

Connecticut Debate Association

January 9, 2010: Joel Barlow High School and King School

Resolved: The US should respond to global warming by instituting a significant reduction in carbon emissions.

Yes: The Transition Can Be Gradual—and Affordable

By ROBERT N. STAVINS, The Wall Street Journal: SEPTEMBER 21, 2009

The world is facing a potential catastrophe from greenhouse-gas emissions. But nations don't have to wreck their economies to avert the crisis.

Critics argue that the legislation passed earlier this year by the U.S. House of Representatives—to cut U.S. emissions 80% below 2005 levels by 2050—will mean big, disruptive changes to our infrastructure and untold economic damage. But they make a couple of basic errors. For one thing, they seem to think we'd have to replace the entire infrastructure quickly, paying trillions of dollars to shift to cleaner power. They also seem to assume that we have to choose between much more expensive energy and no energy at all.

The move to greener power doesn't have to be completed immediately, and it doesn't have to be painful. The right transition plan will increase consumers' bills gradually and modestly, and allow companies to make gradual, well-timed moves.

How would this work? One way is via a combination of national and multinational cap-and-trade systems. Companies around the world would be issued rights by their governments to produce carbon, which they could buy and sell on an open market. If they wanted to produce more carbon, they could buy another company's rights. If they produced less carbon than they needed, they could sell their extra rights. What's more, companies could earn more rights by creating appropriate "offsets" that mitigated their carbon use, such as planting forests. Nations could add carbon taxes to the mix.

The effect would be to send price signals through the market—making use of less carbon-intensive fuels more cost-competitive, providing incentives for energy efficiency and stimulating climate-friendly technological change, such as methods of capturing and storing carbon.

More Efficient

True, in the short term changing the energy mix will come at some cost, but this will hardly stop economic growth. As economies have grown and matured, they have become more adept at squeezing more economic activity out of each unit of energy they generate and consume. Consider this: From 1990 to 2007, while world emissions rose 38%, world economic growth soared 75%—emissions per unit of economic activity fell by more than 20%.

Critics argue we can't possibly increase efficiency enough to hit the 80% goal. In a very limited sense, that's true. Efficiency improvements alone, like the ones that propelled us forward in the past, won't get us where we need to go by 2050. But this plan doesn't rely solely on boosting efficiency. It brings together a host of other changes, such as moving toward greener power sources. What's more, making gradual changes means we don't have to scrap still-productive power plants, but rather begin to move new investment in the right direction.

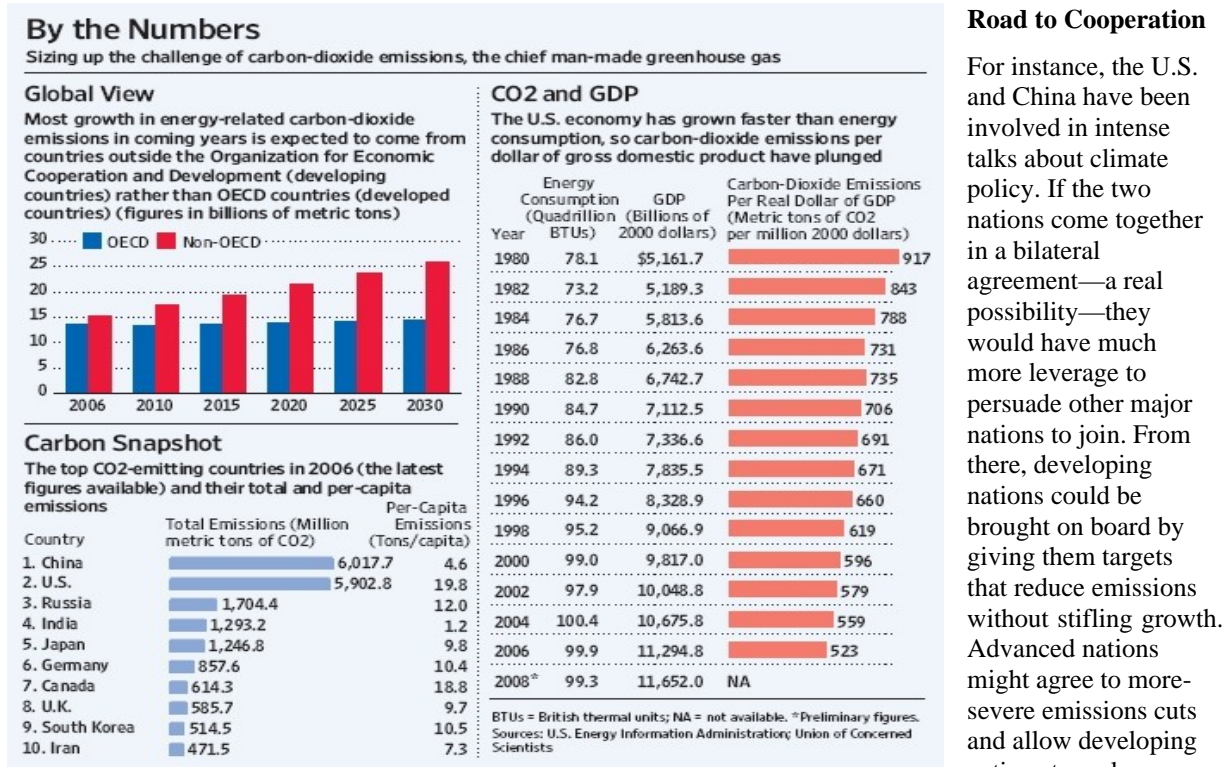
As for how much this will cost, the best economic analyses—including studies from the U.S. Congressional Budget Office and the U.S. Energy Information Administration—say such a policy in the U.S. would cost considerably less than 1% of gross domestic product per year in the long term, or up to \$175 per household in 2020. (That's the cost of one postage stamp per household per day.)

