



A New Direction for U.S. Climate Policy: Credible Alternatives to Kyoto

By Lee Lane and Samuel Thernstrom

President George W. Bush was widely expected to propose ambitious new initiatives to control greenhouse gas emissions in the State of the Union address on January 23. The week before the speech, his top environmental advisor told a Washington Post columnist that a carbon tax or cap-and-trade system would be “the most elegant” solution to climate change, raising expectations that a proposal along those lines might be forthcoming.¹ In the end, however, the president proposed a remarkably modest (and poorly conceived) initiative to cut gasoline consumption by 20 percent in the next ten years. This was an important lost opportunity for leadership at a crucial juncture.

New federal legislation on climate change is certain to be enacted in the next few years. If President Bush leaves office without convincing Americans that there is a genuinely credible alternative to the Kyoto Protocol—the 1997 international treaty to reduce the developed world’s greenhouse gas emissions—his successor is all but certain to put American climate policy back on the Kyoto path in one form or another. The result will be potentially disastrous for both our economy and, in its own way, the environment. Sacrificing the former for the latter is at least a debatable proposition; committing vast resources in pursuit of politically popular but environmentally meaningless goals would be pure folly.

President Bush’s rejection of the Kyoto Protocol in 2001 was well-publicized, but most Americans are only vaguely familiar with the reasons for that decision or the administration’s alternative policies. Meanwhile, the Protocol remains a favorite of environmental advocates and their political allies, as well as a growing number of rent-seeking businesses that stand to profit under such a system, and America remains an international pariah for its refusal to participate in it. President Bush has been able to prevent ratification of the Protocol, but he has not

made the effort needed to convince people that there is a better way to approach the issue.

Kyoto’s advocates claim that the only possible solution to climate change is an international agreement that requires rapid reductions in greenhouse gas emissions. This intuitively appealing perspective has dominated the public debate in both the United States and Europe. But a successful climate policy requires a much broader and longer-range perspective. The scale of emissions reductions necessary to retard warming significantly is vast, and our ability to achieve such reductions is severely limited by existing technologies and economic realities.

A clearheaded analysis of this problem calls for a greater commitment to pursuing a long-term strategy of success rather than a politically popular quick fix. In truth, if the dire predictions of some scientists are accurate, then the prospects for success may be poor. But if we are to make the most

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of our chances, we must chart our path carefully now. Ironically, the environmental advocates who are most concerned about this issue are almost uniformly pushing policy in the wrong direction, while the much-scorned Bush administration has, at least, the seeds of the right approach. The question now is whether it can make them grow during his remaining time in office.

The Kyoto Problem

Given Kyoto's serious and insurmountable flaws, the unshakable international commitment to the Kyoto approach is one of the greatest obstacles to crafting a successful strategy to combat global warming. Paradoxically, it is President Bush, nearly alone among world leaders, who seems to understand this most clearly—although he has been nearly universally condemned for this insight. Unfortunately, the Bush administration has never capitalized upon this opportunity by making a sufficient effort to change domestic or international opinions on this subject. If the president really wants to overcome the Kyoto problem, he must accomplish two things in his remaining time in office: convince Americans of the futility of the Kyoto approach, and persuade them that an alternative is viable.

The first of those tasks should be easier, of course. Kyoto's numerous flaws are beyond repair. Three critical flaws are well-understood and largely undeniable: it would have been unreasonably expensive for the United States (and several other countries) to meet its targets; it did not (and will not, in any future agreement) require China, India, or other developing nations to reduce their emissions; and even if it was implemented faithfully, its emissions-reduction targets are too low to matter. Kyoto's reach is too short, its grasp too weak, and its costs too high.

Even if the United States had ratified Kyoto in its original, more stringent form, it would have had almost no impact on overall global emissions or temperature trends. Kyoto's basic structure was so unfavorable to the United States that we would have paid a disproportionately large share of the costs. It is unreasonable to expect America to bear such costs when emissions in developing countries remain uncapped—and can be

expected to rise even more rapidly if America's energy-intensive industries are driven overseas.

