

Global Climate Change, U.S. Interests, and Vulnerable Nations

[This is a slightly modified version of “The Boiled Frog and Global Warming” (David R. Keller, lead author), in Peggy Connolly, Becky Cox-White, David R. Keller, and Martin G. Leever, *Ethics in Action: A Case-Based Approach*. Copyright 2009 Wiley-Blackwell, Malden, Massachusetts. Reprinted with permission of the publisher.]

The allegory of the boiled frog states that if you put a frog into a pot of boiling water, it will leap out immediately to escape the danger. But if you put a frog into water that is cool and pleasant and then gradually heat the water to boiling, the frog will not become aware of the threat until it is too late, and get boiled.

Many climatologists and environmentalists have equated the allegory of the boiled frog to global climate change. There is growing consensus amid persistent skepticism, that the Earth is warming. Scientific studies show that for each decade of the last 30 years, global surface temperature has increased approximately $.2^{\circ}\text{C}$, consistent with initial rates predicted by 1980s climatological modeling (Hansen et al. 2006). An additional increase of $2\text{--}3^{\circ}\text{C}$ would make the Earth as warm as it was 3 million years ago, when the sea level was about 80 feet higher than today (idem).

The phenomenon of global warming is multi-factorial, but is attributed largely to human activity. In terms of geologic time, the Earth's climate oscillates naturally between hot spells and ice ages (Zachos et al. 2001). Scientists explain these regular oscillations in terms of variations in the amount of solar radiation the atmosphere receives. The amount of radiation the Earth's atmosphere receives depends upon its eccentricity, tilt and precession (wobble) as it travels in its orbit around the sun. The convergence of these regular and predictable cycles, called the Milankovitch Cycles, account for oscillations in climate between hot-house conditions and ice ages (*Science News* 1985). Taken of themselves, such cycles should not cause undue alarm as they are part of the natural rhythm of biospherical process, as numerous commentators on global climate change have pointed out. However, extrapolated onto human history, we should be currently experiencing cooling and entry into the next ice age (Goldsmith 2007). Climatological data indicates the opposite, revealing the human hand in global climate change (Ruddiman 2005).

The engine of the modern industrial economy is powered by the combustion of fossil fuels that emits carbon dioxide (CO₂) and other gases into the atmosphere. Solar energy re-radiating from the Earth's surface, which normally would dissipate into space, is deflected back down to Earth by these gases, creating a "greenhouse effect." As industrialization has

expanded, so has the release of “greenhouse gases” into the atmosphere. According to a recent United Nations (U.N.) report, the emission of heat-trapping gases has increased 70% from 1970 to 2004 (Barker et al. 2007, p. 3).

Receding ice is a visible manifestation of global warming. In the Antarctic, satellite data show that unusually warm air masses have begun pushing southward to within 300 miles of the South Pole, remaining long enough to melt snow across expanses the size of California (Revkin 2007d).

In the Arctic, during the summer of 2005, a 41-square mile sheath of ice, which had jutted into the Arctic Ocean for 3,000 years, broke off and drifted out to sea (Revkin 2006b). During the winter of 2005-06, sea ice failed to reform for the second year in a row (Connor 2006). According to specialists, sea ice is at its lowest point since satellite monitoring began in 1979, probably a sign that the Arctic is responding to global warming (idem).

The rapidity of sea ice disappearance is evidence that the initiation of a positive environmental feedback loop wherein sunlight that normally would be reflected by the ice is instead absorbed by dark blue seawater, speeding warming and melting (idem). Even with modest increases in greenhouse gas

emission, summer sea ice is expected to vanish by the end of the century (Revkin 2005b).

Because floating ice displaces water in the same manner as a ship, melting sea ice does not cause ocean levels to rise, but melting glaciers do. New dynamics of glacial melting provide the most startling adumbration of the likelihood of rising sea levels due to global warming.