In the end, we would be delaying 2050's expected economic output by no more than a few months. And bear in mind that previous environmental actions, such as attacking smog-forming air pollution and cutting acid rain, have consistently turned out to be much cheaper than predicted.

Critics are wary of raising energy prices, arguing that no nations have grown wealthy with expensive power. But historically, it is the scarcity and cost of energy that have prompted technological changes as well as the use of new forms of power. What's more, critics challenge the price estimates the experts have set out. They say that the

predictions depend on extensive—and unrealistic—cooperation among nations. In particular, they say, developing nations won't sign onto plans for curbing emissions, for fear of losing their economic momentum.

Indeed, we do need a sensible international arrangement in place to achieve low costs, and the economic pain will be much greater if we don't set up an international carbon market. But it can be done. Many nations have already initiated such emissions-control policies. And the world can be brought together in a meaningful, long-term arrangement that is scientifically sound, economically rational and politically pragmatic.



Road to Cooperation

For instance, the U.S. and China have been involved in intense talks about climate policy. If the two nations come together in a bilateral agreement—a real possibility—they would have much more leverage to persuade other major nations to join. From there, developing nations could be brought on board by giving them targets that reduce emissions without stifling growth. Advanced nations might agree to more-severe emissions cuts and allow developing nations to make

gradual cuts in the early decades as they rise toward the world's average per-capita emissions. With the right incentives, developing countries can and will move onto less carbon-intensive growth paths.

The longer we put off serious action, the more aggressive our future efforts will need to be, as greenhouse gases and carbon-spewing capital assets continue to accumulate. Plants built today will determine emissions for a generation. In the steel sector—where plant lifetimes typically exceed 25 years—more than half of all plants in the world are now less than 10 years old. The picture is similar in the cement industry, as well as more broadly throughout the economy. For every year of delay before moving to a sustainable emissions path, the global cost of taking necessary actions increases by hundreds of billions of dollars.

Reducing Costs

Critics argue that we can afford to wait because the world of tomorrow will be wealthier and better able to absorb the costs. But acting sooner, such as by adopting the emission caps proposed in the U.S. House legislation, will lower the ultimate costs of achieving the target, because there will be more time allowed for gradual transition—which is what keeps costs down. Perhaps most important, the costs of failing to take action—the damages of climate change—would be substantially greater.

Getting serious about climate change won't be free, and it won't be easy. But if state-of-the-science predictions about the consequences of continued inaction are correct, the time has come for meaningful and sensible action.

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No: Alternatives Are Simply Too Expensive

By STEVEN F. HAYWARD, The Wall Street Journal, SEPTEMBER 21, 2009

The U.S. and Western Europe can point to a remarkable achievement over the past 40 years: significant reductions in air pollution with only a modest effect on our economic growth and prosperity. So, why can't we expect to do the same with greenhouse-gas emissions?

Greenhouse gas isn't a traditional air-pollution problem. It is an energy-use problem, and that makes a world of difference. Traditional air pollution is an unwanted byproduct. Reducing it does not require any constraint on fossil-fuel use. Indeed, over the past few decades, we've doubled consumption of some fossil fuels while making huge cuts in pollution.

Carbon dioxide, however, is the *result* of complete fuel combustion. Apart from still-unproven technologies, there's no way to remove it from the process. The only way to reduce emissions is to burn less fuel, which means less energy output.

