

SENATE TESTIMONY ON BOXER GLOBAL WARMING BILL

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TESTIMONY OF MARLO LEWIS
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AMERICAN POWER ACT

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Thank you, Chairman Boxer and Ranking Member Inhofe, for the opportunity to submit written testimony on climate change, energy, and national security – the focus of Panel 2 of today’s hearing.

Increasingly, proponents of cap-and-trade legislation argue that climate change is a major threat to U.S. national security. My testimony develops two points: (1) the supposed national security risks of climate change are generally overblown, improbable, or even imaginary; (2) the national security risks of climate change policies are real and substantial and likely outweigh those of climate change itself.

In the Beginning

“Few discoveries are more irritating,” wrote Lord Acton, “than those which disclose the pedigree of ideas.” At the risk of irritating Committee Members, I must point out that climate change first came to public attention as a national security concern when, in October 2003, the Pentagon published a study by Peter Schwartz and Doug Randall titled *Imagining the Unthinkable: An Abrupt Climate Change Scenario and Its Implications for United States National Security*.¹

In *Imagining the Unthinkable*, the authors hypothesize what might happen to the global economy and international stability if increased ice melt and precipitation due to global warming disrupt the Atlantic Thermohaline Circulation (THC) and Earth’s climate deteriorates into an ice age.

Unsurprisingly, the authors conclude that the end of the world as we know it would have massive “implications” for U.S. national security. In page after pulse-pounding page, Schwartz and Randall describe a world convulsed by famine, food riots, water shortages, energy shortages, trade wars, displaced populations, and armed conflict within and among nations.

Schwartz and Randall worried that the THC could shut down as soon as 2010. How many scientists worry about this today? There is no evidence that the THC is weakening or likely to shut down in the foreseeable future.² It’s not even clear that a disruption of the THC would have the climate-wrenching effects Schwartz and Randall assume.³

¹ *Imagining the Unthinkable: An Abrupt Climate Change Scenario and Its Implications for United States National Security* a report by Peter Schwartz and Doug Randall http://www.climate.org/PDF/clim_change_scenario.pdf

² Boyer T., et al. 2007. Changes in fresh water content in the North Atlantic Ocean 1955-2006. *Geophysical Research Letters*, Vol. 34, L16603, doi: 10.1029/2007GL030126; Latif, M. et al. 2006. Is the thermohaline circulation changing? *Journal of Climate* **19**: 4631-4637; Kerr, R. A., 2006. False Alarm: Atlantic Conveyor Belt Hasn’t Slowed Down After All, *Science*, **314**, 1064, doi: 00.1126/science.314.5802.1064a; World Climate Report,

In *An Inconvenient Truth*, former Vice President Al Gore worries that a 20-foot wall of water could sweep across the world's coastal communities. Millions upon millions of people “would have to be evacuated,” “would be forced to move,” “would be displaced,” he warns.⁴ This could happen, Gore hypothesizes, “If Greenland melted or broke up and slipped into the sea – or if half of Greenland melted or broke up and slipped into the sea.”⁵ If such a catastrophe were remotely plausible, it would be a national security problem of gigantic proportions. But it is not plausible.

Greenland is shedding ice at the rate of about 27 cubic miles per year.⁶ Greenland has approximately 719,000 cubic miles of ice.⁷ This means Greenland is shedding ice at the rate of 4/10ths of 1 percent *per century*. In the IPCC's mid-range emissions scenario (A1B), Greenland ice loss contributes between 1 centimeter (cm) and 8 cm of sea-level rise in the 21st Century; in the high-end emissions scenario (AFI), Greenland ice loss contributes between 2 cm and 12 cm of sea-level rise by 2100.⁸ Over the 21st Century, sea-level rise due to Greenland ice loss is likely to be measured in inches, not feet.

How long would it take to melt half of Greenland's ice? The IPCC estimates that Greenland would shed about half its ice if CO₂ concentrations rise to 1,100 parts per million – about four times pre-industrial levels – and remain so elevated for 1,000 years.⁹

In *An Inconvenient Truth*, Gore argued that “moulins” – cracks that channel melt-water from the surface to the bedrock – could lubricate the ice sheet, dramatically accelerating its breakup and slide into the sea. A study in *Science* magazine lays that fear to rest as well. An entire melt-water lake 8 kilometers long and 4 meters deep poured down a moulin in less than 2 hours, at a flow rate exceeding that of Niagara Falls. Yet, *Science* magazine reports, “For all the lake's water dumped under the ice that day, and all the water drained into new moulins in the following weeks, the ice sheet moved only an extra half meter near the drained lake.”¹⁰ For perspective, the Greenland ice sheet is about 2,400 kilometers long and almost 1,000 kilometers wide near its northern margin.¹¹

Since the Earth emerged from the Little Ice Age, sea levels have risen about 7 to 9 inches. This has had impacts on coastal infrastructure including military installations. However, to my knowledge, no historian has ever concluded that sea-level rise was an important factor in any of the great battles of the 20th Century. The IPCC projects between 7 and 23 inches of sea-level rise in the 21st Century. Even at the high-end of this range, sea-level rise would likely not be a major influence on the course of human events.

March 15, 2005: <http://www.worldclimatereport.com/index.php/2007/08/22/ocean-circulation-slowdown-false-alarm/>; World Climate Report, August 2, 2007:

<http://www.worldclimatereport.com/index.php?s=thermohaline+circulation>

³ Seager, Richard: “Climate mythology: The Gulf Stream, European climate and Abrupt Change,”

<http://www.ldeo.columbia.edu/res/div/ocp/gs/>

⁴ Al Gore, *An Inconvenient Truth* (Rodale; Melcher Media, 2006), pp. 204-206.

⁵ Id. p. 196.

⁶ Luthcke, S. B. et al. 2006. Recent Greenland Ice Mass Loss by Drainage System from Satellite Gravity Observations. *Science*, Vol. 314, No. 5803, pp. 2086-2089.

⁷ Volume of Earth's Polar Ice Caps, <http://hypertextbook.com/facts/2000/HannaBerenblit.shtml>.

⁸ IPCC, *Climate Change 2007, The Physical Science Basis*, Chapter 10, Table 10.7, p. 820.

⁹ Id., summarizing Ridley et al. (2005), p. 830.

¹⁰ Richard Kerr, “Greenland Ice Slipping Away But Not All That Quickly,” *Science*, Vol. 320, April 18, 2008.

¹¹ Greenland Ice Sheet, *Encyclopedia Britannica*, <http://www.britannica.com/EBchecked/topic/245306/Greenland-Ice-Sheet>.