The vast Greenland Ice Sheet, a two-mile thick slab of ice made up of about the same volume of water as the Gulf of Mexico, contains enough water to push up the sea level by 20 feet worldwide (Revkin 2005a). In southern Greenland, the amount of glacial ice flowing into the ocean has doubled in the last 10 years (Rignot and Kanagaratnam 2006). As melting spreads north, that rate is likely to accelerate, indicating that previous estimates of sea-level rises are too conservative (Dowdeswell 2006).

Changes in the Earth's climate at the poles are only the tip of the iceberg (Kanter and Revkin 2007). The latest comprehensive report on the impact of climate change on the biosphere, prepared by more than 200 scientists and endorsed by over 120 countries including the United States, makes the dramatic claim that global warming is anthropogenic (human-generated) and well under way (Daley 2007). Effects associated with anthropogenic climate

change will stress the resiliency of ecosystems from the equator to poles, resulting in a significantly altered biosphere (Adger et al. 2007, p. 5).

During his two-term presidency, George W. Bush has sustained robust skepticism about the scientific legitimacy of global warming. Bush consistently highlighted the “the incomplete state of scientific knowledge” (Regalado 2001) and its anthropogenic underpinnings, an uncertainty echoed by the editorial board of *The Wall Street Journal* upheld Bush’s position: “There is no scientific consensus that greenhouse gases cause the world’s modest global warming trend, much less whether that warming will do more harm than good, or whether we can even do anything about it” (loc. cit. 2003).

To Bush, basing public policy on scientific uncertainty is reckless. In the case of climate change, curtailing greenhouse gas emissions would damage the domestic economy, and, given the uncertainty of global climate change, it would be irresponsible for the U.S. to foist regulations on industry. It would be much better, Bush has maintained, to ask industry to reduce emissions voluntarily while researching technological solutions to greenhouse gas emissions without restricting economic productivity.

Environmental economists, backing the Bush strategy of measured action, have argued that it would be better to develop technologies for reducing

greenhouse gas emissions over the next several decades rather taking drastic action now. For one thing, doing so would force coal-fired power plants to shut down before they have reached the end of their operational lives and hence be a waste of useful industrial capital (Hilsenrath 2001).

Bush adjusted course slightly in 2007 when he acknowledged in his State of the Union address the need to “confront the serious challenge of global climate change” and the promise of science and technology to do it (op. cit.). At the meeting of the powerful Group of 8 (G-8) industrialized nations five months later, President Bush stated: “In recent years, science has deepened our understanding of climate change and opened new possibilities for confronting it” (Stolberg 2007).

In the White House, economic aims determined scientific claims; the Bush administration actively suppressed empirical evidence in order to align the science of climatology with the politics of the fossil-fueled economy. National Aeronautics and Space Administration (NASA) scientist James E. Hansen, who publicly criticized the White House for inaction (Revkin 2004a), has alleged that the Bush administration tried to prevent him from speaking out (Revkin 2006a). According to Hansen, he received explicit orders from NASA headquarters to submit all public communications to public affairs staff for review (idem). One public affairs officer is reported to have said that, as a

White House appointee, his job was “to make the president look good,” which required vetting Hansen’s work (idem).

The politicization of the global warming science by the White House is corroborated in a survey of climatologists at seven federal agencies by the Union of Concerned Scientists. Of 279 respondents, forty-three per cent “perceived or personally experienced changes or edits during review that changed the meaning of scientific findings” and 46% “perceived or personally experienced new or unusual administrative requirements that impair climate-related work” (Donaghy et al. 2007, p. 2).

Political interference with the process of climatological research is evinced in White House alterations to scientific reports before the publication of final versions. The White House rewrote Environmental Protection Agency reports to impart the impression of the extremely tentative status of global warming evidence (Jackson 2003), and in 2002 and 2003, Philip A. Cooney, a former lobbyist for the American Petroleum Institute who led the fight against limits on greenhouse gas emissions, adjusted and removed descriptions of climate research in order to amplify uncertainty and the dubiousness of anthropogenic causation (Revkin 2005a). In another report, he crossed out a paragraph on glacial melting and wrote in the margin, “straying from research strategy into speculative findings/musings” (idem). Representative