So, to meet the target the climate campaigners have set, the U.S., Europe and Japan will have to replace virtually their entire fossil-fuel energy infrastructure. For the U.S., the 80% target means reducing fossil-fuel greenhouse-gas emissions to a level the nation last experienced in 1910. On a per-capita basis, we'd have to go back to the level of about 1875.

It is not even clear the goal of replacing fossil fuels can be accomplished at *any* cost, a point the International Energy Agency raised in its most recent annual energy forecast: "Even leaving aside any debate about the political feasibility of the 450 Policy Scenario, it is uncertain whether the scale of the transformation envisaged is even technically achievable, as the scenario assumes broad deployment of technologies that have not yet been proven. The technology shift, if achievable, would certainly be unprecedented in scale and speed of deployment."

The basic problem is that current and proposed alternatives—solar, wind, biofuels, hydrogen, more nukes—are much more expensive than fossil fuels. Credible estimates for implementing low or noncarbon energy in the U.S. over the next generation start in the low trillions of dollars. Reasonable people will argue how much this will pinch economic growth, but no one can doubt that the sign will be negative.

The Master Resource

Why? Energy is not like other goods that can be substituted or done without. It has rightly been called the master resource, because it is fundamental to everything else in the economy. There are no examples of a nation that grew wealthy on expensive energy.

True, we have a track record of success in this area. Over the past few decades, the U.S. has become more carbon-efficient while boosting its economic growth. But, for all our efforts, emissions keep going up. Hitting the 80% target by 2050 would mean roughly tripling our efficiency improvements and sustaining them for years to come—surely an impossible feat.

Maybe there will be some energy-technology breakthroughs, but even if so the cost to the economy will still be very large. Power plants, refineries and transmission grids are long-lasting assets, so a rapid switch to new technology will mean retiring assets before their useful life is over and diverting trillions in capital from other sectors. It is the equivalent of replacing your car, all of your household appliances, and your roof to boot, before they are worn out. This will obviously affect other consumption significantly.

Some climate campaigners argue for making gradual changes, using methods like trading licenses to produce carbon. But those plans are based on extremely rosy predictions about how much we can achieve and how much they'll cost. The optimistic price estimates in the Waxman-Markey bill, for instance, assume we'll set up an international system to trade offsets. This free market, the thinking goes, will help keep energy costs relatively steady and protect U.S. consumers from much hardship.

But the obstacles to getting an international system in place are huge—if not insurmountable. Already, Australia, New Zealand and Russia are showing signs of backing out of the existing emissions-cutting framework. The diplomatic house of cards can't withstand further gusts of national self-interest.

Then there's problem of developing nations. If the world is going to hit the 80% target, nations like China and India need to be held to big emissions cuts. Why? Even if the U.S. and other industrialized nations somehow achieved the 80% reduction target, it would have virtually no climate benefit because of soaring emissions from

developing nations. As the International Energy Agency concluded, the major nations in the Organization for Economic Cooperation and Development "alone cannot put the world onto the path to 450-ppm trajectory, *even if they were to reduce their emissions to zero*" (emphasis added).

A Slim Chance

And the chances of getting emerging economies on board with an ambitious emissions plan are slim to none. Yes, world-wide treaties have been hammered out in the past to curb pollution. But, once again, things are different where energy is concerned. Developing nations need to bring huge new amounts of energy online over the next 40 years; is there any realistic chance they will adopt expensive energy on a scale that even rich nations can't afford?

Proponents suggest that we give developing nations lower goals to start with, to help them catch up to the rest of the world. But some of the biggest developing nations—and biggest greenhouse-gas emitters—have indicated they won't accept *any* kind of cap. For one, India has been pretty straightforward for a long time: They'll think about emissions limits when they are as wealthy as the industrialized world is today. How many times do India and China have to say "no" to emissions limits before we believe them?

Finally, the idea that we must act now to avoid bigger costs down the road just doesn't hold water. Simply put, the world of tomorrow will be considerably richer than today—and much better able to absorb the costs of climate change. Yale University's William Nordhaus, one of the top climate economists, thinks it is sound to allow about half or more of the prospective damage from climate change to simply occur—since the world 40 or 60 years from now will be in a much better situation to handle the economic effects.

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Trusting Nature as the Climate Referee

By JOHN TIERNEY, The New York Times, December 15, 2009

Imagine there's no Copenhagen.

Imagine a planet in which global warming was averted without the periodic need for thousands of people to fly around the world to promise to stop burning fossil fuels. Imagine no international conferences wrangling over the details of climate policy. Imagine entrusting the tough questions to a referee: Mother Earth.

