, and ethical facts. We trust that they will render us the same respect.

It is not sufficient, however, to have good intentions. They must be linked to sound understanding of relevant principles, theories, and facts. As we shall argue below, that linkage is lacking for the ECI's "Call to Action."

We present our case in two stages. First, we respond point-by-point to the ECI's four claims and the four assumptions on which its "Call to Action" rests. Second, we present five contrary conclusions. The first four follow from the evidence presented in our critique of the ECI's claims. The fifth sets forth our own alternative call to action to protect the poor, the rest of humanity, and the rest of the world's inhabitants—not only from global warming but also from other potential environmental threats.

Response to the ECI's Four Assumptions

The ECI's "Call to Action" rests on the following four assumptions:

- Human emissions of carbon dioxide and other greenhouse gases into the atmosphere as we burn fuels for energy are the main cause of global warming.
- Global warming is not only real (which we do not contest) but is almost certainly going to be catastrophic in its consequences for humanity—especially the poor.
- Reducing carbon dioxide emissions would so curtail global warming as to significantly reduce its anticipated harmful effects.
- Mandatory carbon dioxide emissions reductions would achieve that end with overall effects that would be more beneficial than harmful to humanity and the rest of the world's inhabitants.

All of these assumptions, we shall argue below, are false, probably false, or exaggerated.

ECI's First Assumption: CO₂ emissions from fossil fuels are the main cause of warming.

The ECI's **first assumption** appears under "Claim 1: **Human-Induced Climate Change is Real.**" While almost certainly true (since humans have long affected climates in which they live), the claim is too vague to have policy implications. It is *possible*, under some assumptions, to attribute *all* recent globally averaged warming to mankind. But our knowledge of climate history also reveals substantial natural variability. The mechanisms driving natural climate variations are too poorly understood to be included accurately in computer climate models. Hence, the models risk overstating human influence.

For support the "Call" cites the Executive Summary of the *Third Assessment Report* (2001) of the Intergovernmental Panel on Climate Change (IPCC) as attributing "*most of the warming*" (emphasis added) to human activities. However, the Executive Summary does not reflect the depth of scientific uncertainty embodied in the report and was written by government negotiators, not the scientific panel itself. Indeed, the wording of the conclusion supplied by the scientific panel as of the close of scientific review did not attribute "most" warming to humans. Instead it emphasized the existing uncertainties: "From the body of evidence since IPCC (1996), we conclude that there has been *a discernible* human influence on global climate. Studies are beginning to separate the contributions to observed climate change attributable to individual external influences, both anthropogenic and natural. This work suggests that anthropogenic greenhouse gases are *a substantial* contributor to the observed warming, especially over the past 30 years. However, the accuracy of these estimates continues to be limited by *uncertainties* in estimates of internal variability, natural and anthropogenic forcing, and the climate response to external forcing."¹ While much valuable scientific research is reflected by the IPCC's reports, their executive summaries have been so politicized as to prompt MIT climate scientist and IPCC participant Richard Lindzen to testify before the United States Senate, "I personally witnessed coauthors forced to assert their 'green' credentials in defense of their statements."²

Further, a number of studies support the conclusion that natural causes—e.g. fluctuations in solar output,³ changes in cloud forcing,⁴ and precipitation microphysics⁵—could outweigh human CO₂

¹Government and Expert Review Draft, IPCC Working Group 1 Third Assessment Report, 5, emphases added. The "IPCC is as much a collection of government bureaucrats as it is of working scientists. . . . only about 33 percent of the 200+ 'lead authors' are in fact climate scientists. Consequently, the 'consensus' that these documents achieve is in fact determined by a majority opinion that is not necessarily formally trained in the subject matter." Patrick J. Michaels, *Meltdown: The Predictable Distortion of Global Warming by Scientists, Politicians, and the Media* (Washington: Cato Institute, 2004), 22.

²"Testimony of Richard S. Lindzen before the Senate Environment and Public Works Committee on 2 May 2001," online at http://epw.senate.gov/107th/lin_0502.htm.

³The IPCC attributes the whole warming of the first half of the twentieth century—about 0.5° C—to solar variability. John T. Houghton, *et al.*, *Climate Change 2001: The Scientific Basis. Contribution of Working Group 1 to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2001),

emissions as causes of the current global warmth.⁶ Other studies find that rising CO₂ follows rather than leads warming and thus is not its cause but might be its effect.⁷ In addition, other human activities (e.g., land use conversion for agriculture and cities, particulate pollution) cause regional climatic changes that go largely unmentioned. Thus the human-induced part of the warming trend is only partly driven by CO₂ and other manmade greenhouse gases. Recently sixty topic-qualified scientists asserted that “global climate changes all the time due to natural causes and the human impact still remains impossible to distinguish from this natural noise,” and that “observational evidence does not support today’s computer climate models, so there is little reason to trust model predictions of the future.”⁸

The discerning reader of the ECI statement should ask: *How much* of current global warming is man-made versus natural? *How much* future warming can we reasonably expect? *What changes* in human behavior that affect climate may be anticipated, under *what conditions*? *What difference* will such changes make to the world’s climate? And what would it actually take to *fix the alleged problem*? In other words, the **first assumption**, which by itself suggests no policy, only becomes relevant when coupled with the second.

ECI’s Second Assumption: Global Warming Will Be Catastrophic, Especially for the Poor

The ECI’s **second assumption** appears under “Claim 2: **The Consequences of Climate Change**

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⁴A discussion of cloud variations as a cause of natural climate variability is contained in Climate Research Committee, Board on Atmospheric Sciences and Climate, Commission on Geosciences, Environment, and Resources of the National Research Council, “Natural Climate Variability On Decade-to-Century Time Scales” (Washington, D.C.: National Academy Press, 1995), online at: <http://darwin.nap.edu/books/0309054494/html>.

⁵The precipitation efficiency uncertainties in climate modeling (and thus our theoretical understanding of how these things can be involved in natural climate fluctuations) are discussed in N. O. Renno, K.A. Emanuel, and P.H. Stone, “Radiative-convective model with an explicit hydrologic cycle 1. Formulation and sensitivity to model parameters,” *Journal of Geophysical Research* 99 (July 10, 1994), 14,429-14,441. The end of the abstract says: “The cumulus convection schemes currently in use in general circulation models bypass the microphysical processes by making arbitrary moistening assumptions. We suggest they are inadequate for climate change studies.”

⁶Such natural causes—especially fluctuations in solar energy output, changes in earth’s orbit and tilt (The Marian Koshland Science Museum of the National Academy of Sciences explains and illustrates these well in “Global Warming Facts & Our Future” at <http://www.koshland-science-museum.org/exhibitgcc/causes08.jsp>), and other long and (geologically) short cycles—certainly outweigh human CO₂ emissions as causes of climate change in history. See, e.g., S. Fred Singer and Dennis T. Avery, “The Physical Evidence of Earth’s Unstoppable 1,500-Year Climate Cycle” (Dallas: National Center for Policy Analysis, NCPA Policy Report No. 279, 2005).

⁷Robert H. Essenhigh, “Does CO₂ really drive global warming?” *Chemical Innovation* 31:5 (May 2001), 44-46; online at http://www.pubs.acs.org/subscribe/journals/ci/31/special/may01_viewpoint.html; H. Fischer, *et al.*, “Ice core record of atmospheric CO₂ around the last three glacial terminations,” *Science* 283, (1999): 1712-1714; U. Siegenthaler, *et al.*, “Stable carbon cycle-climate relationship during the late Pleistocene,” *Science* 310:5752 (November 25, 2005), 1313-1317.

⁸Letter to Canadian Prime Minister Stephen Harper, published as “Open Kyoto to debate: Sixty scientists call on Harper to revisit the science of global warming,” *Financial Post*, April 6, 2006, at <http://www.canada.com/nationalpost/financialpost/story.html?id=3711460e-bd5a-475d-a6be-4db87559d605>. A complete list of signers of this letter is in the Appendix of this paper.

Will Be Significant, and Will Hit the Poor the Hardest.” We shall respond separately to the two parts of this claim.

The first part asserts that “the consequences of climate change will be significant.” It is impossible to quantify what is meant by “significant,” but the “Call to Action” goes on to list a variety of consequences, asserts without evidence that these will be hardest on the poor, and concludes, “Millions of people could die in this century because of climate change, most of them our poorest global neighbors.”

Catastrophic climate scenarios critically depend on the extremely unlikely assumption that global average temperature would rise 6° C (10.8° F) or more in response to doubled CO₂. But more credible estimates of climate sensitivity to doubled CO₂ have been in the range of 1.5° to 4.5° C (2.7° to 8.1° F). Researchers using several independent lines of evidence asserted a “maximum likelihood

estimate . . . close to 3° C” (5.4° F). They concluded, “our implied claim that climate sensitivity actually has as much as a 5% chance of exceeding 4.5° C is not a position that we would care to defend with any vigour, since even if it is hard to formally rule it out, we are unaware of any significant evidence in favour of such a high value.”⁹ It is very unlikely that warming in that range would cause catastrophic consequences. Why? Among other reasons, because CO₂-induced warming will occur mostly in winter, mostly in polar regions, and mostly at night. But in polar regions, where winter night temperatures range far below freezing, an increase of 5.4° F is hardly likely to cause significant melting of polar ice caps or other problems.