Without emissions limits for China and India, no Kyoto-style international agreement can be effective—yet adopting such limits is not in those countries' national interests, so it is foolish to expect them to do so. (Indeed, Kyoto's Clean Development Mechanism perversely reinforces their incentives to avoid accepting emissions limits in the next commitment period.) Having agreed in Kyoto that the developing world has no obligation to reduce its emissions, it will be

nearly impossible for the developed world to reopen that question in the future.

Any country with a buoyant economy and large reserves of coal will pay a disproportionately high price for agreeing to Kyoto-style emissions limits. Serious caps would be very costly for the United States, Australia, Canada, China, India, and Russia. There is growing pressure on these countries to reduce their emissions, but little chance they will agree to do so.² China, India, and Russia are especially unlikely to make economic sacrifices in the name of climate policy. The growth in their emissions will overwhelm any

reductions that may occur elsewhere, and those countries will inevitably become havens for energy-intensive industries fleeing carbon-constrained countries.

Meanwhile, among the countries that have accepted emissions caps under Kyoto, progress toward meaningful emissions reductions has been hesitant at best. Many European countries (and possibly Japan) will not meet their Kyoto targets; some will miss them by wide margins. Others may only meet them by buying large numbers of "hot air" credits from Russia—an act of pointless symbolism, since Russian credits are the result of natural changes in the post-Soviet economy rather than efforts to cut emissions. The net environmental benefit of Kyoto, therefore, will be nearly zero.

Perhaps the most fundamental of Kyoto's problems is its surrender to the politically irresistible desire for a quick fix (or, at the very least, tangible signs of short-term progress). Climate change is a challenge that must be met over the course of the next century, not the next few years; the scale of technological transformation that would be required to stabilize atmospheric concentrations of greenhouse gases can only be accomplished over the course of decades. The critical issue for policymakers,

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therefore, is not how *quickly* emissions can be cut, but how *much* they can be reduced in the long run. (Or, failing that, what else can be done to adapt to warming or prevent it through other means, such as geoengineering.)

Short-term progress in this undertaking is not worthless, naturally, but in the larger context, the modest improvements that Kyoto-style emissions caps might produce will not matter much unless they also inspire much greater progress in the long run—and there is good reason to believe they will not. Contrary to popular misconceptions, the two goals—short-term progress and long-term success—are not synonymous. Refocusing American—and, conceivably, international—attention on the more fundamental questions involved in the long-term challenge of climate change could still be one of President Bush's most important accomplishments if he makes it a priority in his final two years in office.

Emissions Reductions: Quick and Dirty or Slow and Clean?

Are rapid emissions reductions the best way to stop global warming? Most environmental advocates may consider that a silly question—but not all. More than a few serious scholars have looked at the strategic questions involved in meeting the real, long-term challenge of climate change and concluded that a very different focus is needed. (Although they may also advocate short-term emissions reductions, they must admit that a long-term focus is truly essential.) It is this line of thought that should guide American climate policy today.

What changes in energy production and consumption would come from short-term emissions caps of the sort that the Kyoto Protocol or the McCain-Lieberman bill would require? In general, they would be fairly modest. Carbon-intensive fuels such as coal and gasoline would cost more, so we would see a shift toward greater use of slightly cleaner fuels such as natural gas, and somewhat greater use of hybrid or other fuel-efficient vehicles. Renewable (and nuclear) energy sources might get a small boost, and some consumers and businesses might focus modestly greater efforts on energy conservation. (In fact, these trends are already apparent, and federal policies are promoting them. For instance, the

president's latest budget proposal shifts solar-energy funding from research and development [R&D] to tax credits for consumers, thus subsidizing the use of existing solar panels rather than the long-term development of new, more cost-effective technologies.)