That is the intriguing suggestion of Ross McKittrick, an economist at the University of Guelph in Ontario who, like me, is virtuously restricting his carbon footprint by staying away from Copenhagen this week. Dr. McKittrick expects this climate conference to yield the same results as previous ones: grand promises to cut carbon emissions that will be ignored once politicians return home to face voters who are skeptical that global warming is even a problem.

To end this political stalemate, Dr. McKittrick proposes calling each side's bluff. He suggests imposing financial penalties on carbon emissions that would be set according to the temperature in the earth's atmosphere. The penalties could start off small enough to be politically palatable to skeptical voters.

If the skeptics are right and the earth isn't warming, then the penalties for burning carbon would stay small or maybe even disappear. But if the climate modelers and the Intergovernmental Panel on Climate Change are correct about the atmosphere heating up, then the penalties would quickly, and automatically, rise.

"Either way we get a sensible outcome," Dr. McKittrick argues. "The only people who lose will be those whose positions were disingenuous, such as opponents of greenhouse policy who claim to be skeptical while privately believing greenhouse warming is a crisis, or proponents of greenhouse gas emission cuts who neither understand nor believe the I.P.C.C. projections, but invoke them as a convenient argument on behalf of policies they want on other grounds even if global warming turns out to be untrue."

Dr. McKittrick is in the skeptical camp himself and has published critiques of the past warming trends reported at weather stations on the earth's surface (like the data now being re-examined after the much-publicized hacking of e-mail messages and files of British climate scientists). But he says that temperature readings from satellites and weather balloons are trustworthy enough to use for monitoring future trends.

Specifically, he proposes tying carbon penalties to the temperature of the lowest layer of the atmosphere (called the troposphere, which extends from the surface of the earth to a height of about 10 miles). He suggests using the readings near the equator because climate models forecast pronounced warming there.

These temperature readings could be incorporated into the kind of cap-and-trade system being negotiated in Copenhagen, which is intended to impose limits on the amount of greenhouse emissions. If the atmosphere warmed, the cap would be tightened to lower greenhouse emissions; if it cooled, the cap would be loosened.

But it would be even better, Dr. McKitrick says, to use the temperature readings as the basis for a carbon tax instead of a cap-and-trade system. Like many economists and environmentalists, he argues that the carbon tax would be more effective at reducing emissions because it is simpler, more transparent, easier to enforce and less vulnerable to accounting tricks and political favoritism.

The carbon tax might start off at a rate that would raise the cost of a gallon of gasoline by a nickel — or, if there were political will, perhaps 10 or 15 cents. Those numbers are all too low to satisfy environmentalists worried about climate change.

But if the climate models are correct, Dr. McKitrick calculates, within a decade his formula would cause the tax to at least double and possibly sextuple — with further increases on the way if the atmosphere kept heating. The prospect would give immediate pause to any investors trying to decide today what kind of cars, power plants and other long-range energy projects to finance. To estimate future profits, they would need to study climate.

“The best results will accrue to firms incorporating the most accurate climate forecasts into their decision making, precisely the kind of forward-looking behavior environmentalists want to encourage,” Dr. McKitrick writes. “Consequently, it’s not the case that we have to wait until it is ‘too late’ to respond to global warming. The market will force investors to make the best possible use of information and to press for improvements in climate forecasting in the process.”

The revenues from a carbon tax might be refunded to the public, as Dr. McKitrick and others have suggested, or the money might be spent developing low-carbon energy sources, as recommended in the journal *Nature* by two economists from McGill University, Isabel Galiana and Christopher Green. After comparing different climate-change strategies for the Copenhagen Consensus Center, they recommend committing at least \$100 billion per year to energy research and development by dedicating the revenues from a global carbon tax.

It would take some diplomacy to work out a formula for tying carbon penalties to temperatures — which temperatures to count, how much to weight trends. Some researchers question whether the tropical atmosphere is the best measure, and they fear that climate science could become even more politicized if it is directly tied to taxes. (For reactions to Dr. McKitrick’s proposal, go to nytimes.com/tierneylab.)

But negotiating a temperature tax wouldn’t necessarily be any more complicated or acrimonious than the emission cuts being debated in Copenhagen. Instead of arguing about the reliability of forecasts by computer modelers, instead of issuing competing prophecies, both sides would have to abide by what actually happens in the atmosphere.

By starting off with a small penalty for carbon emissions, politicians wouldn’t have to take the blame for imposing immediate pain on the public. The pain, if it came, wouldn’t be felt until later — and at that point they wouldn’t have to take direct responsibility anyway.

They wouldn’t have to vote for higher taxes and utility bills. They could blame it all on Mother Earth, and she never has to worry about being re-elected.