The “claim that climate sensitivity has as much as a 5% chance of exceeding 4.5° C is not a position that we would care to defend with any vigour, since . . . we are unaware of any significant evidence in favour of such a high value.”—J. D. Annan and J. C. Hargreaves

Even if the recent strong warming trend (at most 1° F in the last thirty years) is entirely manmade (and it almost certainly is not), and even if it continues for another thirty years (as it might), global average temperature will only be at most 1° F warmer than now. Predicting climate beyond then depends on assumptions about future use of fossil fuels. Such assumptions are dubious in light of continuous changes in energy sources throughout modern human history. Who could have predicted our current mix of energy sources a century-and-a-half ago, when wood, coal, and whale oil were the most important components and petroleum and natural gas were barely in use?

The ECI predicts that “*even small rises* [emphasis added] in global temperatures will have” a variety of supposedly disastrous impacts. In each instance, there is good reason to reject the prediction:

⁹J. D. Annan and J. C. Hargreaves, “Using multiple observationally-based constraints to estimate climate sensitivity,” *Geophysical Research Letters*, vol. 33, L06704, doi:10.1029/2005GL025259, 2006, online at <http://www.agu.org/pubs/crossref/2006/2005GL025259.shtml>; prepublication draft at http://www.jamstec.go.jp/frcgc/research/d5/jdannan/GRL_sensitivity.pdf. See also G. Hegerl, et al., “Climate sensitivity constrained by temperature reconstructions over the past seven centuries,” *Nature* 440 (April 20, 2006): 1029-1032.

- **“sea level rise”:** Contrary to visions of seawater inundating vast areas, model-average results from a mid-range scenario of the IPCC (a scenario that itself probably exaggerates warming) suggest a rise by A.D. 2100 of only about 0.387 meter (15.24 inches, or 1.27 feet).¹⁰ The rate of rise would be only 1.524 inches per decade, to which the few coastal settlements actually threatened could readily adapt by building dikes. Further, sea level has risen for centuries, since long before earth began to recover from the Little Ice Age (about 1550-1850) and long before fossil fuel burning could possibly have contributed to global warming. Through the twentieth century it rose about 0.18 meter (7.08 inches), and there is no reason to think the natural forces driving that rise will cease.¹¹ Even assuming that the IPCC’s projection of twenty-first century sea level rise is correct, then, only about half of that rise would be attributable to current global warming—and, in turn, only a fraction of that to human-induced warming. Further, “Of the costs to the Netherlands, Bangladesh and various Pacific islands [i.e., the places at greatest risk], the costs of adapting to the changes in sea level are trivial compared with the costs of a global limitation of CO₂ emissions to prevent global warming.”¹²

IPCC mid-range scenario for sea level rise suggests only about 1.524 inches per decade, to which coastal settlements could readily adapt by building dikes.
- **“more frequent heat waves”:** Though there is reason to doubt this prediction, its significance arises only from its impact on health and mortality. Heat-related death rates decline as people learn how, and become better able to afford, to protect themselves from excessive heat.¹³ For example, while a heat wave in Chicago in 1995 caused about 700 heat-related deaths, a nearly

¹⁰Sarah C. B. Raper and Roger J. Braithwaite, “Low sea level rise projections from mountain glaciers and ice caps under global warming,” *Nature* 439 (January 19, 2006), 311-313; abstract online at <http://www.nature.com/nature/journal/v439/n7074/abs/nature04448.html>. Similarly, Indur M. Goklany writes, “In the IPCC’s First Assessment Report, the estimated SLR between 1990 and 2100 was pegged at between 0.31 and 1.10 m with a best estimate of 0.66 m (FAR Scientific Assessment, page 277), and the Third Assessment Report’s estimates were between 0.09 and 0.88 m with a ‘central value’ of 0.48m (TAR Scientific Assessment, page 671). Recently Church and White (2006) came out with an estimate of between 0.28 and 0.34 m.” Indur M. Goklany, “Comments to the Stern Review on the Economics of Climate Change,” March 17, 2006, at <http://members.cox.net/goklany/Stern%202.pdf>, p. 4, citing John A. Church and Neil J. White, “A 20th century acceleration in global sea-level rise,” *Geophysical Research Letters*, vol. 33 (January 6, 2006), L01602, doi:10.1029/2005GL024826, abstract online at <http://www.agu.org/pubs/crossref/2006/2005GL024826.shtml>.

¹¹B. C. Douglas and W. R. Peltier, *Physics Today*, March, 2002, 35-40; compare Church and White (2006), which estimates sea level rise from January 1870 to December 2004 of 0.195 m (4.21 inches), i.e., 0.015 m (0.31 inch) per decade.

¹²Deepak Lal, “Ecological Imperialism: The Prospective Costs of Kyoto for the Third World,” in *The Costs of Kyoto: Climate Change Policy and Its Implications*, ed. Jonathan H. Adler (Washington: Competitive Enterprise Institute, 1997), 83-90, at 85-6. An implication of this is that economic development is an important step to protecting against heat waves, with or without global warming; a further implication is that because energy is a crucial component of economic development, affordable energy is necessary to protect against heat waves.

¹³R. E. Davis, *et al.*, “Decadal changes in heat-related human mortality in the eastern United States,” *International Journal of Biometeorology* 47:166-75.

identical one only four years later caused only about 100, because of better advance warning from weather forecasters and protective steps.¹⁴ Further, those who warn of more frequent heat waves should even more fervently herald less frequent severe cold snaps. The death rate from severe cold is nearly ten times as high as that from severe heat,¹⁵ implying that global warming (assuming that it reduces cold snaps as much as it increases heat waves) should prevent more deaths from cold than it causes from heat.

- **“more frequent . . . droughts, and extreme weather events such as torrential rains and floods”:** Actual projections assuming IPCC-forecast global warming call for more frequent droughts in some places, less frequent droughts in others, more frequent wet periods in some places, and less frequent wet periods in others. It is not possible, at the present state of the science, to be sure whether there will be a net increase of either droughts or wet periods globally or in most locales. However, while worldwide data are insufficient to justify any generalizations, we do know that there is no statistical correlation between global average temperature and droughts in the southwestern United States or even the United States as a whole,¹⁶ a fact that puts the model forecasts into doubt. Further, in an increasingly wealthy world, the ability to distribute water and agricultural products efficiently will continue to improve, making societies more and more resilient to droughts—which will continue to occur with or without human influence on climate.
- **“increased tropical diseases in now-temperate regions”:** Since the mosquitoes that carry *Plasmodium falciparum* (the malaria-causing parasite) require winter temperatures above about 61° to 64° F to survive, it seems intuitively likely that expanding the regions with winter lows above that range would result in increasing malaria rates. However, even in very cold climates there are places sheltered from cold in which the mosquitos can hibernate. Thus, malaria was common throughout Europe and even into the Arctic Circle even during the Little Ice Age and continued common through the end of World War II in Finland, Poland, Russia, around the Black Sea, and in thirty-six of the United States, including all northern border states from Washington through New York.¹⁷ It is not temperatures that are most important for malaria control but elimination of suitable breeding grounds and the use of pesticides to lower the population of malarial mosquitoes and keep them out of homes. The

The impacts of climate change on malaria, at least through 2084, will be trivial compared to non-climate change related factors.

¹⁴M. A. Palecki, S. A. Changnon, and K. E. Kunkel, “The nature and impacts of the July 1999 heat wave in the midwestern United States: Learning from the lessons of 1995,” *Bulletin of the American Meteorological Society* 82:1353-1367.

¹⁵W. R. Keatinge, *et al.*, “Heat related mortality in warm and cold regions of Europe: observational study,” *British Medical Journal* 321:670-673.

¹⁶O. W. Frauenfeld and R. E. Davis, “Midlatitude circulation patterns associated with decadal and interannual Pacific Ocean variability,” *Geophysical Research Letters* 29, DOI: 10.1029/2002GL015743; Michaels, *Meltdown*, 138-142.

¹⁷Paul Reiter, “From Shakespeare to Defoe: malaria in England in the Little Ice Age,” *Emerging Infectious Diseases* 6(1):1-10, at www.cdc.gov/ncidod/eid/vol6no1/reiter.htm.