Threat Multiplier Hype

As scenarios of abrupt climate change and catastrophic sea-level rise have lost credibility, cap-and-trade advocates have pushed a more nuanced national security rationale for suppressing carbon-based energy use. This is the notion that climate change is an important “threat multiplier.” Global warming, they contend, will increase the frequency and severity of drought, crop failure, famine, and coastal flooding, which will impoverish and displace millions, producing conflict, instability, and terrorism.¹²

This is all very dubious. Climate change impact assessments hugely depend on assumptions about climate sensitivity, which in turn depend on assumptions about the relative strength of positive and negative climate feedback mechanisms. A new observational study by MIT scientists Richard Lindzen and Yong-Sang Choi finds that negative feedbacks dominate the tropical atmosphere’s response to increases in sea-surface temperature.¹³ Lindzen and Choi conclude that a doubling of greenhouse gas concentrations over pre-industrial levels will produce 0.5°C of warming — about six times less warming than the IPCC’s “best estimate.”

If climate sensitivity is as low as Lindzen and Choi infer from the data — or even if it is double their estimate — there is no climate “crisis” and no “threat multiplier.”

In addition, climate impact assessments depend on assumptions about future technology, wealth, and adaptive capability. History indicates that economic liberty, free trade, and technological innovation will continue to improve the human condition regardless of climate change.

According to the IPCC, the second half of the 20th century was “likely the warmest 50-year period in the Northern hemisphere in 1300 years” (IPCC, AR4, WGI, Chapter 9, p. 702). That’s open to debate.¹⁴ Nonetheless, for the sake of argument let’s grant the premise. What have been the observed effects on human welfare?

In the United States, heat-related mortality and air pollution have declined since the 1970s, while crop yields and average lifespan have increased.¹⁵ Global warming, where is thy sting?

Okay, one might say, that’s the United States, the world’s wealthiest country. What about developing countries — how is global warming affecting them?

According to many cap-and-trade proponents, global warming makes extreme weather events more frequent and severe. So, weather-wise, is the world becoming a more dangerous place?

¹² See CNA study, “National Security and the Threat of Climate Change,” released in April 2007.

<http://securityandclimate.cna.org/>

¹³ Lindzen, R. and Choi, Y-S. 2009. On the determination of climate feedbacks from ERBE data, *Geophysical Research Letters*, Vol. 36, L16705, doi:10.1029/2009GL0396628, <http://www.drroyspencer.com/Lindzen-and-Choi-GRL-2009.pdf>.

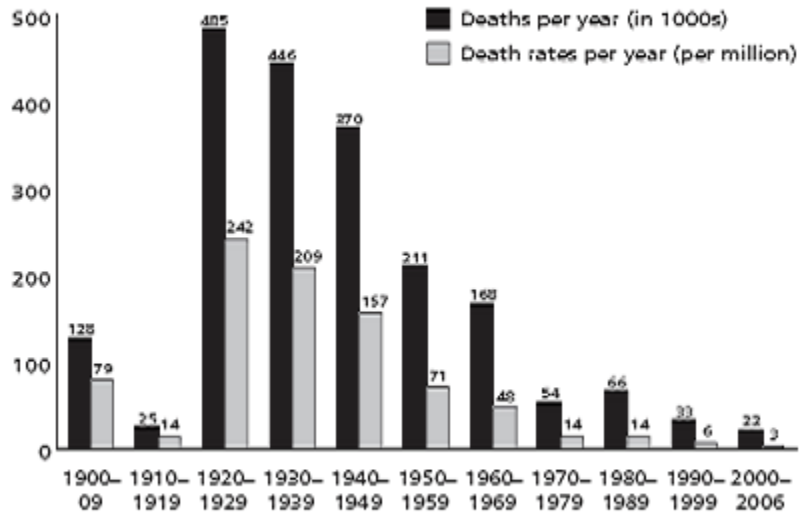
¹⁴ See *Climate Change Reconsidered: The 2009 Report of the Nongovernmental International Panel on Climate Change (NIPCC)*, published in 2007: <http://www.nipccreport.org/chapter3.html>

¹⁵ World Climate Report blog, November 19, 2008:

<http://www.worldclimatereport.com/index.php/2008/11/19/why-the-epa-should-find-against-endangerment/>

Quite the reverse. Globally, aggregate mortality and mortality rates related to extreme weather events of all kinds plummeted 95% and 98.5%, respectively, from 1920 to 2006.¹⁶ It is unreasonable to assume a reversal of this well-established trend.

Figure 1 Global death and death rates due to extreme events, 1900–2006



Note that in figures 1 through 4, data for the last period are averaged over seven years worth of data.
Sources: EM-DAT (2007); McEvedy and Jones (1978); WRI (2005, 2007)

Source: Indur Goklany, Deaths and Death Rates due to Extreme Weather Events: Global and U.S. Trends, 1900–2006, The Civil Society Coalition on Climate Change, November 2007.¹⁷

One of the principal ways climate change supposedly acts as a “threat multiplier” is to intensify drought and water shortages, leading to crop failure, famine, and armed conflict within and among nations. A remarkable column in *Nature* magazine by Wendy Barnaby deflates this fashionable alarum.¹⁸

Barnaby, editor of *People & Science*, the journal of the British Science Association, had written a book about biological warfare, and the publishers suggested she write a book about the coming century of “water wars.”

At the outset, she assumed that water scarcity is a significant source of armed conflict in the world – a pervasive problem just waiting to be ‘threat multiplied’ by climate change. The book

¹⁶ Indur Goklani, *Death and Death Rates Due to Extreme Weather Events: Global and U.S. Trends, 1900-2006*. <http://goklany.org/library/deaths%20death%20rates%20from%20extreme%20events%202007.pdf>

¹⁷ Indur Goklani, *Death and Death Rates Due to Extreme Weather Events: Global and U.S. Trends, 1900-2006*. <http://goklany.org/library/deaths%20death%20rates%20from%20extreme%20events%202007.pdf>

¹⁸ Wendy Barnaby, Do nations go to war over water? *Nature* 458, 282-283 (19 March 2009), <http://www.nature.com/nature/journal/v458/n7236/full/458282a.html>

was to include a history of water wars, but, as she dug into her topic, she found there wasn't much history to write about. "Cooperation, in fact, is the dominant response to shared water resources," she discovered. The data are overwhelming:

Between 1948 and 1999, cooperation over water, including the signing of treaties, far outweighed conflict over water and violent conflict in particular. Of 1,831 instances of interactions over international fresh water resources tallied over that time period (including everything from unofficial verbal exchanges to economic agreements or military action), 67% were cooperative, only 28% were conflictive, and the remaining 5% neutral or insignificant. *In those five decades, there were no formal declarations of war over water* (emphasis added).