Cap-and-Trade's Unlikely Critics: Its Creators

Economists Behind Original Concept Question the System's Large-Scale Usefulness, and Recommend Emissions Taxes Instead

By JON HILSENATH, The Wall Street Journal, August 13, 2009

In the 1960s, a University of Wisconsin graduate student named Thomas Crocker came up with a novel solution for environmental problems: cap emissions of pollutants and then let firms trade permits that allow them to pollute within those limits.

Now legislation using cap-and-trade to limit greenhouse gases is working its way through Congress and could become the law of the land. But Mr. Crocker and other pioneers of the concept are doubtful about its chances of success. They aren't abandoning efforts to curb emissions. But they are tiptoeing away from an idea they devised decades ago, doubting it can work on the grand scale now envisioned.

"I'm skeptical that cap-and-trade is the most effective way to go about regulating carbon," says Mr. Crocker, 73 years old, a retired economist in Centennial, Wyo. He says he prefers an outright tax on emissions because it would be easier to enforce and provide needed flexibility to deal with the problem.

The House has passed cap-and-trade legislation. The Senate could take up a measure in September. But Republicans strongly oppose the idea -- arguing that it is a tax that will hurt the economy -- and Democrats are struggling to come up with an approach that apportions the inevitable cost of a cap-and-trade system among different interests, from consumers to utilities to coal plants.

Mr. Crocker, who went on to become a professor at the University of Wyoming, is one of two economists who dreamed up cap-and-trade in the 1960s. The other, John Dales, who died in 2007, was also a skeptic of using the idea to tame global warming. "It isn't a cure-all for everything," Mr. Dales said in an interview in 2001. "There are lots of situations that don't apply."

Mr. Crocker sees two modern-day problems in using a cap-and-trade system to address the global greenhouse-gas issue. The first is that carbon emissions are a global problem with myriad sources. Cap-and-trade, he says, is better suited for discrete, local pollution problems. "It is not clear to me how you would enforce a permit system internationally," he says. "There are no institutions right now that have that power."

Europe has embraced cap-and-trade rules. Emissions initially rose there because industries were given more permits than they needed, and regulators have since tightened the caps. Meanwhile China, India and other developing markets are reluctant to go along, fearing limits would curb their growth. If they don't participate, there is little assurance that global carbon emissions will slow much even if the U.S. goes forward with its own plan. And even if everyone signs up, Mr. Crocker says, it isn't clear the limits will be properly enforced across nations and industries.

The other problem, Mr. Crocker says, is that quantifying the economic damage of climate change -- from floods to failing crops -- is fraught with uncertainty. One estimate puts it at anywhere between 5% and 20% of global gross domestic product. Without knowing how costly climate change is, nobody knows how tight a grip to put on emissions.

In this case, he says Washington needs to come up with an approach that will be flexible and easy to adjust over a long stretch of time as more becomes known about damages from greenhouse-gas emissions. Mr. Crocker says cap-and-trade is better suited for problems where the damages are clear -- like acid rain in the 1990s -- and a hard limit is needed quickly. "Once a cap is in place," he warns, "it is very difficult to adjust." For example, buyers of emissions permits would see their value reduced if the government decided in the future to loosen the caps.

Joseph Aldy, a White House adviser on the environment, calls the argument a "straw man," saying a market-based cap is being designed with built-in flexibility. For example, a price ceiling on carbon allowances could prevent the program from becoming too big a burden on households and businesses and a floor would prevent a big loss in the value of permits. And unlike a tax, he says, a cap ensures carbon reduction.

Pollution has been a puzzle for economists for decades. In the early 1900s, a British economist named Arthur Pigou proposed taxes on polluters. Ronald Coase, a University of Chicago economist, won a Nobel Prize for his 1960 book, "The Problem of Social Cost," which showed how market economics could address pollution problems.

In 1966, Mr. Crocker, still struggling to finish his thesis at the University of Wisconsin at Milwaukee, sketched out the cap-and-trade idea to deal with air pollution produced by fertilizer plants in Florida. Mr. Crocker first pitched the idea of trading at a conference in Washington. He had been asked to attend as a stand-in for a professor who couldn't go and present data on the Florida plants. He didn't have all the data yet and came up with the theory instead. Working separately, Mr. Dales in 1968 published a book called, "Pollution, Property and Prices," which used the same approach for farmers who were polluting Canadian lakes and streams.

Their logic went like this: When governments capped smog emissions from power plants or the runoff of pesticides by farmers into local streams, it was indirectly putting a value on these emissions. Some farmers and some power plants could reduce these emissions more efficiently than others, and some placed a higher value on them than others. By setting caps on pollution but then allowing the polluters to trade these rights, the economists theorized, the polluters themselves would figure out the cheapest way to meet new targets.