IPCC suggested on the basis of mathematical models that by the 2080s global warming could put about 2-4 percent more people at risk for malaria. What this means is that 96 to 98 percent of people at risk of malaria would be at risk because of non-climate change related factors. In other words, the impacts of climate change on malaria, at least through 2085, will be trivial compared to non-climate change related factors.¹⁸ The IPCC also noted that most of those newly at risk would be in middle- or high-income countries where infrastructure and health services would make infection and death or serious disability unlikely.¹⁹ “Thus, the global study of *actual* malaria transmission shows ‘remarkably few changes, even under the most extreme scenarios.’”²⁰ The resurgence of malaria in some African and Asian countries correlates not with changing temperatures but with the banning of DDT and shifts to less effective disease control methods, and it costs over a million premature deaths annually.

- **“hurricanes that are more intense”:** The recent upswing in numbers and intensity of Atlantic hurricanes makes some people more receptive to claims that global warming might have such an effect. However, the National Oceanic and Atmospheric Administration (NOAA) concluded in a study announced in November 2005 that “the tropical multi-decadal signal is causing the increased Atlantic hurricane activity since 1995, and is not related to greenhouse warming.”²¹ More specifically,

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claims of linkages between global warming and hurricane impacts are premature for three reasons. First, no connection has been established between greenhouse gas emissions and the observed behavior of hurricanes (Houghton et al. 2001; Walsh 2004). . . . Second, the peer-reviewed literature reflects that a scientific consensus exists that any future changes in hurricane intensities will likely be small in the context of observed variability (Knutson and Tuleya 2004; Henderson-Sellers et al. 1998), while the scientific problem of tropical cyclogenesis is so far from being solved that little can be said about possible changes in frequency. And third, under the assumptions of the IPCC,

¹⁸I. M. Goklany and D. King, “Climate Change and Malaria,” *Science* 306:5693 (October 2004), 55-57.

¹⁹J. J. McCarthy, et al., *Climate Change 2001: Impacts, Adaptation, and Vulnerability: Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2001), 9.7.1.1. Cited in Bjørn Lomborg, *The Skeptical Environmentalist: Measuring the Real State of the World*, rev. ed. (Cambridge: Cambridge University Press, 2001), 292.

²⁰Lomborg, *Skeptical Environmentalist*, 292, citing David J. Rogers and Sarah E. Randolph, “The Global Spread of Malaria in a Future, Warmer World,” *Science* 289(5485):1763-6. See also S. I. Hay, et al., “Climate change and the resurgence of malaria in the East African highlands,” *Nature* 415:905-09, which concluded that there was no correlation between malaria transmission and temperature variation.

²¹“NOAA attributes recent increase in hurricane activity to naturally occurring multi-decadal climate variability,” *NOAA Magazine Online*, Story 184, at <http://www.magazine.noaa.gov/stories/mag184.htm>.

expected future damages to society of its projected changes in the behavior of hurricanes are dwarfed by the influence of its own projections of growing wealth and population (Pielke et al. 2000).²²

We have been in a cyclical lull in Atlantic hurricane activity for several decades, during which our coastlines have seen rapid growth in population and infrastructure. It is thus the presence of more property in harm's way, not a historically unprecedented increase in frequency or intensity of hurricanes, that explains rising economic losses from hurricanes. The National Hurricane Center has warned that we were overdue for a return to greater activity, similar to what occurred in the 1930s to the 1950s. Emphasis on a possible human connection distracts from the very real issue that people need to be prepared for increased hurricane activity, whether or not hurricanes' frequency, intensity, or duration are affected by manmade greenhouse gases.

- **“reduction in agricultural output, especially in poor countries”:**

Observational evidence and computer models yield little confidence in forecasts of the impact of global warming on agricultural production, whether in poor countries or elsewhere.²³ However, rising CO₂—presumably what drives global warming—enhances agricultural yield. For every doubling of atmospheric CO₂ concentration, there is an average 35 percent increase in plant growth efficiency. Plants grow better in warmer and colder temperatures and in drier and wetter conditions, and they are more resistant to diseases and pests. Consequently their ranges and yields increase.²⁴ Agricultural productivity worldwide and in developing countries has never been higher than it is today.²⁵ Three likely results of rising CO₂ are shrinking deserts, lower food prices, and reduced demand for agricultural land to feed the world's population, the latter resulting in reduced pressure on

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²²R. A. Pielke Jr., et al., “Hurricanes and Global Warming,” *Bulletin of the American Meteorological Society*, November 2005, 1571-75, citing IPCC's *Climate Change 2001*; K. Walsh, “Tropical cyclones and climate change: Unresolved issues,” *Climate Research* (2004) 27:78-83; T. R. Knutson and R. E. Tuleya, “Impact of CO₂-induced warming on simulated hurricane intensity and precipitation: Sensitivity to the choice of climate model and convective parameterization,” *Journal of Climate* (2004) 17:3477-95; A. Henderson-Sellers, et al., “Tropical cyclones and global climate change: A post-IPCC assessment,” *Bulletin of the American Meteorological Society* (1998), 79:9-38; R. A. Pielke Jr. and D. Sarewitz, “Turning the big knob: Energy policy as a means to reduce weather impacts,” *Energy and Environment* (2000) 11:255-76.

²³Lauren Sacks and Cynthia Rosenzweig, “Climate Change and Food Security,” at <http://www.climate.org/topics/agricul/index.shtml>.

²⁴Many studies have been published demonstrating the benefits of rising CO₂ to agriculture. Much of the work has been done by scientists at the Center for the Study of Carbon Dioxide and Global Change, <http://www.co2science.org/scripts/CO2ScienceB2C/Index.jsp>, which has links to many articles by both its own scientists and others.

²⁵I. M. Goklany, “Potential Consequences of Increasing Atmospheric CO₂ Concentration Compared to Other Environmental Problems,” *Technology* 7 Suppl. 1 (2000), 189-213.

habitat and consequently on species survival. These benefits would be reduced or forgone if we reduced atmospheric CO₂.

In sum, to support its claims that human-induced global warming is not only real but also bound to become catastrophic, the ECI either misreads the IPCC's reports or, following the example of the media and politicians, uncritically relies on its Summary for Policy Makers. The Summary, as we noted above, does not reflect the scientific uncertainty contained in the body of the report, was not agreed to by the vast majority of IPCC

Claims of dangerous or catastrophic global warming are founded primarily on outlier models that present far more extreme scenarios than the vast majority [and] are based on grossly unrealistic assumptions about future factors that do not reflect current facts or likely future situations.

scientists, and was politically driven. Claims of dangerous or catastrophic global warming are founded primarily on outlier models that present far more extreme scenarios than the vast majority. These outlier models can neither predict even one year into the future nor reconstruct one year into the past. They produce scenarios with no basis in actual evidence. They are based on grossly unrealistic assumptions about future energy use, dominant energy types, pollution levels, economic development, and other factors that do not reflect current facts or likely future situations.²⁶ Mainstream media generally report on worst-case scenarios and assume that warming will be catastrophic and will bring devastating harm but no benefits. The ECI's statement follows that model.

There is evidence that the current warming period, from the mid-1800s to the present and likely to continue for a century or more, is driven largely by natural causes. Major global and regional climate changes of equal or greater magnitude—the Roman and Medieval Warm Periods, the Little Ice Age, and civilization-killing droughts in the Yucatan and the American southwest, not to mention the ice ages and interglacial periods—are known to have occurred in the complete absence of significant human impact. Yet the ECI, while presenting no evidence that natural causes are *not* the primary driving forces, endorses a response policy that is not only potentially very harmful but also irrational if the current warming is driven largely by natural causes.

What About Scientific Consensus on Human-induced Global Warming?

Before dealing with the effects on the poor, and since what we argue runs counter to a popularly perceived consensus among scientists on global warming, we must also address the ECI's claim, "Since 1995 *there has been general agreement* [emphasis added] among those in the scientific community most seriously engaged with this issue that climate change is happening and is being caused mainly by human activities" We should like to make three points. First, unlike politics,

²⁶IPCC, SRES. See I. M. Goklany, "Is a Richer-but-warmer World Better than Poorer-but-cooler Worlds?" 25th Annual North American Conference of the US Association for Energy Economics/International Association of Energy Economics, September 21-23, 2005.

but like truth, science is not a matter of consensus but of data and valid arguments. Second, as Thomas Kuhn so famously pointed out in *The Structure of Scientific Revolutions*, great advances in science, often involving major paradigm shifts, occur when small minorities patiently—and often in the face of withering opposition—point out anomalies in the data and inadequacies in the reigning explanatory paradigms until their number and weight become so large as to require a wholesale paradigm shift, and what once was a minority view becomes a new majority view. Indeed, skepticism is essential to science: “Most institutions demand unqualified faith; but the institution of science makes skepticism a virtue.”²⁷

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skepticism a virtue.”—Robert K. Merton

Third, the popular belief that there is such a consensus is dubious at best. Since 1998 over 19,700 scientists have signed a petition saying, “There is no convincing scientific evidence that human release of carbon dioxide, methane, or other greenhouse gasses is causing or will, in the foreseeable future, cause catastrophic heating of the Earth’s atmosphere and disruption of the Earth’s climate. Moreover, there is substantial scientific evidence that increases in atmospheric carbon dioxide produce many beneficial effects upon the natural plant and animal environments of the Earth.” The signers include “2,660 physicists, geophysicists, climatologists, meteorologists, oceanographers, and environmental scientists who are especially well qualified to evaluate the effects of carbon dioxide on the Earth’s atmosphere and climate” and “5,017 scientists whose fields of specialization in chemistry, biochemistry, biology, and other life sciences make them especially well qualified to evaluate the effects of carbon dioxide on the Earth’s plant and animal life.”²⁸

In 2004 *Science* published the results of a study by Naomi Oreskes claiming that “without substantial disagreement, scientists find human activities are heating the earth’s surface.”²⁹ But an attempt at replicating the study both found that she had made serious mistakes in handling data and, after re-examining the data, reached contrary conclusions. Oreskes claimed that an analysis of 928 abstracts in the ISI database containing the phrase “climate change” proved the alleged consensus. It turned out that she had searched the database using three keywords (“global climate change”) instead of the two (“climate change”) she reported—reducing the search results by an order of magnitude. Searching just on “climate change” instead found almost 12,000 articles in the same

²⁷Robert K. Merton, “Science and the Social Order,” *Philosophy of Science* 5:3 (July 1938), 321-337, at 334.