It is true that many nations are water-stressed, but this has not meant that their people must either perish or go to war to seize another country's water supplies. Usually, it means that countries cooperate and import "virtual water" in the form of agricultural produce. It takes lots more water to grow crops than it does to supply households with drinking water. So where water is scarce, people tend to substitute grain imports for home-grown produce. Israel, Jordan, and Egypt are a case in point:

Israel ran out of water in the 1950s: it has not since then produced enough water to meet all of its needs, including food production. Jordan had been in the same situation since the 1960s; Egypt since the 1970s. Although it's true that these countries have fought wars with each other, they have not fought over water. Instead, they all import grain. As [U.K. social scientist Tony] Allan points out, more 'virtual' water flows into the Middle East each year embedded in grain than flows down the Nile to Egyptian farmers.

Climate change-related drought would pose challenges to resource managers but should not lead to armed conflict where nations are free to cooperate and trade.

Barnaby's conclusion is worth reproducing in full:

Book or no book, it is still important that the popular myth of water wars somehow be dispelled once and for all. This will not only stop unsettling and incorrect predictions of international conflict over water. It will also discourage a certain public resignation that climate change will bring war, and focus attention on what politicians can do to avoid it: most importantly, improve the conditions of trade for developing countries to strengthen their economies. And it would help to convince water engineers and managers, who still tend to see water shortages in terms of local supply and demand, that the solutions to water scarcity and security lie outside the water sector in the water/food/trade/economic development sector. It would be great if we could unclog our stream of thought about misleading notions of 'water wars.'

Environmental researcher Indur Goklany provides additional evidence that climate change is unlikely to be an important threat multiplier. Climate change supposedly increases the frequency of floods as well as droughts. Obviously, the worst and most destabilizing thing droughts and floods can do is kill people. Are deaths from droughts and floods going up or going down?

Goklany finds that “deaths from droughts have declined 99.9% since the 1920s, and 99% from floods since the 1930s.”¹⁹

What of the future? Maybe the amount of warming experienced so far isn't so bad, but what if the rate of warming spikes upward over the next several decades?

Probably the most pessimistic assessment of the economic damages from a warming at the high end of the IPCC forecast range is the UK Government's *Stern Review on the Economics of Climate Change*.²⁰ In the Spring 2009 issue of *Regulation* magazine, Goklany dissects the *Stern Review* and finds that even in its worst-case scenario, developing countries in the late 21st Century are prosperous by today's standards.²¹ Goklany's analysis may be summarized as follows:

- According to the *Stern Review*, the 5th-95th percentile estimates of losses in welfare due to climate change under the warmest IPCC scenario (which might lead to a 4°C increase in global temperatures from 1990 to 2085) range from 0.9% to 7.5% in 2100, with a mean loss of 2.9%. By 2200, under this extreme scenario, estimated losses range from 2.9% to 35.2%, with a mean loss of 13.8%.
- Goklany shows that even if one assumes the *Stern Review*'s 95th percentile loss estimate under the warmest scenario, developing countries' net welfare (after accounting for climate change) would increase from \$900 per capita in 1990 to \$61,500 in 2100 and \$86,200 in 2200 (all in 1990 U.S.\$).
- For context, Goklany notes that in 2006, GDP per capita was \$19,300 for industrialized countries, \$30,100 for the United States, and \$1,500 for developing countries.
- Thus, despite its best efforts to paint a gloomy picture, the *Stern Review*'s own numbers tell us that, regardless of climate change, global welfare will improve dramatically over the next two hundred years, and developing country adaptive capacity will far surpass that of industrial countries today — even if the high-end IPCC warming scenario comes to pass.

The figure below illustrates Goklany's analysis:

¹⁹ Indur Goklany, A Bad Climate for Development – Rebuttal to the Economist, October 8, 2009, citing Goklany, Death and Death Rates Due to Extreme Weather Events, <http://wattsupwiththat.com/2009/10/08/a-bad-climate-for-development-rebuttal-to-the-economist/>

²⁰ *Stern Review on the Economics of Climate Change*, released on October 30, 2006 by the Office of Climate Change: http://www.hm-treasury.gov.uk/sternreview_index.htm

²¹ Indur Goklani, “Discounting the Future,” *Regulation*, Spring 2009.

<http://goklany.org/library/Goklany%20Discounting%20the%20future%20Regulation%202009%20v32n1-5.pdf>

Table 2

The Costs of Warming

Mean welfare per capita in 2100 and 2200 for developing and industrialized countries, adjusting for the costs of climate change from market effects, non-market (i.e., environmental and public health) effects, and the risk of catastrophe, per the *Stern Review's* 95th percentile estimate of costs

A. Scenario	1990	2100			
	Actual	A1F	A2	B2	B1
DEVELOPING COUNTRIES					
GDP per capita, no climate change	\$900	\$66,500	\$11,000	\$18,000	\$40,200
Maximum cost of climate change*	0	\$5,000	\$600	\$500	\$800
Net welfare per capita, with climate change	\$900	\$61,500	\$10,400	\$17,500	\$39,400
INDUSTRIALIZED COUNTRIES					
GDP per capita, no climate change	\$13,700	\$107,300	\$46,200	\$54,400	\$72,800
Maximum cost of climate change*	0	\$8,000	\$2,400	\$1,500	\$1,500
Net welfare per capita, with climate change	\$13,700	\$99,300	\$43,800	\$52,900	\$71,300
B.					
Scenario	1990	2200			
	Actual	A1F	A2	B2	B1
DEVELOPING COUNTRIES					
GDP per capita, no climate change	\$900	\$133,000	\$22,000	\$36,000	\$80,400
Maximum cost of climate change*	0	\$46,800	\$5,300	\$4,500	\$7,600
Net welfare per capita, with climate change	\$900	\$86,200	\$16,700	\$31,500	\$72,800
INDUSTRIALIZED COUNTRIES					
GDP per capita, no climate change	\$13,700	\$214,600	\$92,400	\$108,800	\$145,600
Maximum cost of climate change*	0	\$75,500	\$22,100	\$13,700	\$13,800
Net welfare per capita, climate change*	\$13,700	\$139,100	\$70,300	\$95,100	\$131,800

SOURCE: Author's calculations, based on Warren et al. (2006), Arndt et al. (2004), Stern Review, and World Bank data.