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Environmental advocates will find these changes pleasing. But will they really help us meet the long-term challenge of climate change? We fear not. These efforts may be worthwhile, but the real question is whether they will help develop the breakthrough clean-energy technologies that will be needed to make dramatic emissions reductions possible (and cost-effective) in the coming decades—and the answer to that is no. Emissions caps are likely to prompt businesses to switch from using one existing technology to another, rather than to develop radically new technologies—and the entire challenge of climate change, at this stage, is in technology development, not deployment.

As University of Maryland economist Jae Edmonds has argued, emissions caps are very effective at getting clean-energy technologies off the shelf, but they are not good at putting new technologies *on* the shelf in the first place. Unfortunately, the

latter is the vital challenge for climate change. Making long-term breakthroughs in how we generate energy is what is needed, not shifts among (or incremental improvements to) different existing technologies.

The development of new clean energy technologies is also the only possible answer to the Kyoto problems. Only new technologies that dramatically lower the cost of emissions abatement will make real reductions possible for most major emitters. When these technologies become available, the challenges of developing and implementing an effective international agreement to reduce global emissions will be vastly reduced. Until these technologies are developed, efforts to compel rapid emissions reductions are essentially futile.

Environmental advocates will object that a strategy focused on long-term technological development will not sufficiently reduce near-term emissions. That is true—but no politically feasible plan does. Even the most aggressive version of the McCain-Lieberman bill would have reduced global greenhouse gas emissions by

a mere 2.5 percent by 2025, not even enough to noticeably lower the global emissions growth rate. And that bill was abandoned, deemed too expensive to be politically viable.

President Bush has been roundly condemned for emphasizing the importance of technological development. These critics are wrong—and wrong to overlook the flaws in his current efforts. What is needed now is a more robust effort to develop climate technologies, not a greater focus on short-term emissions trends. There are real questions about how to best do that, but the options are clear enough.

Conservatives may be inclined to believe that such research is best carried out by the private sector. And indeed, that is generally preferable—but perhaps not in this case. The kind of fundamental breakthroughs in basic science that are needed for climate technologies are not likely to come from the private sector. Most companies invest their resources in developing technologies that can be brought to market quite quickly—within, say, five years. These are typically incremental improvements over existing technologies, not radically new ways of generating clean energy. Much longer-term projects are significantly riskier, making them poor candidates for substantial private-sector investments.

The private sector's reluctance to pursue an ambitious R&D agenda is likely to be especially strong when it comes to the kind of research needed to reduce greenhouse gas emissions on a large scale. Since no large emissions-free energy sources lie just over the horizon,³ successful innovation in this area will require unusually high risks and long delays. Because developing these technologies will entail breakthroughs in basic science, much of the most essential work will be ineligible for patent protection, making this an especially unattractive option for private-sector R&D.⁴ Emissions caps cannot eliminate these obstacles, and as a result, they will only generate modest increases in private-sector climate R&D.⁵ Instead, emissions caps are likely to spur substitution among existing energy sources or incremental improvements to current technologies, rather than create fundamental R&D breakthroughs.⁶

Reforming the Federal Climate R&D Program

If the private sector is ill-equipped to conduct this basic science research, the obvious alternative is federal research. The president has embraced that strategy, but

he has not done so aggressively enough to make it credible. Ironically, the president's critics concentrate so heavily on attacking him for his refusal to embrace short-term emission cuts they have usually missed or misdiagnosed the serious shortcomings in the administration's Climate Change Technology Program (CCTP). The president devoted some attention to crafting this policy in the beginning of his first term but has largely ignored it since then, leaving it to drift in a sea of bureaucratic malaise.

Although the president has supported development of some specific technologies, such as hydrogen fuel cell vehicles, the federal climate-related R&D effort is seriously flawed. Three problems plague the CCTP: its research agenda is insufficiently ambitious and too risk averse, given the need for such large scale improvements in technology; its strategic planning process is starved for resources; and its influence on program priorities is questionable. (Its funding is probably also too limited in light of the size of the challenge.)