²⁸See the Oregon Petition Project at <http://www.oism.org/pproject/s33p37.htm>. Dr. Art Robinson, an evangelical who managed the project and keeps the signature list up to date, reports that additional scientists continue to sign the petition regularly, and almost none have removed their signatures in the nine years the petition has been in existence. For a complete list of signers, separate lists of those with specialized qualifications, and refutation of attempts to discredit the Petition, see <http://www.oism.org/pproject/s33p357.htm>. Similarly, since 1995 over 1,500 topic-qualified scientists have signed the Leipzig Declaration opposing the Kyoto Protocol (<http://www.sepp.org/leipzig.html>). Forty-seven topic-qualified scientists who reject the hypothesis of catastrophic human-induced global warming are listed at http://www.envirottruth.org/myth_experts.cfm, complete with contact information and notes on their subjects of expertise.

²⁹Naomi Oreskes, “The scientific consensus on climate change,” *Science*, vol. 306, issue 5702 (December 3, 2004), 1686, at <http://www.sciencemag.org/cgi/content/full/306/5702/1686>.

database in the relevant decade. Excluded from Oreskes's list were "countless research papers that show that global temperatures were similar or even higher during the Holocene Climate Optimum and the Medieval Warm Period when atmospheric CO₂ levels were much lower than today; that solar variability is a key driver of recent climate change; and that climate modeling is highly uncertain." Further, even using the three key words she actually used, "global climate change," brought up 1,247 documents, of which 1,117 included abstracts. An analysis of those abstracts showed that

- only 1 percent explicitly endorsed what Oreskes called the "consensus view";
- 29 percent implicitly accepted it "but mainly focus[ed] on impact assessments of envisaged global climate change";
- 8 percent focused on "mitigation";
- 6 percent focused on methodological questions;
- 8 percent dealt "exclusively with paleo-climatological research unrelated to recent climate change";
- 3 percent "reject[ed] or doubt[ed] the view that human activities are the main drivers of the 'the [sic] observed warming over the last 50 years'";
- 4 percent focused "on natural factors of global climate change"; and
- 42 percent did "not include any direct or indirect link or reference to human activities, CO₂ or greenhouse gas emissions, let alone anthropogenic forcing of recent climate change."³⁰

³⁰Benny J. Peiser, Letter to *Science*, January 4, 2005, submission ID: 56001. *Science* Associate Letters Editor Etta Kavanagh eventually decided against publishing the letter, or the shortened version of it provided at her request by Peiser, not because it was flawed but because "the basic points of your letter have already been widely dispersed over the internet" (e-mail from Etta Kavanagh to Benny Peiser, April 13, 2005). Peiser, a scientist at Liverpool John Moores University, replied: "As far as I am aware, neither the details nor the results of my analysis have been cited anywhere. In any case, don't you feel that SCIENCE has an obligation to your readers to correct manifest errors? After all, these errors continue to be employed by activists, journalists and science organizations . . . Are you not aware that most observers know only too well that there is absolutely *no* consensus within the scientific community about global warming science?" He went on to cite a survey of "some 500 climatologists [that] found that 'a quarter of respondents still question whether human activity is responsible for the most recent climatic changes,'" and other evidence. Peiser, e-mail to Kavanagh, April 14, 2005. The whole correspondence, including much more evidence of the lack of scientific consensus on anthropogenic global warming, is online at www.staff.livjm.ac.uk/spsbpeis/Scienceletter.htm.

On April 6, 2006, sixty well-qualified scientists working in the field of climate change sent an open letter to Canadian Prime Minister Stephen Harper, saying, “Observational evidence does not support today’s computer climate models, so there is little reason to trust model predictions of the future.” The scientists went

“Observational evidence does not support today’s computer climate models, so there is little reason to trust model predictions of the future.”—Sixty climate-change scientists in an open letter to Canadian Prime Minister Stephen Harper

on to reject the vision of catastrophic human-induced global warming and oppose the Kyoto Protocol.³¹ Shortly afterward a group of leading New Zealand climatologists and meteorologists skeptical of catastrophic human-induced global warming formed The New Zealand Climate Science Coalition.³² And on April 20, 2006, the British Broadcasting Corporation aired a radio program, “Overselling Climate Change,” in which many scientists, including those who believe global warming is a serious problem, decried exaggerated claims about it that undermine confidence in science.³³ As Lindzen testified,

Indeed, the whole issue of consensus and skeptics is a bit of a red herring. If, as the news media regularly report, global warming is the increase in temperature caused by man’s emissions of CO₂ that will give rise to rising sea levels, floods, droughts, weather extremes of all sorts, plagues, species elimination, and so on, then it is safe to say that global warming consists in so many aspects, that widespread agreement on all of them would be suspect *ab initio*. If it truly existed, it would be evidence of a thoroughly debased field. In truth, neither the full text of the IPCC documents nor even the summaries claim any such agreement. Those who insist that the science is settled should be required to state exactly what science they feel is settled.³⁴

“. . . the whole issue of consensus and skeptics is a bit of a red herring. . . . neither the full text of the IPCC documents nor even the summaries claim any such agreement..”—Richard S. Lindzen

The idea of scientific consensus on anthropogenic global warming is an illusion.³⁵

³¹<http://www.canada.com/components/print.aspx?id=3711460e-bd5a-475d-a6be-4db87559d605>.

³²<http://www.climate-science.org.nz/Index.php>. For a news report on it, see http://www.nzherald.co.nz/section/story.cfm?c_id=1&ObjectID=10379768.

³³“Overselling Climate Change,” audio online at <http://www.bbc.co.uk/radio4/thebattleforinfluence/pip/abkim/>.

³⁴“Testimony of Richard S. Lindzen before the Senate Environment and Public Works Committee on 2 May 2001,” online at http://epw.senate.gov/107th/lin_0502.htm.

³⁵It is ironic that many supporters of the ECI rely heavily on the claim of scientific consensus to buttress their view of global warming. The role of the IPCC in climate studies is similar to that of the Jesus Seminar in New Testament scholarship in the 1990s and Darwinism for the past century. It is a self-selecting group with a narrow point of view favored by the political left and mainstream media, and it tends to respond to critics with derision or dismissal rather than collegial engagement. Evangelicals have been quick to criticize the process behind the Jesus Seminar and Darwinism. They have resisted the idea that complex scholarly issues could be decided by a majority vote among club members. Those same critical instincts need to be kept in place when evaluating claims of consensus on global warming.

Global Warming and Concern for the Poor

The second part of Claim 2 is that **“The consequences of climate change will . . . hit the poor the hardest.”** On the contrary, the destructive impact on the poor of enormous mandatory reductions in fossil fuel use far exceeds the impact on them—negative or positive—of the moderate global warming that is most likely to occur. Indeed, the policy promoted by the ECI would be both economically devastating to the world’s poor and ineffective at reducing global warming.