Indeed, even if we go beyond the Stern Review's gloomiest projection, and assume that global warming will reduce global GDP 35.2% by 2100 (instead of by 2200), developing country per-capita GDP in 2100 is over \$43,000 — more than twice industrial country per capita GDP in 2006.

Bang for Buck?

Even if climate change were an important threat-multiplier, that is no guaranty that cap-and-trade would be an effective response. Climate scientist Chip Knappenberger shows that reducing U.S. emissions 83% below 2005 levels by 2050 — the Kerry-Boxer emissions-reduction target —

would avoid less than 0.2°C of projected global warming by 2100.²² That's an amount too small to be distinguished from the "noise" of inter-annual climate variability. Even if all industrial countries achieve the Kerry-Boxer target, that would avoid only 0.4°C of warming by 2100 — less than 10% of the projected rise in the IPCC's "fossil intensive" (A1FI) emissions scenario.

Cumulatively, the United States and its allies could end up spending trillions of dollars to achieve trivial reductions in projected climate change. As a national security strategy, Kerry-Boxer would yield no measurable bang for buck.

When cap-and-traders call global warming a national security issue, they mainly mean that climate change will aggravate a number of pre-existing threats – e.g., drought, hunger, malaria, coastal flooding — that already cause or contribute to instability and conflict. Goklany outlines a more promising way to address those conditions – an approach he calls "focused adaptation."²³

Goklany shows that it is much more effective — and far cheaper — to tackle directly, with proven methods, the health and environmental threats that a changing climate might exacerbate than it is to address those threats indirectly via energy-rationing schemes. For example, the Kyoto Protocol, at a cost of \$165 billion per year, might reduce deaths from malaria by 0.2% in 2085. In contrast, a \$3 billion annual investment in proven anti-malaria methods could reduce malaria deaths by 75%, according to the UN Millennium Development Project.

Bjorn Lomborg's Copenhagen Consensus project comes to much the same conclusion.²⁴ Resources available to meet the world's biggest challenges are finite. Hence, Lomborg sensibly argues, policymakers should invest in those policies that will do the most good per dollar expended.

In 2004, Lomborg convened a panel of eight distinguished economists, including three Nobel Laureates, to answer the question, "What would be the best ways of advancing global welfare, and particularly the welfare of developing countries, supposing that an additional \$50 billion in resources were at governments' disposal?" The panel commissioned "challenge papers" from 10 acknowledged authorities in different policy fields. The authors set out more than 30 policy proposals for the panel's consideration. The panel, the authors, and two outside experts in each field examined and debated the proposals during a week-long conference. The panel then ranked the proposals in order of desirability:

²² <http://masterresource.org/?p=2367>

²³ Indur Goklani, *What to Do about Climate Change*, CATO Policy Analysis No. 609, February 5, 2008. <http://www.cato.org/pubs/pas/pa-609.pdf>

²⁴ For more about the Copenhagen Consensus Center, see <http://www.copenhagenconsensus.com/About%20CCCC/About%20CCC.aspx>

Project rating	Challenge	Opportunity
Very Good	1 Diseases	Control of HIV/AIDS
	2 Malnutrition	Providing micro nutrients
	3 Subsidies and Trade	Trade liberalisation
	4 Diseases	Control of malaria
Good	5 Malnutrition	Development of new agricultural technologies
	6 Sanitation & Water	Small-scale water technology for livelihoods
	7 Sanitation & Water	Community-managed water supply and sanitation
	8 Sanitation & Water	Research on water productivity in food production
	9 Government	Lowering the cost of starting a new business
Fair	10 Migration	Lowering barriers to migration for skilled workers
	11 Malnutrition	Improving infant and child nutrition
	12 Malnutrition	Reducing the prevalence of low birth weight
	13 Diseases	Scaled-up basic health services
Bad	14 Migration	Guest worker programmes for the unskilled
	15 Climate	Optimal carbon tax
	16 Climate	The Kyoto Protocol
	17 Climate	Value-at-risk carbon tax

All three climate policy proposals were deemed “bad investments.” Costs would exceed benefits and the policies would save far fewer lives per dollar invested than would alternative policy proposals.

Because resources are finite, bad investments tend to crowd out good. Even if climate policies did no positive harm, they could undermine U.S. national security by (a) displacing investment in policies that more effectively enhance human welfare, and (b) diverting money, expertise, public attention, and political will from the kinds of threats our military forces and intelligence agencies actually know how to do something about.

In fact, however, climate policies have a high potential to *do positive harm* to U.S. national security.

The National Security Risks of Climate Change Policies

In testimony (p. 7) before a joint hearing (June 25, 2008) of the House Permanent Select Committee on Intelligence and the House Select Committee on Energy Independence and Global Warming, Dr. Thomasingar, Chairman of the National Council on Intelligence (NIC), stated that, “Government, business, and public efforts to develop mitigation and adaptation strategies to deal with climate change — from policies to reduce greenhouse gases to plans to reduce exposure to climate change or capitalize on potential impacts — may affect U.S. national security interests even more than the physical impacts of climate change itself.”²⁵

²⁵ Testimony of Dr. Thomasingar on the National Intelligence Assessment on the Security Implications of Global Climate Change to 2020,” before the House Permanent Select Committee on Intelligence and the House Select Committee on Energy Independence and Global Warming, on June 25, 2008.

<http://globalwarming.house.gov/tools/2q08materials/files/0069.pdf>

Those words provoked the ire of Chairman Ed Markey (D-MA), who demanded to know who at Bush's OMB inserted that verbiage into Fingar's testimony. Fingar assured Markey that the entire testimony, including the offending sentence, reflects the consensus view of the U.S. intelligence community, and that OMB offered no comments on that portion of the text. (Incidentally, Fingar's testimony also said that climate change was "unlikely to trigger state failure in any state out through 2030," and that "the United States as a whole would enjoy modest economic benefits over the next several decades largely due to increased crop yields.")

Regrettably, Fingar's testimony did not explain how climate policies might affect U.S. national security interests "more than the physical impacts of climate change itself," nor did he elaborate in the back-and-forth with Chairman Markey. In general, the global warming debate lacks balance, with climate change risks highlighted, exaggerated, or even invented, and climate policy risks denied or ignored.

Let's then consider some of the ways climate policies might damage U.S. national security interests.

(1) Gas pains. The Romans used to say that an army travels on its stomach. For the past hundred years or so, however, armed forces have traveled on their fuel tanks. In the Afghan and Iraq wars, U.S. strategy plays to our comparative advantage in mobile forces.²⁶ Today's U.S. Army is the most fuel-intensive in history.²⁷

At recent briefing sponsored by Partners for a Secure America (PSA), Admiral Dennis McGinn warned that the end of the current recession would usher in a return to a "volatile cycle of rising energy prices." Oil exceeded \$140 a barrel in July 2008, and global demand could push oil prices back up to that level, he opined.