Another economist, David Montgomery, advanced their ideas in the 1970s, converting their theories into the complex mathematical formulas to demonstrate that they weren't merely an idea but were also economically feasible. Mr. Montgomery, too, is a skeptic of cap-and-trade for greenhouse gases. He prefers an outright tax. "You get huge swings in carbon prices with a cap, which creates more volatility and uncertainty for business," he says.

Cap-and-trade got a big boost in 1990, when President George H.W. Bush signed amendments to the Clean Air Act that imposed new limits on emissions of sulfur dioxide, which produces acid rain. Economists said the move let producers save billions of dollars and still hit their targets.

Still, Messrs. Dales and Crocker never got much personal mileage out of the idea. Mr. Crocker says he had such a hard time getting funding to further his research on the subject that he moved on to other matters. So far, he has stayed on the sidelines in the debate about cap-and-trade.

Biggest Obstacle to Global Climate Deal May Be How to Pay for It

By [ELISABETH ROSENTHAL](#), The New York Times, October 15, 2009

As world leaders struggle to hash out a new global climate deal by December, they face a hurdle perhaps more formidable than getting big polluters like the United States and China to reduce greenhouse gas emissions: how to pay for the new accord.

The price tag for a new climate agreement will be a staggering \$100 billion a year by 2020, many economists estimate; some put the cost at closer to \$1 trillion. That money is needed to help fast-developing countries like India and Brazil convert to costly but cleaner technologies as they industrialize, as well as to assist the poorest countries in coping with the consequences of [climate change](#), like droughts and rising seas.

This financing is an essential part of any international climate agreement, negotiators and scientists say, because developing nations must curb the growth of their emissions if the world is to limit rising temperatures. Based on calculations by the International Energy Agency for 2005 to 2030, 75 percent of the growth in energy demand will come from the developing world.

Many developing countries have made it clear that they will not sign a treaty unless they get money to help them adapt to a warmer planet. Acknowledging that a new treaty needs unanimity for success, industrialized nations like the United States and those in Europe have agreed in principle to make such payments; they have already been written into the agreed-upon structure of the treaty, to be signed in Copenhagen in December. But to date there is no concrete strategy to raise such huge sums. There is not even agreement about which nations should pay or in what proportion.

"The level of ambition in funding is not matching up to the sense of urgency everyone now has," said Luiz Alberto Figueiredo Machado, the lead climate negotiator for Brazil, which hopes to get financing to preserve its [rain forest](#). He added, "Financing and an inadequate level of financing are a deal breaker for us."

At a [United Nations summit meeting in New York on climate change](#) and at the [Group of 20](#) meetings in Pittsburgh last month, national leaders, including [President Obama](#) and President [Hu Jintao](#) of China, stressed the urgency of combating climate change. But they offered no new proposals for financing and put no new cash on the table.

Perhaps even more troublesome, the [United Nations](#) Adaptation Fund, which officially began operating in 2008 to help poor countries finance projects to blunt the effects of global warming, remains an empty shell, largely because rich nations have failed to come through with the donations they promised. The fund now holds about \$18 million, a tiny fraction of what it was supposed to have, according to fund officials.

United Nations officials regard the failure to come up with financing as a blind spot that jeopardizes a new global treaty. "How important is this? It is critical," said Yvo de Boer, executive secretary of the [United Nations Framework Convention on Climate Change](#), which oversees the treaty negotiations.

The United States and other industrialized nations will certainly have to contribute heavily to any financing program. But the global recession has tightened purse strings, and nations are having trouble backing their good intentions and previous pledges with cash.

The money woes of the United Nations fund, set up as an exemplar of international cooperation in addressing climate change, are symptomatic. The fund was supposed to benefit from two income streams: the first is a 2 percent tax on carbon credits sold in the United Nations carbon trading system, in which rich nations invest in green projects in the developing world to offset emissions at home; the second is voluntary donations by richer countries. The 2 percent tax is expected to generate at least \$1.6 billion by 2012. But the donations have not materialized, Mr. de Boer said.

A number of proposals are on the table to generate money to help developing countries rein in future emissions as well as to adapt to the effects of climate change. But most remain far from producing money.

In September, the European Union offered a plan in which “industrialized nations and economically more advanced developing countries” would provide \$33 billion to \$74 billion a year to help poor countries adapt, with the European Union’s share placed at \$3 billion to \$22 billion. The climate bill passed by the House in the United States in June would auction emissions permits, and donate a portion of revenues to help poor countries. The climate legislation is now before the Senate.