Because energy is an essential component in almost all economic production, reducing its use and driving up its costs will slow economic development, reduce overall productivity, and increase costs of all goods, including the food, clothing, shelter, and other goods most essential to the poor. The ECI does not detail steps to reduce CO₂ emissions, instead offering

Full compliance with the Kyoto Protocol’s carbon emissions reductions would reduce global warming by less than 0.2° F by 2050—an amount so tiny as to disappear in annual fluctuation and with no significant impact on consequences.

only broad outlines. That reduces its vulnerability to direct criticism. But its broad outlines generally fit with the Kyoto Protocol, so until the ECI offers its own detailed set of proposals, it is helpful to point out the weaknesses in Kyoto. Compliance with the Protocol, without a global carbon emissions trading mechanism, could cost the global economy about \$1 trillion per year³⁶ (i.e., about 2.25 percent of the world’s annual production). Over the fifty years from 2001 to 2050, that means \$50 trillion. Yet full compliance would reduce global warming by less than 0.2° F by 2050³⁷—an amount so tiny as to disappear in annual fluctuation and with no significant impact on consequences. As a result, its supporters also say Kyoto is just a first step—that we shall need many, perhaps forty, more such treaties,³⁸ each more costly than the last, to prevent catastrophic global warming. It is

³⁶Bjørn Lomborg, “Should we implement the Kyoto Protocol? No—We risk burdening the global community with a cost much higher than that of global warming,” at www.spiked-online.com/articles/00000002D2C3.htm. More specifically, with no emissions trading, the combined annual cost of compliance in the year 2010 to the United States, the European Union, Japan, Canada, Australia, and New Zealand alone would be around \$350 billion; with emissions trading within two blocks of that group, about \$240 billion; with unrestricted trading within all Annex I countries, slightly over \$150 billion; and with global trading, about \$75 billion. Lomborg, *Skeptical Environmentalist*, 303, Figure 158, citing John P. Weyant and Jennifer N. Hill, “Introduction and overview,” *The Energy Journal*, Kyoto Special Issue [1999], vii-xliv, at xxxiii-xxxiv, and Bureau of Economic Analysis, *Price Indexes for Gross Domestic Product and Gross Domestic Purchases* (www.bea.doc.gov/bea/dn/st3.csv) and *Selected NIPA Tables showing advance estimates for the fourth quarter of 2000* (www.bea.doc.gov/bea/dn/dpga.txt), both 2001.

³⁷Calculations of the range of temperature reduction from compliance with Kyoto differ but are all very low. E.g.: (1) “the Kyoto Protocol . . . , if adhered to by every signatory (including the United States)[,] would only reduce surface temperature by 0.07° C (.13° F) in fifty years” (Michaels, *Meltdown*, 19). (2) “Global mean reductions [in warming by 2100] for the three scenarios are small, 0.08-0.28°C” [i.e., 0.14-0.5° F] (T. M. L. Wigley, “The Kyoto Protocol: CO₂, CH₄ and Climate Implications,” *Geophysical Research Letters*, vol. 25 [July 1998], 2285-88, at 2287).

³⁸Wigley writes: “For B=CONST, the expected global-mean warming to 2100 is reduced by [Kyoto compliance by] 0.10-0.21°C depending on the climate sensitivity (close to 7% in all cases). For NOMORE, the reduction in warming is 4%, while for the B= -1% case it is approximately 14%. The rate of slow-down in temperature rise is small, with no sign of any approach to climate stabilization. *The Protocol, therefore, . . . can be considered only as a first and relatively small step towards stabilizing the climate*” (Wigley, “The Kyoto Protocol,” 2287-88, emphasis added). National Center

impossible to calculate with any confidence the actual amount that would cost the world economy, but since initial emissions cuts would be cheapest, and every deeper level of cuts afterward would be more costly, it would stand to reason that compliance with forty levels of Kyoto-type agreements would reduce global economic production not by \$1 trillion but by over \$40 trillion per year—i.e., about 91 percent of its present total. As Lindzen put it:

Should a catastrophic scenario prove correct, Kyoto will not prevent it. If we view Kyoto as an insurance policy, it is a policy where the premium appears to exceed the potential damages, and where the coverage extends to only a small fraction of the potential damages. Does anyone really want this? I suspect not.³⁹

The one specific policy the ECI does name to reduce CO₂ emissions is cap-and-trade: adopting through international treaty maximum limits on global emissions, issuing permits to individual nations, and the nations auctioning those permits to bidders.

The ECI supports a proposal the requirements of which would be far lighter than those of the Kyoto Treaty and consequently would have no significant climatic effect, regardless of cost.

Specifically, and in contradiction to its explicit concern to reduce global warming and its alleged perils, the ECI supports a proposal by Senators Pete Domenici and Jeff Bingaman the requirements of which would be far lighter than those of the Kyoto Treaty and consequently would have no significant climatic effect, regardless of cost. In principle a tradable permits scheme is a sensible way to deal with pollution and can be less costly than a command-and-control regulatory approach. However, advocating efficient means of achieving pointless goals does not avoid the problem that the goal itself is poorly conceived. Its efficiency depends largely on there being a variety of ways to address the pollution problem at a variety of costs. In the climate change arena, the lowest cost solutions have largely been either abandonment of means of production that are high CO₂ emitters or using “sinks”—planting more forests to absorb CO₂. While the cap-and-trade system for sulfur dioxide emissions ushered in by the Clean Air Act amendments of 1990 is often cited, it operates on a much smaller scale than that envisioned for controlling national and global CO₂ emissions. Sulfur dioxide was controllable with relatively simple and inexpensive end-of-pipe treatments, such as smokestack scrubbers. No such options are available for CO₂ emissions. Imposing an absolute cap on national or global CO₂ emissions in the absence of any low-cost abatement options would create substantial risks of job losses and economic disruption, whether or not permits are tradable.

for Atmospheric Research scientist Jerry Mahlman says elimination of human-induced warming would require “forty successful Kyotos” (Tim Appenzeller and Dennis Dimick, “The Heat Is On,” *National Geographic*, September 2004, 11). David Malakoff cites other climate scientists as saying thirty (David Malakoff, “Thirty Kyotos Needed to Control Warming,” *Science*, December 19, 1997, 2048).

³⁹“Testimony of Richard S. Lindzen before the Senate Environment and Public Works Committee on 2 May 2001,” online at http://epw.senate.gov/107th/lin_0502.htm.

Moreover, we still must determine how harmful CO₂ emissions are and, thus, the benefits of reducing them. But, as we have seen, many scientists, especially agriculturalists, believe that CO₂ should not be classed as a pollutant at all because of its

Many scientists, especially agriculturalists, believe that CO₂ should not be classed as a pollutant at all because of its benefits to plant growth.

benefits to plant growth. Even assuming that CO₂ is a pollutant, it is simply impossible at the present state of the science to estimate with any reasonable degree of confidence how much harm—and benefit—is done by each ton emitted, and the balance between the two. Further, most of the proposals for cap-and-trade now on the table would exempt most developing countries from the cap. Because large, rapidly developing countries like India and China are among the exempt, and firms in regulated countries could move operations to unregulated countries to avoid abatement or permit costs, the result would be to leave actual global emissions largely unaffected.

Church leaders, evangelicals in particular, are concerned about climate change primarily because they fear its potential impacts on the world's poor, especially in the tropics. However, forecasts of things like precipitation and temperature change over long time horizons in particular regions are simply not possible. If the aim is to help the poor, what

If the aim is to help the poor, what matters from the policy point of view is supporting the development process by which countries acquire greater ability to deal with adverse economic, climatic, and social conditions, regardless of cause.

matters from the policy point of view is supporting the development process by which countries acquire greater ability to deal with adverse economic, climatic, and social conditions, regardless of cause. Put simply, poor countries need income growth, trade liberalization, and secure supplies of reliable, low-cost electricity. Rather than focusing on theoretically possible changes in climate, which varies tremendously anyway with El Niño, La Niña, and other natural cycles, we should emphasize policies—such as affordable and abundant energy—that will help the poor prosper, thus making them less susceptible to the vagaries of weather and other threats in the first place.

ECI's Third and Fourth Assumptions: Reducing CO₂ Emissions

The ECI's **third** and **fourth assumptions** appear under “Claim 3: Christian Moral Convictions Demand Our Response to the Climate Change Problem” and “Claim 4. The need to act now is urgent. Governments, businesses, churches, and individuals all have a role to play in addressing climate change—starting now.” The assumptions are that reducing carbon dioxide emissions would so curtail global warming as to significantly reduce its anticipated harmful effects (which we have just seen is false), and that government-mandated carbon dioxide emissions reductions would achieve that end with overall effects that would be more beneficial than harmful to humanity and the rest of the world's inhabitants.

With the general assertions that Christians must care about climate change because we love God and are called to love our neighbors and that God has given us stewardship over the earth, we agree. But

The harms caused by mandatory CO₂ emissions will almost certainly outweigh the benefits, especially to the poor.

these address motive. They do not specify action. The specific actions demanded by the ECI are “to find ways now to begin to reduce the carbon dioxide emissions from the burning of fossil fuels that are the primary cause of human-induced climate change”⁴⁰ and to “help the poor adapt to the significant harm that global warming will cause.” But as we have already seen, the harms caused by mandatory CO₂ emissions reductions will almost certainly outweigh the benefits, especially to the poor, for whom the marginal increases in prices will be a much greater burden than for the rich.