Henry Waxman, chairperson of the House Oversight and Government Reform Committee, characterized the Cooney scandal as an “orchestrated campaign to mislead the public about climate change” (Neikirk 2007). The *Houston Chronicle* cynically observed in an descriptively editorial titled *Blinded Science: The Bush Administration’s Solution to Global Warming is a Good Copy Editor*, “In the Bush White House, it seems, certain energy companies are allowed to pick and choose which scientific theories best fit their business plan” (op. cit. 2005). White House interference with the scientific method has drawn comparisons to the Catholic Church’s suppression of heliocentrism (idem) and Soviet party commissars revising science to meet the demands of USSR Communism (Goldsborough 2004).

Public policy analysts have discerned credible evidence for anthropogenic global warming for decades. In the words of one DuPont corporate official referring to the importance of reducing CO₂ emissions: “We saw sufficient science emerging to warrant what in our judgment was prudent action back in 1991” (Revkin 2001). But the Bush administration remained unconvinced about the reality of global climate change and its anthropogenic origins, maintaining steadfastly year after year the need for further study before substantive action is taken (Nesmith 2002). Eventually, however, evidence swamped recalcitrant skepticism, forcing Bush to admit to the connection between industrialization and global warming (Stolberg 2007).

While Bush's position on the role of the human hand in global warming has changed, his position on mandatory caps for greenhouse gas emissions has not. The United Nations Framework Convention on Global Warming (1992) was signed by his father, President George Herbert Walker Bush, and laid the groundwork for the Kyoto Protocol (1998), a treaty that was negotiated in Japan in 1997 and endorsed by President Bill Clinton and the leaders of over 100 other nations (Revkin 2001). All G-8 nations with the exception of the U.S. (Canada, France, Germany, Italy, Japan, and Russia), as per guidelines of the protocol, agreed to bring their emissions down to 1990 levels by 2012 (Eilperin 2005).

In March 2001, Bush notoriously rescinded U.S. commitment to the protocol (Drozdiak and Pianin 2001), explaining that he opposed the treaty because it would hurt the U.S. economy and exempt developing industrialized countries, most notably China and India, from committing to reductions on emissions (Revkin 2001). It is unfair to expect the U.S. to restrict its industrial activity without developing nations to do the same, Bush explained. (In June 2007, when this case study was written, China was poised to pass the U.S. in greenhouse gas emissions (Oster 2007).)

Bush's refusal to ratify the Kyoto Protocol prompted outrage from the international community. "History will not judge George Bush kindly," a London newspaper predicted, and mocked the backpedaling from agreements made by his father and Clinton as "...not even isolationism, it is in-your-face truculence" (*The Independent* 2001). An editorial published the same day in another English daily characterized the U.S. under Bush as "the ultimate rogue state" (*The Guardian* 2001).

But Bush's skepticism has won high praise from the free-market faithful. Philip Stott, Emeritus Professor of Biogeography at the University of London, derided climate change as a "myth" foisted on the public by "authoritarian greens." According to Stott, "'Global warming' was invented in 1988, when it replaced two earlier myths of an imminent plunge into another Ice Age and the threat of a nuclear winter. The new myth was seen to encapsulate a whole range of other myths and attitudes that had developed in the 1960s and 1970s, including 'limits to growth,' sustainability, neo-Malthusian fears of a population time bomb, pollution, anticorporate anti-Americanism, and an Al Gore-like analysis of human greed disturbing the ecological harmony and balance of the earth" (loc. cit. 2001). According to S. Fred Singer, atmospheric physicist at George Mason University, "Allowing for uncertainties in the data and for imperfect models, there is only one valid conclusion from the failure of greenhouse theory to explain the observations: The human

contribution to global warming appears to be quite small and natural climate factors are dominant" (loc. cit. 2006).

In the other corner, environmentalists ridiculed Bush for being a pawn of big energy corporations, ignoring the facts, and living in denial. Larry Schweiger, President and CEO of the National Wildlife Federation, claimed that Bush's unwillingness to show leadership in breaking our economy's addiction to oil discouraged the innovation of alternative energy technologies: "Instead of paving the way to such an energy future, the Bush administration clings to the past" (loc. cit. 2005). Journalist and economist Anatole Kaletsky (2007) has argued that the Bush strategy of cautious gradualism might actually damage the economy rather than protect it.