Connie Hedegaard, the Danish minister of climate and energy, who will be chairwoman of the Copenhagen meeting, recently suggested imposing a new tax on shipping fuel or on airline flights — which both cause substantial emissions — to finance adaptation in poor countries. “We need more innovative financing,” Ms. Hedegaard said in an interview. “The G-20 should come up with fast-track financing that would send a very strong signal that developed countries are serious about this.”

Many poor countries say they are increasingly skeptical, having witnessed the way past promises evaporated when the economy soured. They are likewise nervous about market-based solutions, like using a portion of revenues from carbon credits. “Developing countries are not convinced that the market will find them the \$100 billion they need,” said Mr. Figueiredo Machado, Brazil’s climate negotiator. “They want guarantees.”

When Germany and France suggested at a recent Group of 20 meeting in London that they would contribute to the fund by reducing other types of aid, India rebelled. Financing to help poor countries adapt to climate change or to reduce emissions “should not be at the cost of other monetary support,” said Pranab Mukherjee, India’s finance minister.

Equally contentious is the issue of which countries should give, and which should receive. Should the contributors be only industrialized nations, or should they include rapidly developing — and increasingly wealthy — polluters like China? Xie Zhenhua, the lead Chinese climate negotiator, speaking at a news conference in New York last month, said the United Nations should not expect China to pay. “Global warming is a result of CO2 from developed countries during their industrialization,” Mr. Xie said. “China is one of the countries that has borne the brunt of that.”

Climate Change: A Perilous Path

Bjorn Lomborg, Forbes.com, 09.21.09, 12:00 AM ET

Evidence is growing that relatively cheap policies like climate engineering and non-carbon energy research could effectively prevent suffering from global warming, both in the short and long term. Unfortunately, political leaders gathering at a special meeting of the United Nations in New York this week will focus on a very different response.

They will make many of the most important decisions on how to respond to climate change over the next decade. They are expected to thrash out political disputes like how much carbon rich and poor nations should agree to cut. The real question that must be addressed is: Do we want to be the generation that promised so much but failed to solve global warming? We will not be judged by our descendants on our rhetoric, nor on the scale of our promises. We will be judged on what we deliver.

We have failed to rein in emission rises despite sincere and well-meaning promises made in Kyoto in 1997 and earlier, because carbon cuts are expensive to enact. That problem is only going to grow as our promises become more ambitious.

Research by climate economist Professor Richard Tol shows that carbon cuts big enough to keep temperature rises lower than 2 degrees Celsius (3.6 degrees Fahrenheit)--a target that the G-8 and many others argue is necessary--could cost a staggering 12.9% of global GDP in 2100. That is the equivalent of \$40 trillion a year. Available estimates show that the welfare loss induced by global warming will be just \$3 trillion per year by 2100. For each dollar spent on global carbon cuts, we buy two cents worth of avoided climate damage. The solution is far more costly than the problem.

A global deal based around carbon cuts is expected to include a lot of spending from rich countries to help poor nations to prepare for global warming. There is a great danger that this will actually be diverted away from saving lives that are at risk from *today's* problems. Developed countries seem set to spend much money to save few lives in the distant future, instead of combating malnutrition, malaria, or communicable diseases today. It is amoral to build a dam to avoid flooding in 100 years, when the people living beside that dam are starving today. We should be helping communities become stronger today and better able to prepare for global warming in 50 years.

Little wonder that five of the world's top economists--including three Nobel laureates--who gathered this month for the Copenhagen Consensus on Climate to evaluate policy responses to climate change found that global carbon taxes are a "very poor" option.

Yet, carbon cuts have become the mantra of the political elite. We need another way that is politically feasible, economically responsible and morally right. World leaders should focus on the investments that the economists for the Copenhagen Consensus project found most promising.

Imagine we could fix climate for the next hundred years for less than what the U.S. spends on climate research in a year. Research from Eric Bickel of the University of Texas highlights the potential of climate engineering to do just that.

Bickel explores the costs and benefits of so-called marine cloud whitening, a well-established tech-proposal in which boats would spray seawater droplets into clouds above the sea to make them reflect more sunlight back into space--augmenting the natural process where evaporating ocean sea salt helps to provide tiny particles for clouds to form around. He concludes that about \$9 billion spent developing this technology might be able to cancel out this century's global warming. The benefits--from preventing the temperature increase--would add up to about \$20 trillion. We should research this technology today to identify its limitations, risks and potential as a stop-gap measure that could buy us a century's delay in warming.

To sustainably reduce temperature rises, though, we need better non-carbon-based technology options. Research by economist Chris Green from McGill University shows that non-fossil sources like nuclear, wind, solar and geothermal energy will--based on today's availability--get us less than halfway toward a path of stable carbon emissions by 2050, and only a tiny fraction of the way towards stabilization by 2100.