Agreed. But now suppose that on top of that, Congress enacts a cap-and-trade program. Such policies are *designed* to make carbon-based fuels more costly (see p. 2 of former CBO Director Peter Orszag's April 24, 2008 congressional testimony).²⁸ The Heritage Foundation estimates that the Waxman-Markey cap-and-trade program would increase motor fuel prices by 58% or \$1.38/gallon by 2030.²⁹

Next, layer on top of the price effects of cap-and-trade and resurgent global demand the effects of additional supply constraints imposed by other "clean energy" policies, such as:

²⁶ Report by Jessica Leber for E&E on July 20, 2009: <http://www.eenews.net/public/climatewire/2009/07/20/1>

²⁷ Robert Bryce, "Gas Pains," *The Atlantic*, May 2005: <http://www.theatlantic.com/doc/200505/bryce>

²⁸ Statement of Peter Orszag on the Implications of a Cap-and-Trade Program for Carbon Dioxide Emissions before the Committee on Finance of the US Senate, on April 24, 2008. http://www.cbo.gov/ftpdocs/91xx/doc9134/04-24-Cap_Trade_Testimony.pdf

²⁹ David Kreutzer, Karen Campbell, William Beach, Ben Lieberman, and Nicholas Loris, *The Economic Consequences of Waxman-Markey: An Analysis of the American Clean Energy Security Act*, Heritage Center for Data Analysis Report #09-04, August 6, 2009. <http://www.heritage.org/Research/EnergyandEnvironment/cda0904.cfm>

- moratoria on oil and gas exploration in the North Sea,³⁰ the Arctic,³¹ and the U.S. Pacific coast;
- carbon tariffs³² or low-fuel standards³³ that cut off imports of Canadian tar-sands oil;
- Clean Air Act New Source Performance Standards (NSPS) for carbon dioxide (CO₂) emissions that discourage investments to expand refining capacity;³⁴
- windfall profit taxes that deter U.S. oil companies from developing new supply sources,³⁵ and,
- prohibitions on the development of oil from the Rocky Mountain shale.³⁶

If Congress enacts this green policy wish-list, including cap-and-trade, while global demand for petroleum products rebounds, we will all long for the days when gasoline cost “only” \$4.00/gallon.

Everybody would feel pain at the pump, including the nation’s largest energy consumer, the Department of Defense.³⁷ Although Congress would not allow U.S. armed forces to lack fuel in combat situations, soaring energy prices would put pressure on DOD to reprogram funds and cut fuel consumption – perhaps, for example, by reducing the frequency or scope of training exercises. Experts in the field should consider how a policy-induced “energy crunch” might impact DOD budgets for training, procurement, salaries, and benefits. So far, there has been no public discussion of this.

(2) Money is the Sinew of War. Economic strength is the foundation of military might. A strong industrial base made America the “arsenal of democracy” in two world wars. America won the Cold War in part because the Soviets went broke trying to match the Reagan-era defense buildup.

America cannot remain a great power with a second-rate economy. A dynamic economy not only supports investment in military forces and high-tech weaponry, it also promotes U.S. leadership in the world generally. Conversely, economic stagnation forces painful budgetary choices

³⁰ “Norwegian bishop’s proposal for oil moratorium runs into some flak, *Ecumenical News International*, 23 February, 2009. <http://eni.ch/featured/article.php?id=2759>

³¹ As advanced by the Center for Biological Diversity, http://www.biologicaldiversity.org/programs/public_land/energy/dirty_energy_development/oil_and_gas/index.html

³² Possibility of carbon tariffs has triggered Canadian concern: <http://www.tarsandswatch.org/canada-says-proposed-u-s-greenhouse-gas-tax-would-hurt-trade-lee-anne-goodman>

³³ Nicola Jones, “Obama may be tough on Canada’s tar sands,” published online in *Nature*, 13 February, 2009. <http://www.nature.com/news/2009/090213/full/news.2009.103.html>

³⁴ See *Washington Energy Report*, Troutman Sanders, September 5, 2008.

<http://www.troutmansanders.com/firm/media/mediadetail.aspx?media=964>

³⁵ Advocated by non-profits like Public Citizen, <http://www.citizen.org/publications/release.cfm?ID=7425>

³⁶ See press release by the Natural Resources Defense Council, <http://www.nrdc.org/media/2008/080722a.asp>

³⁷ See Congressional Research Service report by Anthony Andrews, “Department of Defense Facilities Energy Conservation Policies and Spending,” February 19, 2009. <http://www.fas.org/spp/crs/natsec/R40111.pdf>

between guns and butter, and the associated “malaise” can sway public attitudes towards isolationism.³⁸

Affordable energy is vital to economic growth. The cap-and-traders acknowledge this, sort of, when they blame high oil prices for contributing to our economic woes. But they don’t acknowledge the inescapable implication: Because cap-and-trade policies are designed to make energy more costly, they can chill job creation and growth.

The Heritage Foundation estimates that Waxman-Markey would reduce cumulative GDP by \$9.4 trillion from 2012 to 2030 and reduce net employment by 1.9 million in 2012 and 2.5 million in 2035.³⁹ Similarly, the National Association of Manufacturers/American Council for Capital Formation study estimates that, in 2030, Waxman-Markey would lower annual GDP by \$419 billion to \$571 billion and reduce net employment by 1.79 million to 2.44 million.⁴⁰

All such studies depend on assumptions and are open to criticism. Nonetheless, the potential for carbon-suppression policies to weaken the economy by inflating energy prices is undeniable. Likewise, the potential for economic weakness to produce military weakness is undeniable. A “perfect storm” created by the convergence of Kerry-Boxer, the other anti-oil policies noted above, and resurgent global petroleum demand could produce one heck of an energy crunch, putting the economy into a tailspin.