And according to a recent U.N. report (Barker et al. 2007), the era of hesitancy and delay has past. Industrialized nations must commit to binding limits such as those set forth in the Kyoto Protocol. Alluding to the failed Bush strategy, one author said: "We can no longer make the excuse that we need to wait for more science, or the excuse that we need to wait for more technologies and policy knowledge" (Revkin 2007c).

Independently of the political and economic ramifications of global warming in the industrialized West, the prospect of climate change poses very

tangible threats to small and politically weak developing nations. The world's wealthiest nations, which have contributed by far the most to global warming, stand to suffer the least. G-8 members are located in temperate climates where the capricious effects of atmospheric change might be mitigated, and are already spending billions of dollars to limit the repercussions of rising tides and drought (Revkin 2007a).

The world's poorest nations, often located in tropical coastal regions, are at the gravest risk (Barker et al. 2007). Less industrialized nations have not reaped the benefit from the wealth generated by the economic activity that appears to have precipitated global warming, but will bear the brunt of its consequences. For this reason, Eskimos, or Inuit, have cast the issue of global warming as a human-rights issue (Revkin 2004b).

Small island nations are particularly vulnerable. Fear of flooding is already discouraging foreign investment (Lewis 1992). But there is a much greater, much more catastrophic, fear: advancing tides could—quite literally—wipe them off the map. A study by the National Oceanic and Atmospheric Administration identifies the Marshall Islands as one such “innocent victim” of global warming (Lewis 1992). There, residents are running out of places to live. An unprecedented storm surge washed over the island of Kili in 1996, poisoning the soil, killing crops, and demolishing homes. But the

residents could not move back to their original home, the island of Bikini, which is still severely polluted by radioactive waste left from U.S. nuclear testing of the 1950s. The best option is the island of Marjuro. But moving to Marjuro is not without worry: a mere 3-foot rise in sea level would flood 80% of the island. All this points to the unthinkable for Marshall Islanders: they may have to abandon their homeland entirely (Fialka 1997).

In the Maldives, a nation in the Indian Ocean consisting of over one thousand low-lying reefs where the highest point in the entire archipelago is only 8 feet, rising sea water could drown the entire nation within one hundred years (Crossette 1990).

The lessons of global warming are twofold. First, wealthy nations may have the ethical responsibility to help mitigate the consequences of a problem they probably created or at least exacerbated. In the view of Peter H. Gleick, co-founder and President of the Pacific Institute for Studies in Development, Environment, and Security, "We have an obligation to help countries prepare for the climate changes that we are largely responsible for" (Revkin 2007b).

Second, global warming may have local roots but is global in reach. As a Maldivian government spokesman warned wealthy nations, "Our message to the U.S. is as simple as this: Sea level rise is not just a phenomenon which

is just going to engulf the Maldives and then stop. If it affects us tomorrow, it will affect you the day after” (Kristof 2006).

References

- Adger, Neil et al. 2007. “Climate Change 2007: Impacts, Adaptation and Vulnerability.” Summary for Policymakers. Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report. United Nations, New York.
- Barker, Terry, Igor Bashmakov, Lenny Bernstein, Jean Bogner, Peter Bosch, Rutu Dave, Ogunlade Davidson, Brian Fisher, Michael Grubb, Sujata Gupta, Kirsten Halsnaes, Bertjan Heij, Suzana Kahn Ribeiro, Shigeki Kobayashi, Mark Levine, Daniel Martino, Omar Masera Cerutti, Bert Metz, Leo Meyer, Gert-Jan Nabuurs, Adil Najam, Nebojsa Nakicenovic, Hans Holger Rogner, Joyashree Roy, Jayant Sathaye, Robert Schock, Priyaradshi Shukla, Ralph Sims, Pete Smith, Rob Swart, Dennis Tirpak, Diana Urge-Vorsatz, and Zhou Dadi. 2007. “Climate Change 2007: Mitigation of Climate Change.” Summary for Policymakers. Working Group III Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report. United Nations, New York.

