



BRIEF ANALYSIS

No. 527

For immediate release:

Monday, September 19, 2005

Climate Change: Consensus Forming around Adaptation

by H. Sterling Burnett, Ph.D.

A consensus is forming concerning the appropriate response to global warming. While scientists continue to debate the extent to which humans are responsible for rising average global temperatures, a growing number of economists and policy experts have concluded that the best response to climate change is to adapt by investing resources in more pressing problems.

Recent studies indicate that the cost of mitigating climate change by reducing greenhouse gas emissions far exceeds the benefit. Rather than create new problems, climate change is projected to exacerbate existing ones, so the world is much better off adapting, while reducing climate sensitive hazards in vulnerable regions.

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Adapting to Climate Change. Climate change is expected to increase problems such as malaria, hunger, water shortage and coastal flooding. In a series of studies, Indur Goklany of the U.S. Department of Interior's Office of Policy Analysis examined the relative benefits and costs of mitigating carbon emissions versus adapting to climate change. He concludes that in some cases mitigation has small benefits, but that adaptation can produce the same or greater benefits at a fraction of the cost.

Among the mitigation scenarios Goklany compared to adaptation:

- Meeting the carbon dioxide (CO₂) emissions reductions required by the Kyoto protocol — an average for developed economies of 5 percent below 1990 levels by 2012 — carries an estimated total cost of more than \$165 billion annually (in 2003 dollars).
- While Kyoto will not halt the increase in the level of atmospheric CO₂, more aggressive proposals to

stabilize it at 550 parts per million (ppm) — which is higher than today — would cost trillions of dollars.

- By contrast, a multi-pronged effort of “focused adaptation” — to solve the problems climate change is expected to exacerbate — would cost approximately \$10 billion annually.

Reducing Malaria. Up to 8.8 billion people worldwide are expected to be at risk from malaria in 2085. Global warming is projected to contribute about 3 percent (up to 323 million people) of the total, as warming increases the range of malaria-carrying mosquitoes.

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- Meeting the Kyoto protocol's emission reduction targets would reduce the population at risk from malaria by only 0.2 percent.

■ Stabilizing CO₂ emissions at 550 ppm would

reduce the at-risk population a mere 0.4 percent.

- By contrast, an additional \$1.5 billion annual investment in malaria prevention and treatment today would cut the current annual number of deaths due to malaria in half — from more than 1 million to less than 500,000.

Reducing Hunger. Even with population growth, the number of people worldwide at risk of hunger should fall from about 521 million people today to 300 million in 2085, due to continuing increases in agricultural productivity. However, global warming could change weather patterns, modestly reducing the growth of agricultural productivity enough to expose an additional 69 to 91 million people to food shortages.

- Meeting the Kyoto protocol's emission reduction targets would reduce the population facing hunger by approximately 1.5 to 2 percent.
- Stabilizing CO₂ emissions at 550 ppm would reduce potential hunger by approximately 9.7 percent.
- Investing an additional \$5 billion annually to solve agricultural problems in developing countries today

Percent Reduction in Total Population at Risk in 2085			
Risk	Kyoto Protocol	Stabilize CO ₂ 550 PPM*	Focused Adaptation
Malaria	0.2%	0.4%	50%
Hunger	1.5%	9.7%	50%
Coastal Flooding	18.1%	80.1%	~100%

* Parts per million.
Source: Indur M. Goklany, “Living with Global Warming,” National Center for Policy Analysis, Policy Report No. 278, September 2005.

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would cut the population at risk of hunger by 50 percent — beginning today, not in 2085.

Reducing Water Shortages. The 1.75 billion people facing shortages of drinking water today is expected to increase to 6.5 billion by 2085, due to the increasing population of poorer countries lacking basic infrastructure. Global warming may increase that number by nearly 13 percent (862 million) in 2085 — conversely, global warming may have a positive effect, cutting the at-risk population by 37 percent, or 2.4 billion people. The actual effect will depend on the weather-pattern changes that occur with global warming. As a result:

- Meeting the Kyoto protocol's emission reduction targets would, at best, reduce the population facing water shortages by 1 percent — and could, in fact, exacerbate the problem.
- At best, stabilizing CO₂ emissions at 550 ppm could reduce the population facing water shortages by 12 percent, but also threatens to increase the risk of shortages for as many as 2.4 billion people.
- Institutional reforms such as allowing water pricing and transferable water rights could reduce agricultural water use. And just an 18 percent decrease would double the availability of water for nonagricultural uses.

Reducing Coastal Flooding. Today, 10 million people are at risk of coastal flooding, and this number is projected to increase to 13 million by 2085 as coastal populations increase. Global warming is expected to raise sea levels by about 0.5 meters by the end of this century — due to such things as melting ice sheets and thermal expansion — putting an additional 81 million people at risk.

- Meeting the Kyoto protocol's emission reduction targets would cut the increased population at risk from coastal flooding by 18 percent.
- Stabilizing CO₂ emissions at 550 ppm would reduce the increased population at risk by approximately 80 percent.
- On the other hand, investing an additional \$1 billion annually in preventative measures — such as building sea walls and relocating coastal populations — would reduce the people at risk from flooding now and in the future.

Furthermore, technologies devised to solve today's problems would help cope with the same problems tomorrow, whether caused by climate change or not.

Copenhagen Consensus. In 2004, eight world-renowned economists, including three Nobel Laureates, were asked by Danish scholar Bjorn Lomborg 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 of resources were at governments' disposal?" The "Copenhagen Consensus" examined a range of proposals to meet 10 global challenges identified by the United Nations.

Three of the 17 proposals dealt with climate change by reducing CO₂ emissions. They ranked dead last — 15, 16 and 17 — and were categorized as "bad." The panel concluded that the costs of these proposals, including the Kyoto protocol, exceed the expected benefits.

Of the three major climate sensitive hazards analyzed by both the Copenhagen Consensus and Goklany — malaria, hunger and water shortages — the panel concluded that it would be far better to address these problems directly today rather than attempt to stem the rise of greenhouse gases.

Conclusion. Some government officials are beginning to acknowledge that adaptation is a superior response to threats posed by global warming. At the July 2005 G-8 summit, Prime Minister Tony Blair attempted to get the world's industrial powers to agree to stricter limits on greenhouse gases. However, the British House of Lords' economic committee issued a report that concluded efforts to prevent further warming are likely to fail and the costs are likely to be quite high. Accordingly, they argued that it would be beneficial to pay more attention to "adaptation measures," stating that "climate adaptation should become one of the mainstream elements of investment decisions, particularly with respect to infrastructure, coastal housing development and development assistance."

The growing consensus on climate change policies is that adaptation will protect present and future generations from climate-sensitive risks far more than efforts to restrict CO₂ emissions.

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