The threat to the U.S. economy may be even greater than the Heritage Foundation’s analysis suggests. The Heritage study analyzes the impacts of the bill’s *explicit* emission reduction targets and obligations. However, Title VII, Part A of both bills contain language that could (1) encourage CO2 tort litigation against businesses smaller than those subject to the cap-and-trade program, and (2) pressure policymakers to move the goal posts – amend the legislation to make “350 the new 450” and tighten caps. For further discussion of this important issue, see my recent column on MasterResource.Org, the free-market energy blog.⁴¹

(3) Threat Multiplier. The global warming movement’s top priority is to stop construction of new coal-fired plants⁴² in order to reduce global emissions 50%⁴³ or more by 2050⁴⁴. Yet,

³⁸ <http://www.rightwingnews.com/speeches/carter.php>

³⁹ David Kreutzer, Karen Campbell, William Beach, Ben Lieberman, and Nicholas Loris, *The Economic Consequences of Waxman-Markey: An Analysis of the American Clean Energy Security Act*, Heritage Center for Data Analysis Report #09-04, August 6, 2009. <http://www.heritage.org/Research/EnergyandEnvironment/cda0904.cfm>

⁴⁰ “Analysis of the Waxman-Markey Bill ‘The American Clean Energy Security Act of 2009’, Using The National Energy Modeling System,” by the National Association of Manufacturers (NAM) and the American Council for Capital Formation (ACCF), August 2009. http://www.accf.org/media/dynamic/3/media_381.pdf

⁴¹ Marlo Lewis, “Kerry-Boxer: Its Bite Is Worse Than Its Bark,” MasterResource.Org, October 27, 2009, <http://www.masterresource.org/2009/10/kerry-boxer-its-bite-is-worse-than-its-bark>.

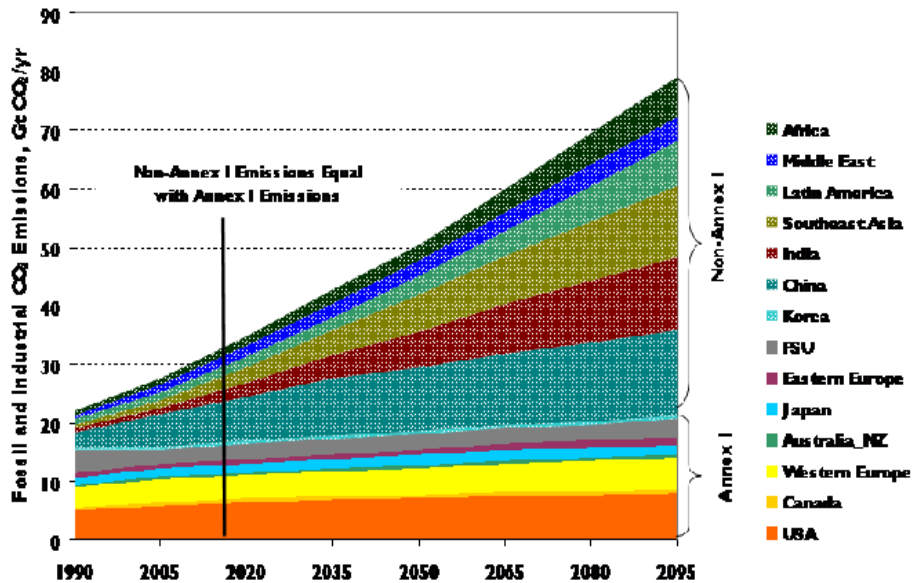
⁴² See May 5, 2008 blog post at Climate Progress: <http://climateprogress.org/2008/05/05/is-450-ppm-politically-possible-part-4-the-most-urgent-climate-policy-isnt-a-co2-price/>

⁴³ AFP, “Halve global-warming pollution by 2050, Europe tells summit,” September 24, 2007: <http://www.turkishpress.com/news.asp?id=195474>

⁴⁴ See European Parliament press release, October 23, 2007: <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+IM-PRESS+20071022IPR12053+0+DOC+XML+V0//EN>

banning new coal plants in developing countries could condemn large segments of humanity – the 1.6 billion people who have never flipped a light switch – to decades of deadly energy poverty.⁴⁵

Approximately 90% of the growth in global emissions in the remainder of this century is projected to occur in developing (“Non-Annex I”) countries.



Source: James Connaughton, Chairman, Council on Environmental Quality, Energy and Climate Policy, December 2007.⁴⁶

Thus, absent breakthroughs that dramatically lower the cost of zero-emission energy, there is no way to achieve the 50% global emissions reduction target without suppressing energy consumption and economic growth in the world’s poorest countries.

Thwarting developing countries’ aspirations for a better life would not promote stability and peace! Global warming policy is potentially a big threat-multiplier.

(4) Trade war, U.S-China conflict. The EU/UN/Al Gore goal of reducing global emissions at least 50% by 2050 will require developing countries to limit their CO₂ emissions to 1.3 tons per capita (see slide #11 of U.S. Chamber of Commerce economist Stephen Eule’s Power Point presentation⁴⁷). That’s roughly equivalent to current per-capita CO₂ emissions in Africa,⁴⁸ the

⁴⁵ <http://www.openmarket.org/2009/08/24/policy-peril-segment-10-its-a-moral-issue/> and <http://masterresource.org/?p=4483#more-4483>

⁴⁶ <http://belfercenter.ksg.harvard.edu/files/2007-12-12%20Connaughton%20Presentation%20FINAL.pdf>

⁴⁷ Slide 11 can be viewed at:

http://www.energyxxi.org/pages/February_2009_Vice_President_Steve_Eule_Climate_Change_Scale_and_Scope_of_the_Challenge.aspx

(5) Nuclear proliferation. At the PSA panel, Ambassador James Woolsey argued against sharing nuclear technology with developing countries, even though nuclear power is the world's leading source of zero-emission electricity. This would create a "huge proliferation problem"; nuclear must take "big steps" before it is a "reasonable competitor to other options," he said.

However, if developing countries are denied access to coal-fired power plants, where else are they going to get substantial base load electricity, if not from nuclear power? It is difficult to imagine developing countries consenting to a moratorium on coal power plants unless industrial countries agree to share nuclear technology with them, and pay for it to boot.

Nothing would spread nuclear technology and fissile materials faster than an effectively enforced ban on new coal power plants, especially if the G77 plus China get their wish and industrial countries pony up 0.5%-1% of their GDP annually in international "climate assistance."⁵⁷

At a minimum, cap-and-traders should acknowledge that increased proliferation risk is a potential consequence of the global warming crusade.

(6) Europe's dependence on Russian gas. "Clean energy" advocates decry America's dependence on oil from unfriendly nations, and say we must transition away from oil to win the war on terror.