The world’s poor are much better served by enhancing their wealth through economic development than by whatever minute reductions might be achieved in future global warming by reducing CO₂ emissions.⁴¹ It is difficult to imagine how it could possibly be that, as the ECI claims, “*The basic task for all of the world’s inhabitants* [emphasis added] is

Not only will the policies proposed by the ECI not solve any of the real, present, and vast problems that cost millions of deaths among the poor every year, but instead they will slow down and in some cases prevent their being solved.

to find ways now to begin to reduce the carbon dioxide emissions from the burning of fossil fuels that are the primary cause of human-induced climate change.” Millions of poor people in developing countries die every year because they lack clean water and indoor plumbing, electricity (forcing them to burn wood and dung for cooking and heating and to live without refrigeration and air conditioning), sewage treatment, jobs, access to affordable medical care, and adequate nutrition—not to mention just and orderly legal and economic systems. Not only will the policies proposed by the ECI not solve any of these real, present, and vast problems, but instead they will slow down and in

⁴⁰This question-begging language deserves notice. Suppose (only to illustrate the point, not as if it were true) that one-tenth of 1 percent of global warming were human-induced, and that 60 percent of that were induced by burning fossil fuels. In that case 0.06 percent of global warming would be attributable to burning fossil fuels. If anticipated global warming from a doubling of atmospheric CO₂ were 3° C (likely on the high side), that would mean that only 0.0018° C of global warming from doubled CO₂ could be blamed on burning fossil fuels. Yet it would still be true that only by reducing fossil fuel use could we “reduce the carbon dioxide emissions from the burning of fossil fuels that are the primary cause of *human-induced* climate change.”

⁴¹See, as examples of studies supporting such conclusions, the following papers by environmental policy analyst Indur M. Goklany: “Comments to the Stern Review on the Economics of Climate Change,” March 17, 2006, at <http://members.cox.net/goklany/Stern%202.pdf>; “Evidence for the Stern Review on the Economics of Climate Change,” December 9, 2005, <http://members.cox.net/goklany/Goklany-%20Evidence%20for%20Stern%20Review.pdf>; “Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development,” http://members.cox.net/igoklany/Goklany-Integrating_A&M_preprint.pdf; “A Climate Policy for the Short and Medium Term: Stabilization or Adaptation?”, *Energy & Environment* 16:3&4 (2005), http://members.cox.net/igoklany/EEv16_Stab_or_Adaptation.pdf; “Evidence to the House of Lords Select Committee on Economic Affairs on Aspects of the Economics of Climate Change,” *Energy & Environment* 16:3&4 (2005), http://members.cox.net/igoklany/EEv16-3+4_GoklanyHoL_Evidence.pdf.

some cases prevent their being solved—all for the sake of responding to speculative and likely exaggerated risks far in the future, through measures that would be ineffective anyway.

The ECI's claim that "deadly impacts are being experienced now" is unsubstantiated. To substantiate it, the ECI would have to prove not just that global average temperatures are rising or that severe weather events are more frequent or more extreme, etc., but that (a) these things are significantly driven by CO₂ emissions from fossil fuel consumption and (b) the numbers of deaths attributable to them match or exceed the numbers attributable to the known, well-understood causes listed above. No data anywhere suggest anything remotely like that. In fact, virtually everywhere death rates have declined over the last several decades, even as the globe has admittedly warmed—although they are rising in some areas that are sinking deeper into poverty or where malaria is resurgent and AIDS has become prevalent.⁴²

Worse, by emphasizing these improbable risks and solutions, and by condemning the world's poor to slower economic development by raising energy prices, the ECI asks the poor to give up or at least postpone their claims to modern technology that is essential for a better future for themselves and their children. It tells them they must not expect to have fossil fuels, electricity, or even eco-tourism (because jets emit greenhouse gases and cause climate change). Other environmental activists tell them they must not use hydroelectric or nuclear power to generate electricity, because of fears of damming rivers and risks from handling nuclear wastes. So the world's poor must remain indigenous, traditional, and poor—or as Leon Louw has put it, must continue living in "human game preserves," so that affluent Westerners can visit them in their quaint villages.⁴³

It is immoral and harmful to Earth's poorest citizens to deny them the benefits of abundant, reliable, affordable electricity and other forms of energy (for homes, cars, airplanes, and factories) merely because it is produced by using fossil fuels. Foreseeable forms of renewable energy (other than hydroelectric)

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won't provide *reliable, affordable* electricity at least for many years, in amounts that are adequate and necessary for modern hospitals, factories, homes, communities and nations. To tell poor families, communities, and nations that they can't develop hydroelectric or nuclear energy either, because some people disapprove of them, is unconscionable.

As discussed previously, the ECI advises, "In the United States, the most important immediate step that can be taken at the federal level is to pass and implement national legislation requiring sufficient

⁴²I. M. Goklany, "The Globalization of Human Well-being," *Policy Analysis* 447 (Washington: Cato Institute, August 22, 2002).

⁴³For thorough discussion of the destructive impact of much environmental policy originating in the West on the poor in the developing world, see Paul Driessen, *Eco-Imperialism: Green Power Black Death* (Bellevue, WA: Free Enterprise Press, 2003).

economy-wide reductions in carbon dioxide emissions through cost-effective, market-based mechanisms such as a cap-and-trade program.” The term *sufficient* here is misleading: no one claims the kinds of cap-and-trade systems under discussion would be sufficient to mitigate global warming. And the statement itself is a contradiction in terms. Compulsory programs are not market-driven; they are driven by regulations, treaties, and rent seeking.⁴⁴ But such programs appeal to politicians, who want to hide the tax and blame others for the soaring prices.

We agree that it is wise to pursue increasing energy efficiency through the development of new technologies. But a program that can only be done by government mandate is by definition not a program that the market deems cost effective. We believe the market is a better judge of cost effectiveness than bureaucrats and politicians. What are needed are *prudent* policies that reflect actual risks, costs, and benefits; an honest evaluation of sound scientific, economic, and technological data; and unbiased application of moral, ethical, and theological principles.

Perhaps the most ironic element of the ECI’s “Call to Action” appears in its statement that “as a society and as individuals we must also help the poor adapt to the significant harm that global warming will cause.” It is ironic not only because it assumes what might very well be false (that the overall impact of global warming on the poor will be more harmful than beneficial) but, much more importantly, because the cure it prescribes will rob the poor of the very thing they most need if they are to be able to adapt, not just to catastrophic global warming but to *any* future catastrophe: wealth.⁴⁵ We know we have said this before, but it bears repeating: since energy is an essential component in all economic production, artificially restricting its consumption will drive down production, drive up prices, and reduce access to life-improving and life-saving technologies, harming the poor especially.

A Better Vision, a Better Call to Action

In light of all the above, we conclude that the best scientific and economic evidence points to these five conclusions:

- Foreseeable global warming will have moderate and mixed (not only harmful but also helpful), not catastrophic, consequences for humanity—including the poor—and the rest of the world’s inhabitants.
- Natural causes may account for a large part, perhaps the majority, of the global warming in both the last thirty and the last one hundred fifty years, which together constitute an episode in the natural rising and falling cycles of global average temperature. Human emissions of carbon dioxide and other greenhouse gases are probably a minor and possibly an insignificant

⁴⁴Rent seeking is the process of seeking profit not by producing goods and services for consumers but by manipulating the economic circumstances through government mandates.

⁴⁵I. M. Goklany, “Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development,” forthcoming in *Mitigation and Adaptation Strategies for Global Change* (2006).

contributor to its causes.

- Reducing carbon dioxide emissions would have at most an insignificant impact on the quantity and duration of global warming and would not significantly reduce alleged harmful effects.
- Government-mandated carbon dioxide emissions reductions not only would not significantly curtail global warming or reduce its harmful effects but also would cause greater harm than good to humanity—especially the poor—while offering virtually no benefit to the rest of the world’s inhabitants.
- In light of all the above, the most prudent response is not to try (almost certainly unsuccessfully and at enormous cost) to prevent or reduce whatever slight warming might really occur. It is instead to prepare to adapt by fostering means that will effectively protect humanity—especially the poor—not only from whatever harms might be anticipated from global warming but also from harms that might be fostered by other types of catastrophes, natural or manmade.

We believe the first four of these points are adequately supported by the previous discussion. Hence we turn to the fifth: the need for economic development to protect against environmental problems of all kinds.

National Center for Atmospheric Research scientist Jerry Mahlman has said even full compliance with Kyoto would have no measurable effect on CO₂ levels or climate—and to stabilize the Earth’s climate would take “forty successful Kyotos,”⁴⁶ each more restrictive than its predecessors. This assessment and similar ones are behind demands by some that poor countries (especially the large, dynamic ones), which were exempted from the Kyoto Protocol, must also agree to it and curb their appetites for energy. However, Brazil, China, India, and other developing countries have a duty, as governments responsible for the well-being of their people, to promote and facilitate energy and economic development, and greater prosperity and hope, for their people. Poor countries have every right to develop their economies, ultimately creating greater environmental awareness and reaching an improved economic and technological ability to achieve greater energy efficiency, pollution control, and environmental improvement. Similarly, developed nations have a duty to refrain from imposing restrictions that would make it harder for them to do so. Only in this way can both human and ecological goals be met.