The scope of the CCTP's research deliberately excludes several of the most promising technologies. Ironically, it concentrates excessively on making incremental progress rather than on making the fundamental breakthroughs needed to cope with climate change—thus reproducing the flaws of Kyoto's short-term vision in the very area in which they should be corrected. And the strategic planning process is underfunded and ineffectual.

Incomprehensibly, the CCTP's research agenda excludes technologies that could aid adaptation to climate change, as well as geoengineering technologies that might counteract the effects of continuing greenhouse gas emissions. The latter omission is particularly troubling because if sudden large-scale and highly damaging consequences of climate change were to appear, solar radiation management (or some other form of geoengineering) would be the only option. It seems prudent to do R&D to learn more about potential costs, benefits, and side effects of the technologies that might be deployed under these conditions. It is hard to understand the administration's refusal to explore this option, as well its refusal to develop adaptation technologies and strategies. This may be due to fear that working on these approaches would be seen as admitting that the administration has failed to stop global warming. Whatever the reason, these decisions should be reconsidered.

The administration's R&D program almost certainly requires reorganization. Many scientists and engineers have voiced these criticisms, and thoughtful members of

Congress such as Representative Tom Davis (R-Va.) have offered bipartisan proposals to reorganize these programs to address this problem. So far, however, the Bush administration, siding with turf-conscious bureaucrats at the Department of Energy, has rejected all such reforms.

One option would be to create a new R&D organization modeled on the Defense Advanced Research Projects Agency (better known as DARPA). This would not be a panacea, but if properly implemented, it might significantly ameliorate some of the known institutional problems with the existing federal program, especially its unambitious style. An independent agency could study solar-radiation management strategies and other geoengineering technologies, as well as strategies to help people here and abroad adapt to, and minimize the damage from, changes in the climate that are already underway.

With additional resources, there could also be opportunities for innovative engagement with the private sector. Environmental advocates think of President John F. Kennedy's challenge to put a man on the moon as a model for the sort of federal climate program they would like to see—a well-funded government-led enterprise—but history offers another model worth considering: in 1714, the British government offered a £20,000 prize (a vast fortune at the time) as an inducement for inventors to create a device that would allow ships to accurately determine their longitude, and consequently, to reliably navigate across vast ocean distances. It took John Harrison, a carpenter and amateur clockmaker, almost fifty years to win the prize, having invented the first marine chronometer. This is precisely the sort of long-term research effort that federal climate scientists need to undertake now. While much of that research will be done in federal energy labs, there is no reason why comparable prizes could not be offered to private companies as an inducement for the development of specific clean-energy or climate-related technologies.

A Carbon Tax

The Bush administration faces two challenges: designing an effective long-term climate policy and stopping the growing momentum toward inefficient, Kyoto-inspired policies. These are complementary efforts; a

long-term alternative to Kyoto may help lessen its appeal. But the desire for short-term action is irresistible; politics demand action. An R&D-focused “do nothing until the technology ripens” policy is simply not credible, either domestically or internationally. If for no other reason than to halt momentum toward economically inefficient Kyoto-style emissions-trading policies, the Bush administration needs to reconsider its long-standing opposition to mandatory greenhouse gas-emissions controls. Federal emissions limits are now inevitable; the only question is which president will craft them.

Given the importance of precedent in American politics, the answer to that question is critical: once the federal government embarks on a given approach to curtailing greenhouse gases, future policies are likely to follow that path. For the last decade, most Americans have assumed that emissions trading is the best approach to reducing greenhouse gas emissions. Cap-and-trade programs have been effective at controlling conventional air pollution in the United States, but greenhouse gases are very different. Establishing economically efficient emis-

sions caps is an exercise in arbitrary and inevitably politicized policymaking. Creating a well-run multibillion-dollar market in carbon emissions is a vastly greater logistical challenge than trading sulfur dioxide credits among a relatively small number of utilities. The evidence we see so far from Europe's experience with Kyoto is hardly encouraging.