Bush, George W. 2007. State of the Union Address (January 23). <http://www.whitehouse.gov/news/releases/2007/01/20070123-2.html> (accessed June 12, 2007).

Connor, Steve. 2006. "Climate Change 'Irreversible' As Arctic Sea Ice Fails to Re-Form." *The Independent* (London) (March 14): 7.

Crossette, Barbara. 1990. "Male Journal: 1,190 Islands in Danger: Sea Could Drown Them." *New York Times* (November 26): A4.

Daley, Beth. 2007. "A Climate Change Warning: Panel Says Humans are Probably Causing Shifts Around the World." *Boston Globe* (April 7): A1.

Donaghy, Timothy, Jennifer Freeman, Francesca Grifo, Karly Kaufman, Tarek Maassarani, and Lexi Shultz. 2007. "Atmosphere of Pressure: Political Interference in Federal Climate Science." A Report of the Union of Concerned Scientists and the Government Accountability Project. UCS Publications, Cambridge, Massachusetts.

Dowdeswell, Julian A. 2006. "The Greenland Ice Sheet and Global Sea-Level Rise." *Science* Vol. 311 Issue 5763 (February 17): 963-64.

Drozdiak, William, and Eric Pianin. 2001. "U.S. Angers Allies Over Climate Pact; Europeans Will Ask Bush to Reconsider." *Washington Post* (March 29): A1.

Eilperin, Juliet. 2005. "U.S. Pressure Weakens G-8 Climate Plan; Global-Warming Science Assailed." *The Washington Post* (June 17): A1.

Fialka, John J. 1997. "From Dots in the Pacific, Envoys Bring Fear, Fury to Global-Warming Talks." *The Wall Street Journal* (October 31): 1.

Goldsborough, James O. 2004. "The White House War Against Science." Opinion-Editorial. *San Diego Union-Tribune* (October 25): B7.

Goldsmith, Donald. 2007. "Ice Cycles." *Natural History* Vol. 116 Issue (March): 14-18.

Guardian, The (Manchester U.K.) "A Dirty Business: Mr Bush Has Put US Credibility on the Line." Editorial (March 30): 21.

Hansen, James, Makiko Sato, Reto Ruedy, Ken Lo, David W. Lea, and Martin Medina-Elizade. 2006. "Global Temperature Change." *Proceedings of the National Academy of Sciences* Vol. 103 Issue 39 (September 26): 14288-93.

Hilsenrath, Jon E. 2001. "Eco-Economists Back Bush on Kyoto Pact: Obscure Group Says Accord Contains Serious Flaws, Slower Course Favored." *The Wall Street Journal* (August): A2.

Houston Chronicle. 2005. "Blinded Science: The Bush Administration's Solution to Global Warming is a Good Copy Editor." Editorial (June 10): 10.

Independent, The (London). 2001. "Kyoto Treaty: A Cynical Man, A Catastrophic Error." (March 30): 1.

Jackson, Derrick Z. 2003. "Bush Fries Climate Change." Opinion-Editorial. *Boston Globe* June 20): A15.

Kaletsy, Anatole. 2007. "Right Problem, George. But Wrong Solution."
Comment/Opinion. *The Times* (London) (January 25): 17.

Kanter, James, and Andrew C. Revkin. 2007. "Scientists Detail Climate
Changes, Poles to Tropics." *New York Times* (April 7): A1.

Kristof, Nicholas. 2006. "A Paradise Drowning." *The New York Times* (January
8): A15.

Kyoto Protocol to the United Nations Framework Convention on Climate
Change. 1998. United Nations, New York.

Lewis, Paul. 1992. "Danger of Floods Worries Islanders." *The New York Times*
(May 13): A8.

Neikirk, William. 2007. "Warming Data Allegedly Manipulated." *Chicago
Tribune* (January 31): 3.