Many environmentalists argue that developed and developing nations alike must stop using fossil fuels. They thus oppose coal and natural gas-fired electrical generating plants. But because they also oppose hydroelectric and nuclear facilities, they leave developing countries no alternatives to more expensive, presently less efficient energy technologies like solar and wind (technologies that do not represent the required base load or dependable power source needed by societies for energy security).⁴⁷ The very fact that such higher-cost technologies are not widely used in rich countries

⁴⁶Appenzeller and Dimick, “The Heat Is On,” *National Geographic*, September 2004, 11.

⁴⁷“Renewable sources of energy—hydroelectric, solar, wind, geothermal and biomass—have high capital investment

testifies that they cannot be widely used in poor ones. Fossil fuels, then, should be seen as a proper stage in energy development, far safer than burning wood and dung (smoke from which claims 1.6 million lives per year),⁴⁸ and a means of enabling the economic growth that eventually can make even cleaner technologies affordable.

Stopping or reversing economic development in the world's poor countries—which drastic restrictions on fossil fuel use would cause—would keep poor nations impoverished. It would perpetuate what South Africa's Leon Louw calls “human game preserves” where Western tourists can see “cute indigenous people at one with their environment and the wildlife.” But what climate activist—indeed, what signer of “Climate Change: An Evangelical Call to Action”—would willingly, for even a month, live in a mud hut in malaria-infested rural Africa under the indigenous conditions their policy prescription would perpetuate? Who among them would be glad to drink the locals' contaminated water, eat their paltry, mold-infested food, breathe the smoke from their wood and dung fires, live twenty-four hours a day, seven days a week, three hundred sixty-five days a year without lights, air conditioning, and refrigeration? Who among them would work all day in the fields amid swarms of diseased mosquitoes and tsetse flies—and swelter under bed nets, trying to sleep when the temperature in the hut is 90° F and inside the bed net 100°—all without bug spray, pesticides, and anti-malaria pills? Who among them would be prepared to walk twenty miles to the nearest clinic, carrying their sick or dying child with them, when they inevitably come down with the fever, chills, and convulsions of acute malaria?

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That way of life—or rather, death—is the real, though unintended, impact of the policies promoted by “Climate Change: An Evangelical Call to Action.”

A thought experiment might help make our point clearer. Imagine that your city were struck by a

requirements and significant, if usually unacknowledged, environmental consequences. For most renewables, the energy they collect is extremely dilute, requiring large areas of land and masses of collectors to concentrate. Manufacturing solar collectors, pouring concrete for fields of windmills, drowning square miles of land behind dams damages and pollutes.” E.g., a 1,000-megawatt wind farm (about the capacity of a medium-sized conventional power plant) would occupy 2,000 square miles “and even with substantial subsidies and uncharged pollution externalities would produce electricity at double or triple the cost of fossil fuels.” At that ratio, wind farms sufficient to generate the 604,000 megawatts the United States consumes would occupy a third of the country's total land area. Richard Rhodes and Denis Beller, “The Need for Nuclear Power,” *Foreign Affairs* 79:1 (January/February 2000), 30-44; citing here from annotated version at <http://www.nci.org/conf/rhodes/index.htm>.

⁴⁸The Intermediate Technology Development Group, citing United Nations and International Energy Agency data. Smoke from wood and dung fires thus kills more people than malaria and almost as many as unsafe drinking water and lack of sanitation. Most of its victims are women and children. Alex Kirby, “Indoor smoke ‘kills millions’,” BBC News, November 28, 2003, online at <http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/3244214.stm>.

heat wave like the one that killed 700 in Chicago in 1995. Would you be more likely to survive comfortably and safely if you were wealthy, or if you were poor? If the answer is as obvious as we believe it is, what moral basis can there be for adopting an anti-global warming policy that reduces economic development for the world's poor and thus prolongs the time during which they cannot afford to protect themselves from heat—or any other risk?

Responsible discussion of a proposed policy to deal with any problem requires comparing its costs and benefits with those of alternative policies to deal not just with the same problem but also with other problems. Every prescription is likely to have both positive and negative consequences—for different aspects of the environment, different species, different regions, and different groups of people. Therefore we commend the approach used by the Copenhagen Consensus, and we hope our evangelical brothers and sisters, and all who are concerned not just about global warming but about other threats to human and planetary well being, will study it carefully.⁴⁹

We should reduce any emissions only in a cost-effective manner. The difficulty lies in defining what is cost-effective, which entails consideration of monetary cost, available technology, opportunity cost (other uses for that money for health, education, environmental protection, etc), the likelihood and magnitude of risks to be averted, the likelihood and magnitude of benefits to be achieved, who is most likely to enjoy the benefits, who is most likely to bear the costs, and who gets to make the decisions. We believe mandatory carbon emissions reductions are not cost-effective. Therefore we believe that, while we should continue studying the issue, there is no need for draconian measures that will keep the poorest people on Earth from enjoying the benefits of abundant energy. Our technological advancements over the next fifty years will likely dwarf those of the twentieth century and yield new energy generation and use technologies that we cannot even imagine today. All will help reduce human impacts on the climate. More important for the life, health, and well being of the world's poor and their posterity, however, we should continue to promote policies that encourage economic growth where they are.

⁴⁹Bjørn Lomborg, *Global Crises, Global Solutions* (Cambridge: Cambridge University Press, 2004); <http://www.copenhagenconsensus.com/Default.aspx?ID=675>. In the process, studies by specialists and respondents were submitted to eight expert economists, including three Nobel Laureates, who then prioritized major problems facing mankind and alternative solutions to them and then ranked them from most to least effective. The alternatives were divided into four categories of cost-effectiveness—Very Good, Good, Fair, and Bad—and listed in descending order of cost effectiveness (how many people would experience how much benefit at what cost) within each category. The results (*Global Crises, Global Solutions*, 606) were: **Very Good**: 1. Communicable diseases: control of HIV/AIDS. 2. Malnutrition and hunger: providing micronutrients. 3. Subsidies and trade: trade liberalization. 4. Communicable diseases: control of malaria. **Good**: 5. Malnutrition and hunger: development of new agricultural technologies. 6. Sanitation and water: community-managed water supply and sanitation. 7. Sanitation and water: small-scale water technology for livelihoods. 8. Sanitation and water: research on water productivity in food production. 9. Governance and corruption: lowering the cost of starting a new business. **Fair**: 10. Migration: lowering barriers to migration for skilled workers. 11. Malnutrition and hunger: improving infant and child nutrition. 12. Communicable diseases: scaled-up basic health services. 13. Malnutrition and hunger: reducing the prevalence of low birth weight. **Bad**: 14. Migration: guest worker programs for the unskilled. 15. Climate change: optimal carbon tax. 16. Climate change: Kyoto Protocol. 17. Climate change: value-at-risk carbon tax. **Of the seventeen options, the three worst all had to do with attempting to reduce global warming.**

Sixteen years ago, the *Oxford Declaration on Christian Faith and Economics* made this crucial point:

We deplore economic systems based on policies, laws, and regulations whose effect is to favour privileged minorities and to exclude the poor from fully legitimate activities. Such systems are not only inefficient, but are immoral as well in that participating in and benefitting from the formal economy depends on conferred privilege of those who have access and influence to public and private institutions rather than on inventiveness and hard work. Actions need to be taken by public and private institutions to reduce and simplify the requirements and costs of participating in the national economy.⁵⁰

Today we stand with the Oxford Declaration in deploring policies, laws, and regulations whose effect is to favor the already wealthy at the expense of the still poor, excluding them from legitimate development of and legitimate participation in advanced economies and all the benefits they deliver such as lower infant and child mortality rates, longer life expectancy, lower disease rates, more and better education, transportation, communication, and all the other things the already wealthy take for granted. Therefore we pledge to oppose quixotic attempts to reduce global warming. Instead, constrained by the love of Jesus Christ for the least of these (Matthew 25:45), and by the evidence presented above, we vow to teach and act on the truths communicated here for the benefit of all our neighbors.

Authors: E. Calvin Beisner, Ph.D. (History/History of Political Thought), Associate Professor of Social Ethics, Knox Theological Seminary, and author of *Where Garden Meets Wilderness: Evangelical Entry Into the Environmental Debate* (Grand Rapids: Eerdmans/Acton Institute, 1997); Paul Driessen, Esq., environmental ethicist, Senior Policy Advisor on energy and environmental issues, Congress of Racial Equality, and author of *Eco-Imperialism: Green Power, Black Death* (Bellevue, WA: Free Enterprise Press, 2003); Ross McKittrick, Ph.D. (Environmental Economics), Associate Professor and Director of Graduate Studies, University of Guelph, author of the Donner Prize-winning *Taken By Storm: The Troubled Science, Policy and Politics of Global Warming* (Toronto: Key Porter Books, 2002), IPCC expert reviewer (Working Group 1); and Roy Spencer, Ph.D. (Climatology), principal research scientist, University of Alabama, Huntsville, former senior scientist for climate studies, Marshall Space Flight Center, NASA.

