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## Carbon Cuts Won't Work

**It's time we considered alternatives.**

By Bjørn Lomborg

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When world leaders meet for the climate-change summit in Copenhagen this December, they will make decisions that will affect the world for many generations. Three months before that meeting, there is an alarming absence of serious discussion about what these decisions should be. What passes for debate is usually a shouting match between those who believe that climate change is not real and those who believe that it will end life on Earth. We are all, it seems, either "deniers" or "believers."

The careful work of mainstream climate scientists shows that human activity is warming the planet. I have made that point for more than a decade. But research also suggests that many of the most alarming scenarios depicted in movies and the media—a six-meter wall of water, for instance—are wildly improbable. Moreover, the only policy on offer seems to be one that calls on rich nations to make cuts in carbon emissions (the bigger, the better). But this approach is bound to fail, while other ideas with far greater promise aren't even being considered.

Cutting emissions has failed spectacularly in the past. In Kyoto in 1997, world leaders promised to cut greenhouse-gas emissions 5.2 percent below 1990 levels by 2010, but they will miss that target by as much as 25 percent. Gearing up for the Copenhagen summit, some policymakers are calling for 80 percent cuts over current levels by 2050. There's little reason to think this goal has any more likelihood of being achieved. The U.S. cap-and-trade bill (if it passes the Senate) will do little good for the climate: even if the entire industrialized world enacted the same legislation tomorrow, temperatures would drop by only 0.22 degrees Celsius by 2100.

Likewise, even if all industrialized nations succeeded in meeting the most drastic emissions goals, it would likely come at a huge sacrifice to prosperity. Using carbon cuts to limit the increase in global temperature to 2 degrees Celsius, as promised by the European Union and the G8, would cost 12.9 percent of GDP by the end of the century, according to economist Richard Tol of the Economic and Social Research Institute in Ireland. That's

\$40 trillion a year, or more than \$4,000 for every person, to the end of the century. Yet, such measures would avoid only \$1.1 trillion in damage due to higher temperatures. The cure would be more painful than the illness.

Tol's research, one of a series of papers commissioned by the Copenhagen Consensus Center to explore the benefits and costs of different responses to global warming, might seem at odds with the much-publicized 2006 report by economist Nicholas Stern. That report used lower estimates of the cost of emissions cuts than Tol's report did, and higher estimates of the damages from global warming. Yet Stern has recently accepted that true costs were likely to be twice what he had originally found, which would be on par with Tol's report. Stern's review also estimates a higher economic payoff from emissions cuts than most climate economists do.

On the positive side, two options seem to stand out. One possibility is to make a small investment in climate engineering—ways of artificially lowering the temperature to postpone the rise in temperatures. For instance, automated boats could spray seawater into the air to make clouds whiter, and thus more reflective, augmenting a natural process. Bouncing just 1 or 2 percent of the total sunlight that strikes the Earth back into space could cancel out as much warming as that caused by doubling pre-industrial levels of greenhouse gases. Spending about \$9 billion researching and developing this technology could head off \$20 trillion of climate damage. To put this in context, the U.S. annual budget on climate research is \$6 billion a year: for just 18 months' worth of this spending, we might be able to avoid any additional temperature rise for the rest of the century. Climate engineering would raise ethical and logistical issues that warrant discussion, but we should welcome the possibility of a cheap, effective response to global warming.

Another option is a global agreement on investment in research and development of green-energy sources. To reduce our reliance on fossil fuels, we need much more CO<sub>2</sub>-free energy—in fact, an increase of many hundreds of times today's level of wind, solar, and other technologies. Investing about \$100 billion annually in research into green energy would mean that we could essentially fix climate change within a century or so, with every invested dollar avoiding about \$11 of climate damage.

If instead we embark on a quixotic crusade to cut carbon emissions, we will do ourselves great economic damage without avoiding a harmful rise in temperatures. We should aim to deal with climate change as effectively as we can.

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