At the same PSA briefing, Ambassador Woolsey asked the audience, "Who funds terror?" Answering his own question, he said: "Look in the mirror the next time you fill up at the gas station." A clever sound bite, if the point is to evoke and manipulate feelings of guilt. You get the same look-in-the-mirror answer when you ask, "Who finances 28 million retirement accounts in 2,650 federal, state, and local public employee pension funds?"⁵⁸

Woolsey overstates the link between oil and terror, as Jerry Taylor and Peter Van Doren of the Cato Institute explain:⁵⁹

- Although some of the dollars we spend on oil undoubtedly trickle into terrorist coffers, "only 15.5 percent of the oil in world markets is produced in nation-states accused of funding terrorism." Presumably, those states fork over only a small fraction of their oil revenues to terrorists. "Hence, the vast majority of the dollars we spend do not end up on the purported conveyor belt to terrorist bank accounts."

⁵⁶ Jamie Glazov, "The China-Russia-Iran Axis," *Frontpagemagazine.com*, January 22, 2008. <http://www.frontpagemag.com/readArticle.aspx?ARTID=29604>

⁵⁷ The proposal of China and the G77 for "climate assistance" can be viewed at: http://unfccc.int/files/kyoto_protocol/application/pdf/g77_china_financing_1.pdf

⁵⁸ Robert J. Shapiro and Nam D. Pham, "The Economic Impact of a Windfall Profit Tax on Federal, State, and Local Public Employee Pension Funds," February 2006. http://www.sonecon.com/docs/studies/wpt_0206.pdf

⁵⁹ Jerry Taylor and Peter Van Doren, "The Energy Security Obsession," *The Georgetown Journal of Law and Public Policy*, Summer 2008, Vol. 6, No. 2. <http://www.cato.org/pubs/articles/energy-security.pdf>

- “Regardless, terror is a low-cost endeavor and oil revenues are unnecessary for terrorist activity. The fact that a few hundred thousand dollars paid for the 9/11 attacks suggest that the limiting factor for terrorism is expertise and manpower, not money.”
- Analyzing data on oil prices and terrorist incidents from 1983 to 2005, Taylor and Van Doren found no correlation between Saudi oil profits and fatalities due to Islamic terrorist attacks, and none between Saudi oil profits and the number of Islamic terrorist incidents.

As to the concern about depending on oil from unfriendly countries, Taylor and Van Doren note that the OPEC “oil weapon” (embargoes, cutoffs) is mostly bluster. Petro states go broke if they don’t sell oil, and, because oil markets are global, an embargoed nation can always import oil via non-embargoed third parties.

An energy extortion strategy is more feasible with natural gas. As Taylor and Van Doren explain, “sellers have leverage in natural gas markets that is not possible in oil markets because oil can be transported easily while gas is shipped through pipelines. Buyers have few near-term alternatives if natural gas sellers reduce shipments.”

Due to the geographically-constrained character of natural gas markets, Europe, which imports about 40% of its natural gas from Russia, is far more vulnerable to energy extortion than we are.

Table 2: Major Recipients of Russian Natural Gas Exports, 2005			
Rank	Country	Imports (bcf/y)	Percent of Domestic NG Consumption
1	Germany	1,291	36%
2	Italy	824	27%
3	Turkey	630	65%
4	France	406	23%
5	Hungary	294	56%
6	Czech Republic	252	75%
7	Austria	246	72%
8	Poland	226	39%
9	Slovakia	226	99%
10	Finland	148	95%
11	Romania	140	22%
12	Fmr Yugoslavia	134	57%
13	Bulgaria	101	53%
14	Greece	85	85%
15	Switzerland	13	11%
Sales to Baltic & CIS States, 2005			
	Ukraine	2,113	69%
	Belarus	710	99%
	Baltic States	205	89%
	Azerbaijan	120	33%
	Georgia	46	88%
Sources: Domestic Consumption: EIA International Energy Annual, 2005; Imports: Cedigaz 2006 and BP Statistical Review 2007.			

Ten months ago, in the midst of a very cold winter, Russia halted gas exports to Ukraine, thereby cutting off nearly all gas shipments to Europe.⁶⁰ Although Russia claimed it was simply trying to resolve a longstanding dispute with Ukraine over gas prices and debts, the cutoff may also have been punishment for Ukraine's pursuit of NATO membership, and a warning to Europe not to admit Ukraine into NATO.⁶¹

Europe's dependence on Russian gas partly stems from EU global warming policy. The U.S. Energy Information Administration (EIA) observes: "Many nations in OECD Europe have made commitments to reduce carbon dioxide emissions, bolstering the incentive for governments to encourage natural gas use in place of other fossil fuels."⁶²

If Europe's deeds ever match its green rhetoric, and European countries ban new coal plants instead of building them,⁶³ they will become even more dependent on Moscow to keep their lights on and their houses warm.

Although Soviet communism is dead, Russia is not a liberal democracy. Moscow aspires to regain Russia's great power status, and whatever else might be said about Russia, its interests in Europe are not identical to ours. Last year, for example, a Russian general threatened to nuke Poland, if Warsaw participates in a U.S. missile defense system designed to block attacks by rogue nations like Iran.⁶⁴

In short, the Russian Bear is not yet tame, Europe's dependence on Russian natural gas makes Europe vulnerable to energy extortion, and regulatory climate policies increase that vulnerability. Enacting Kerry-Boxer would only encourage Europe to remain on the potential dangerous energy path it has chosen.

Finally, even on the assumption that oil imports are a menace, cap-and-trade would likely increase our dependence on imported petroleum products by reducing investment in the U.S. petroleum refining sector. A report⁶⁵ prepared by EnSys Energy for the American Petroleum Institute, finds that by 2030, Waxman-Markey would:

- Significantly increase U.S. refining costs;
- Reduce U.S. refining volume by up to 4.4 million barrels per day (mbd);
- Reduce annual U.S. refining investments by up to \$89.7 billion (up to an 88% decline in investment);
- Reduce refinery utilization rates from 83.3% to as low as 63.4%;

⁶⁰ Andrew E. Kramer, "Russia Cuts Gas, and Europe Shivers," *The New York Times*, January 6, 2009.

<http://www.nytimes.com/2009/01/07/world/europe/07gazprom.html>

⁶¹ Tom Lasserer, "10 countries cut off as Russia-Ukraine gas dispute spreads," McClatchy Newspapers, January 6, 2009. <http://www.mcclatchydc.com/world/story/59099.html>

⁶² See chapter 3 of the International Energy Outlook 2009, released on 27 May, 2009 by the Energy Information Administration. http://www.eia.doe.gov/oiaf/ieo/nat_gas.html

⁶³ Elisabeth Rosenthal, "Europe Turns Back to Coal, Raising Climate Fears," *The New York Times*, April 23, 2008. <http://www.nytimes.com/2008/04/23/world/europe/23coal.html>

⁶⁴ "Q&A: US Missile Defence," *BBC News*, September 20, 2009. <http://news.bbc.co.uk/2/hi/europe/6720153.stm>

⁶⁵ Ensys Energy, Waxman-Markey (H.R. 2454) Refining Sector Impact Assessment, August 21, 2009, http://www.api.org/Newsroom/upload/ENSYS_W_M_Briefing_Report_2009_8_20.pdf

- Create competitive advantage for non-U.S. refineries; and, hence
- Increase U.S. reliance on petroleum product imports.