⁵⁰*Oxford Declaration on Christian Faith and Economics* (1990), 47; published online at <http://www.casi.org.nz/statements/decoxcfe.htm>.

Appendix

Signers of the Open Letter to Canadian Prime Minister Stephen Harper

<http://www.canada.com/nationalpost/financialpost/story.html?id=3711460e-bd5a-475d-a6be-4db87559d605>

Dr. Ian D. Clark, professor, isotope hydrogeology and paleoclimatology, Dept. of Earth Sciences, University of Ottawa; **Dr. Tad Murty**, former senior research scientist, Dept. of Fisheries and Oceans, former director of Australia's National Tidal Facility and professor of earth sciences, Flinders University, Adelaide, currently adjunct professor, Departments of Civil Engineering and Earth Sciences, University of Ottawa; **Dr. R. Timothy Patterson**, professor, Dept. of Earth Sciences (paleoclimatology), Carleton University, Ottawa; **Dr. Fred Michel**, director, Institute of Environmental Science and associate professor, Dept. of Earth Sciences, Carleton University, Ottawa; **Dr. Madhav Khandekar**, former research scientist, Environment Canada, member of editorial board of Climate Research and Natural Hazards; **Dr. Paul Copper**, FRSC, professor emeritus, Dept. of Earth Sciences, Laurentian University, Sudbury, Ont.; **Dr. Ross McKittrick**, associate professor, Dept. of Economics, University of Guelph, Ont.; **Dr. Tim Ball**, former professor of climatology, University of Winnipeg; environmental consultant; **Dr. Andreas Prokoph**, adjunct professor of earth sciences, University of Ottawa, consultant in statistics and geology; **Mr. David Nowell**, M.Sc. (Meteorology), fellow of the Royal Meteorological Society, Canadian member and past chairman of the NATO Meteorological Group, Ottawa; **Dr. Christopher Essex**, professor of applied mathematics and associate director of the Program in Theoretical Physics, University of Western Ontario, London, Ont.; **Dr. Gordon E. Swaters**, professor of applied mathematics, Dept. of Mathematical Sciences, and member, Geophysical Fluid Dynamics Research Group, University of Alberta; **Dr. L. Graham Smith**, associate professor, Dept. of Geography, University of Western Ontario, London, Ont.; **Dr. G. Cornelis van Kooten**, professor and Canada Research Chair in environmental studies and climate change, Dept. of Economics, University of Victoria; **Dr. Petr Chylek**, adjunct professor, Dept. of Physics and Atmospheric Science, Dalhousie University, Halifax; **Dr./Cdr. M. R. Morgan**, FRMS, climate consultant, former meteorology advisor to the World Meteorological Organization, previously research scientist in climatology at University of Exeter, U.K.; **Dr. Keith D. Hage**, climate consultant and professor emeritus of Meteorology, University of Alberta; **Dr. David E. Wojcik**, P.Eng., energy consultant, Star Tannery, Va., and Sioux Lookout, Ont.; **Rob Scagel**, M.Sc., forest microclimate specialist, principal consultant, Pacific Phytometric Consultants, Surrey, B.C.; **Dr. Douglas Leahey**, meteorologist and air-quality consultant, Calgary; Paavo Siitam, M.Sc., agronomist, chemist, Cobourg, Ont.; **Dr. Chris de Freitas**, climate scientist, associate professor, The University of Auckland, N.Z.; **Dr. Richard S. Lindzen**, Alfred P. Sloan professor of meteorology, Dept. of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology; **Dr. Freeman J. Dyson**, emeritus professor of physics, Institute for Advanced Studies, Princeton, N.J.; **Mr. George Taylor**, Dept. of Meteorology, Oregon State University; Oregon State climatologist; past president, American Association of State Climatologists; **Dr. Ian Plimer**, professor of geology, School of Earth and Environmental Sciences, University of Adelaide; emeritus professor of earth sciences, University of Melbourne, Australia; **Dr. R.M. Carter**, professor, Marine Geophysical Laboratory, James Cook University, Townsville, Australia; **Mr. William Kininmonth**, Australasian Climate Research, former Head National Climate Centre, Australian Bureau of Meteorology, former Australian delegate to World Meteorological Organization Commission for Climatology, Scientific and Technical Review; **Dr. Hendrik Tennekes**, former director of research, Royal Netherlands Meteorological Institute; **Dr.**

Gerrit J. van der Lingen, geologist/paleoclimatologist, Climate Change Consultant, Geoscience Research and Investigations, New Zealand; **Dr. Patrick J. Michaels**, professor of environmental sciences, University of Virginia; **Dr. Nils-Axel Morner**, emeritus professor of paleogeophysics & geodynamics, Stockholm University, Stockholm, Sweden; **Dr. Gary D. Sharp**, Center for Climate/Ocean Resources Study, Salinas, Calif.; **Dr. Roy W. Spencer**, principal research scientist, Earth System Science Center, The University of Alabama, Huntsville; **Dr. Al Pekarek**, associate professor of geology, Earth and Atmospheric Sciences Dept., St. Cloud State University, St. Cloud, Minn.; **Dr. Marcel Leroux**, professor emeritus of climatology, University of Lyon, France, former director of Laboratory of Climatology, Risks and Environment, CNRS; **Dr. Paul Reiter**, professor, Institut Pasteur, Unit of Insects and Infectious Diseases, Paris, France, expert reviewer, IPCC Working group II, chapter 8 (human health); **Dr. Zbigniew Jaworowski**, physicist and chairman, Scientific Council of Central Laboratory for Radiological Protection, Warsaw, Poland; **Dr. Sonja Boehmer-Christiansen**, reader, Dept. of Geography, University of Hull, U.K., editor, *Energy & Environment*; **Dr. Hans H.J. Labohm**, former advisor to the executive board, Clingendael Institute (The Netherlands Institute of International Relations) and an economist who has focused on climate change; **Dr. Lee C. Gerhard**, senior scientist emeritus, University of Kansas, past director and state geologist, Kansas Geological Survey; **Dr. Asmund Moene**, past head of the Forecasting Centre, Meteorological Institute, Norway; **Dr. August H. Auer**, past professor of atmospheric science, University of Wyoming; previously chief meteorologist, Meteorological Service (MetService) of New Zealand; **Dr. Vincent Gray**, expert reviewer for the IPCC and author of *The Greenhouse Delusion: A Critique of 'Climate Change 2001'*, Wellington, N.Z.; **Dr. Howard Hayden**, emeritus professor of physics, University of Connecticut; **Dr. Benny Peiser**, professor of social anthropology, Faculty of Science, Liverpool John Moores University, U.K.; **Dr. Jack Barrett**, chemist and spectroscopist, formerly with Imperial College London, U.K.; **Dr. William J. R. Alexander**, professor emeritus, Dept. of Civil and Biosystems Engineering, University of Pretoria, South Africa, member, United Nations Scientific and Technical Committee on Natural Disasters, 1994-2000; **Dr. S. Fred Singer**, professor emeritus of environmental sciences, University of Virginia, former director, U.S. Weather Satellite Service; **Dr. Harry N.A. Priem**, emeritus professor of planetary geology and isotope geophysics, Utrecht University, former director of the Netherlands Institute for Isotope Geosciences; past president of the Royal Netherlands Geological & Mining Society; **Dr. Robert H. Essenhigh**, E.G. Bailey professor of energy conversion, Dept. of Mechanical Engineering, The Ohio State University; **Dr. Sallie Baliunas**, astrophysicist and climate researcher, Boston, Mass.; **Douglas Hoyt**, senior scientist at Raytheon (retired) and co-author of *The Role of the Sun in Climate Change*, previously with NCAR, NOAA, and the World Radiation Center, Davos, Switzerland; **Dipl.-Ing. Peter Dietze**, independent energy advisor and scientific climate and carbon modeller, official IPCC reviewer, Bavaria, Germany; **Dr. Boris Winterhalter**, senior marine researcher (retired), Geological Survey of Finland, former professor in marine geology, University of Helsinki, Finland; **Dr. Wibjorn Karlen**, emeritus professor, Dept. of Physical Geography and Quaternary Geology, Stockholm University, Sweden; **Dr. Hugh W. Ellsaesser**, physicist/meteorologist, previously with the Lawrence Livermore National Laboratory, Calif., atmospheric consultant; **Dr. Art Robinson**, founder, Oregon Institute of Science and Medicine, Cave Junction, Ore.; **Dr. Arthur Rorsch**, emeritus professor of molecular genetics, Leiden University, The Netherlands, past board member, Netherlands organization for applied research (TNO) in environmental, food, and public health; **Dr. Alister McFarquhar**, Downing College, Cambridge, U.K., international economist; **Dr. Richard S. Courtney**, climate and atmospheric science consultant, IPCC expert reviewer, U.K.