Nesmith, Jeff. 2002. "Federal Climate Study Blasted Global Warming
Demands Action, Critics Complain." *Atlanta Journal-Constitution*
(December 4): A6.

Oster, Shai. 2007. "China Seems Poised to Pass U.S. As Top Greenhouse-Gas
Emitter." *The Wall Street Journal* (April 24): A6.

Regalado, Antonio. 2001. "Weighing the Evidence of Global Warming: MIT
Study Calculates Odds of Higher Temperatures, Indicates Need for
Action." *The Wall Street Journal* (March 22): B1.

Revkin, Andrew C. 2001. "Bush's Shift Could Doom Air Pact, Some Say." *The
New York Times* (March 17): A7.

- Revkin, Andrew C. 2004a. "NASA Expert Criticizes Bush On Global Warming Policy." *The New York Times* (October 26): A22.
- Revkin, Andrew C. 2004b. "Eskimos Seek to Recast Global Warming as a Rights Issue." *The New York Times* (December 15): A3.
- Revkin, Andrew C. 2005a. "Bush Aide Edited Climate Reports." *The New York Times* (June 8): A1.
- Revkin, Andrew C. 2005b. "No Escape: Thaw Gains Momentum." *The New York Times* (October 25): F1.
- Revkin, Andrew C. 2006a. "Climate Expert Says NASA Tried to Silence Him." *The New York Times* (January 29): A1.
- Revkin, Andrew C. 2006b. "After 3,000 Years, Artic Ice Shelf Broke Off Canadian Island, Scientists Find." *The New York Times* (December 30): A9.
- Revkin, Andrew C. 2007a. "Poorest Nations Will Bear Brunt as World Warms." *New York Times* (April 1): A1.
- Revkin, Andrew C. 2007b. "Wealth and Poverty, Drought and Flood: Reports From 4 Fronts In the War on Warming." *The New York Times* (April 3): F4.
- Revkin, Andrew C. 2007c. "Climate Panel Reaches Consensus on the Need to Reduce Harmful Emissions." *The New York Times* (May 4): A8.
- Revkin, Andrew C. 2007d. "Analysis Finds Large Antarctic Area Has Melted." *The New York Times* (May 16): A15.

- Rignot, Eric, and Pannir Kanagaratnam. 2006. "Changes in the Velocity Structure of the Greenland Ice Sheet." *Science* Vol. 311 Issue 5763 (February 17): 986-90.
- Ruddiman, William E. 2005. "How Did Humans First Alter Global Climate?" *Scientific American* Vol. 292 Issue 3 (March): 46-53.
- Schweiger, Larry. 2005. "The Administration's Rhetoric Presents a False Choice Between the Environment and the Economy." Opinion-Editorial. *Chicago Sun-Times* (July 7): 41.
- Science News*. 1985. "The Climate, It Is Achanging." Vol. 128 Issue 16 (October 19): 251.
- Singer, S. Fred. 2006. "Earth's Climate Is Always Warming or Cooling." *The Wall Street Journal* (June 20): A21.
- Stolberg, Sheryl Gay. 2007. "Bush Proposes Goal to Reduce Greenhouse Gas." *The New York Times* (June 1): A1.
- Stott, Philip. 2001. "Hot Air + Flawed Science = Dangerous Emissions." Opinion-Editorial. *The Wall Street Journal* (April 2): A22.
- United Nations Framework Convention on Global Warming. 1992. United Nations, New York.
- Walker, Marcus, and John D. McKinnon. 2007. "G-8 Aims for 2009 Climate Accord; Bush Unwilling to Endorse Targets Germany Proposed; Race to Shape Global Talks." *The Wall Street Journal* (June 8): A6.

Wall Street Journal, The. 2003. "A Republican Kyoto." Editorial. (April 8):
A14.

Zachos, James, Mark Pagani, Lisa Sloan, Ellen Thomas, and Katharina
Billups. 2001. "Trends, Rhythms, and Aberrations in Global Climate 65
Ma to Present." *Science* Vol. 292 Issue 5517 (April 27): 686-94.