(7) Biofueling Disaster. Increased use of biofuels will help break America's oil dependence, Ambassador Woolsey asserted. Well, no, it won't, unless biofuels actually give consumers more bang for the buck than gasoline does — in which case there will be no need for the biofuel and flex-fuel mandates Woolsey advocates.

For all their fretting about how climate change will undermine U.S. security by intensifying world hunger, the PSA panelists uttered not a word about the role of biofuel policies in increasing grain prices and world hunger.

The price of corn tripled during 2007-2008, and wheat and rice prices also more than doubled. I don't usually quote eco-radical George Monbiot, but on this topic nobody said it better: "even when the price of food was low, 850 million people went hungry because they could not afford to buy it. With every increment in the price of flour or grain, several million more are pushed below the bread line."⁶⁶ In 2008, food riots sparked by soaring grain prices broke out in several countries and toppled the government in Haiti — the very sort of instability we're supposed to fear from climate change, but climate change had nothing to do with it.⁶⁷

Although several factors contributed to the surge in grain prices including a weak dollar, high oil prices, and increased demand in China and India, biofuel policies were also a factor. According to the World Bank, "Almost all the increase in global maize [corn] production during 2004 to 2007 (the period when grain prices rose sharply) went to bio-fuels production in the United States, while existing stocks were depleted by an increase in global consumption for other uses."⁶⁸ The numbers tell the story: "From 2004 to 2007, global maize production increased by 51 million tons, biofuel use in the United States increased 50 million tons and global consumption for all other uses increased 33 million tons, which caused global stocks to decrease by 30 million tons."

Biofuel policy bid up the price of corn and, since all grains compete for customers and, to a lesser extent, land, biofuel policy contributed to grain price inflation generally. The International Food Policy Research Institute estimates that during 2000 to 2007, biofuel demand accounted for 39% of the increase in real corn prices, 22% of the rise in wheat prices, and 21% of the increase in rice prices.⁶⁹ A study published by the World Bank (although not representing the Bank's official position) estimates that 70-75% of the increase in food commodity prices "was due to

⁶⁶ George Monbiot, *An Agricultural Crime Against Humanity*, Feb. 6, 2007, <http://www.monbiot.com/archives/2007/11/06/an-agricultural-crime-against-humanity/>

⁶⁷ "Riots, instability spread as food prices skyrocket," CNN, April 14, 2008. <http://www.cnn.com/2008/WORLD/americas/04/14/world.food.crisis/>

⁶⁸ *Rising Food Prices: Policy Options and World Bank response*, World Bank, February 2009. http://siteresources.worldbank.org/NEWS/Resources/Developmentcommittee_note_Apr11.doc

⁶⁹ Joachim von Braun, *Biofuels, International Food Prices, and the Poor*, International Food Policy Research Institute (IFPRI), 2008. http://energy.senate.gov/public_files/vonBraunTestimony061208.pdf

biofuels and the related consequences of low grain stocks, large land use shifts, speculative activity and export bans.”⁷⁰

Technological breakthroughs may some day make it possible to produce vast quantities of cheap ethanol from switch grass or algae. In the meantime (which could be decades), the potential of biofuel mandates to divert ever-increasing quantities of grain from food to auto fuel, inflate food prices, and increase world hunger cannot reasonably be denied.

Now, consider these risks in the context of the EU/UN/Al Gore goal of reducing CO₂ emissions to 50% below current levels by 2050. Achieving that goal would require global emissions in 2050 to be 38.3 billion tons below the baseline projection, estimates Stephen Eule of the U.S. Chamber of Commerce’s Institute for 21st Century Energy.⁷¹

Achieving just one gigaton or 2.6% of that reduction from biofuels would require biomass plantations occupying an area about 5.4 times the total land area of Iowa – about 200 million acres, Eule estimates.

Our supposed ability to “solve the climate crisis” just by scaling up off-the-shelf technologies is often discussed in terms of “stabilization wedges,” a concept popularized by Princeton researchers Steven Pacala and Robert Socolow. In a widely cited paper, Pacala and Socolow outline 15 policy options (wedges) each of which could lower global emissions by 1 gigaton in 2050 or by 25 gigatons from 2004 to 2054.⁷²

One of the options is to produce 34 million barrels of ethanol a day – “about 50 times larger than today’s [2004’s] production rate, almost all of which can be attributed to Brazilian sugar cane and United States corn.” The ethanol wedge, they estimate, would require 250 million hectares of high-yield plantations by 2054, “an area equal to about one-sixth of the world’s current cropland.” *One-sixth of the world’s current crop land!*

It doesn’t take military intelligence to see that “saving the planet” with biofuels could significantly reduce the land area available for food crop production. The world is not well fed now, and the food and feed demands on farmlands are expected to more than double by 2050.⁷³ The potential for disaster is obvious.

⁷⁰ Donald Mitchell, *A Note on Rising Food Prices*, The World Bank Development Prospects Group, July 2008. http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2008/07/28/000020439_20080728103002/Rendered/PDF/WP4682.pdf

⁷¹ Stephen E. Eule, *Climate Change: Scale & Scope of the Challenge to Reduce Global Greenhouse Gas Emissions*, February 2009. http://www.energyxxi.org/images/Uploaded/ClimateScale_ScopePresentation2-2009.pdf

⁷² S. Pacala and R. Socolow, “Review: *Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies*,” *Science*, 13 August 2004, Vol. 305. <http://carbonsequestration.us/Papers-presentations/htm/Pacala-Socolow-ScienceMag-Aug2004.pdf>

⁷³ Dennis Avery, *Biofuels, Food, or Wildlife? The Massive Costs of U.S. Ethanol*, CEI Issues Analysis, September 21, 2006. <http://cei.org/pdf/5532.pdf>

Conclusion

The climate debate suffers from a stupendous lack of balance. The risks of climate change are trumpeted, magnified, and in some cases even invented. The risks of climate change policies are discounted, denied, and, more frequently, ignored. Yet climate change policies have an enormous potential to damage U.S. national security, international stability, and the security of the world's poorest nations. Members of the Committee should ponder these risks before deciding their position on the Kerry-Boxer bill.

Cover photo taken by Bret Stewart.



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