Most economists agree that a carbon tax would be the most efficient way to limit greenhouse gas emissions. A carbon tax would apply moderate, even pressure across the economy to reduce emissions rather than selectively raising the cost of politically unpopular forms of energy production and consumption, such as automobiles and power plants.⁷ A carbon tax may seem anathema to the Bush administration, but as several economists (including AEI's Kevin A. Hassett) have noted, carbon-tax revenues could be used to finance reductions in the marginal rates of other taxes.⁸ The net result would be a revenue-neutral tax reform, not increased taxation.

Properly structured, such a tax reform could stimulate the economy, rather than depress it as emissions trading would. Another unappreciated problem with

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emissions-trading programs is the risk that most of the potential revenue will be captured by rent-seeking corporations, rather than be available for socially productive purposes like tax cuts. Unfortunately, the loss of Republican control of the Congress may have doomed this option, but it is still worth considering. It is our best hope for accomplishing both the administration's tax-reform goals and climate-policy objectives.

If a tax is politically impracticable, the president should at least insist that any cap-and-trade program incorporate a "safety valve"—which would, in effect, make it function much like a tax, limiting wasteful spending on excessively expensive emissions reductions. (A safety valve provides for the sale of unlimited emissions credits at a certain price, establishing a ceiling on their cost.) Bills of this type have been introduced in both houses of Congress, a demonstration of the level of support for this approach.

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In his remaining time in office, President Bush must think strategically about how to make his well-intentioned but anemic climate program robust enough to garner bipartisan support, and prevent his successor from reengaging, in some form or another, with the Kyoto system. A more robust R&D program must be the centerpiece of America's long-term climate policy, but establishing the principle that taxation rather than emissions trading is the best way to limit emissions in the short run may be the most important element of crafting an efficient near-term policy. Such a tax will be hard for President Bush to swallow, but it may be the price he needs to pay to make his alternative to Kyoto credible and buy time for the next generation of clean-energy technologies to develop. If that cannot be done,

there may be no way to control global warming—but we will waste a great deal of money trying.

Notes

1. Sebastian Mallaby, "The Other Team's Playbook: A Bush U-Turn on Climate Change?" *Washington Post*, January 15, 2007.

2. Russia ratified the Kyoto Protocol, which established its emissions limits far above their actual level of emissions. The relevant question, therefore, is whether Russia would ever accept a real limit on their actual emissions—and the answer is almost certainly no.

3. Martin I. Hoffert et al., "Advanced Technology Paths to Global Climate Stability: Energy for a Greenhouse Planet," *Science* 298 (2002): 981.

4. Jae Edmonds and Gerry Stokes, "Launching a Technology Revolution," in *Climate Policy for the 21st Century: Meeting the Long-Term Challenge of Global Warming*, ed. David Michel (Washington, DC: Center for Transatlantic Relations, 2003), 163.

5. David Popp, "R&D Subsidies and Climate Policy: Is There a 'Free Lunch?'" (working paper 10880, National Bureau of Economic Research, Cambridge, MA, October 2004), 15.

6. William D. Nordhaus, "Modeling Induced Innovation in Climate Change Policy" (working paper, National Research Council, Yale University, New Haven, CT, 2001), 284.

7. A moderate carbon tax might be something in the range of \$15 per ton of carbon, for example, which translates into a five-cents-per-gallon increase in the price of gasoline. A tax in the \$10 to \$30 per ton range would generate between \$15 billion and \$45 billion annually in federal revenues.

8. Kevin A. Hassett and Gilbert E. Metcalf, "What Would a Rational Energy Tax Policy Look Like?" *Tax Analysts*, November 27, 2006, available at www.aei.org/publication25199/.