Policy makers should abandon carbon-reduction negotiations and make agreements to seriously invest in research and development. About \$100 billion spent annually on non-carbon-based energy research could essentially stabilize our emissions and get temperature reductions under control within a century or so. Green conservatively concludes that the benefits of such an investment--from reduced warming and greater prosperity--would bring about \$11 worth of climate damage prevention for every \$1 invested.

Because research spending would be much cheaper than carbon-emission cuts, there would be a much higher chance of political agreement, and a much higher probability of the promises being enacted.

Many of us fear inaction on global warming. But we should equally fear continuing down the perilous path of promising costly action that will either fail to be enacted, or be more harmful than global warming itself. We have within our grasp alternative policy options that would truly leave the planet in a better state.

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An Affordable Truth

By Paul Krugman, New York Times op-ed, December 7, 2009

Maybe I'm naïve, but I'm feeling optimistic about the climate talks starting in Copenhagen on Monday. President Obama now plans to address the conference on its last day, which suggests that the White House

expects real progress. It's also encouraging to see developing countries — including China, the world's largest emitter of carbon dioxide — agreeing, at least in principle, that they need to be part of the solution.

Of course, if things go well in Copenhagen, the usual suspects will go wild. We'll hear cries that the whole notion of global warming is a hoax perpetrated by a vast scientific conspiracy, as demonstrated by stolen e-mail messages that show — well, actually all they show is that scientists are human, but never mind. We'll also, however, hear cries that climate-change policies will destroy jobs and growth.

The truth, however, is that cutting greenhouse gas emissions is affordable as well as essential. Serious studies say that we can achieve sharp reductions in emissions with only a small impact on the economy's growth. And the depressed economy is no reason to wait — on the contrary, an agreement in Copenhagen would probably help the economy recover.

Why should you believe that cutting emissions is affordable? First, because financial incentives work. Action on climate, if it happens, will take the form of “cap and trade”: businesses won't be told what to produce or how, but they will have to buy permits to cover their emissions of carbon dioxide and other greenhouse gases. So they'll be able to increase their profits if they can burn less carbon — and there's every reason to believe that they'll be clever and creative about finding ways to do just that.

As a recent study by McKinsey & Company showed, there are many ways to reduce emissions at relatively low cost: improved insulation; more efficient appliances; more fuel-efficient cars and trucks; greater use of solar, wind and nuclear power; and much, much more. And you can be sure that given the right incentives, people would find many tricks the study missed.

The truth is that conservatives who predict economic doom if we try to fight climate change are betraying their own principles. They claim to believe that capitalism is infinitely adaptable, that the magic of the marketplace can deal with any problem. But for some reason they insist that cap and trade — a system specifically designed to bring the power of market incentives to bear on environmental problems — can't work.

Well, they're wrong — again. For we've been here before. The acid rain controversy of the 1980s was in many respects a dress rehearsal for today's fight over climate change. Then as now, right-wing ideologues denied the science. Then as now, industry groups claimed that any attempt to limit emissions would inflict grievous economic harm. But in 1990 the United States went ahead anyway with a cap-and-trade system for sulfur dioxide. And guess what. It worked, delivering a sharp reduction in pollution at lower-than-predicted cost.

Curbing greenhouse gases will be a much bigger and more complex task — but we're likely to be surprised at how easy it is once we get started. The Congressional Budget Office has estimated that by 2050 the emissions limits in recent proposed legislation would reduce real G.D.P. by between 1 percent and 3.5 percent from what it would otherwise have been. If we split the difference, that says that emissions limits would slow the economy's annual growth over the next 40 years by around one-twentieth of a percentage point — from 2.37 percent to 2.32 percent. That's not much. Yet if the acid rain experience is any guide, the true cost is likely to be even lower.

Still, should we be starting a project like this when the economy is depressed? Yes, we should — in fact, this is an especially good time to act, because the prospect of climate-change legislation could spur more investment spending.

Consider, for example, the case of investment in office buildings. Right now, with vacancy rates soaring and rents plunging, there's not much reason to start new buildings. But suppose that a corporation that already owns buildings learns that over the next few years there will be growing incentives to make those buildings more energy-efficient. Then it might well decide to start the retrofitting now, when construction workers are easy to find and material prices are low.

The same logic would apply to many parts of the economy, so that climate change legislation would probably mean more investment over all. And more investment spending is exactly what the economy needs.

So let's hope my optimism about Copenhagen is justified. A deal there would save the planet at a price we can easily afford — and it would actually help us in our current economic predicament.

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