

IN REVIEW



The Kyoto Protocol

BY GWYN PRINS & STEVE RAYNER

THE 1997 KYOTO PROTOCOL is a symbolically important expression of concern about climate change. Born out of the negotiations of the U.N. Framework Convention on Climate Change, the protocol required industrialized country signatories to demonstrate progress toward a 5-percent reduction in greenhouse gas emissions

over 1990 levels by 2005 and to meet those targets by 2012. It also allows for international trading of emissions reductions and the establishment of the Clean Development Mechanism (CDM) so that big emitters can claim credits for reductions bought in developing countries.

In broad terms, the protocol sought to manipulate a basket of diverse greenhouse gas emissions and all their sources

and sinks, even though these emissions cannot be accurately measured, compared, or accounted for. This focused approach consciously downplayed the ways nations could adapt to the effects of climate change on the grounds that this might weaken the will to mitigate emissions. Former Vice President Al Gore forcefully declared his opposition to adaptation in 1992, explaining that it represented a “kind of laziness, an arrogant faith in our ability to react in time to save our skins.”¹

The Kyoto mechanisms have conspicuously failed to deliver. The protocol’s emissions targets relate only distantly to mitigating the causes of climate change. Furthermore, parties to the protocol watered down emissions targets during intergovernmental negotiations in attempts to gain signatories, most notably at the framework convention’s 2000 review conference in The Hague. The targets for developed countries dropped from 5 percent to about 2 percent and are unlikely to be met in any case.² As is apparent in their track record, emissions targets have no hope of affecting changes in industrial societies’ energy systems that would increase energy security and lighten the human footprint on the planet. (We sketch a radically different approach to climate policy that could achieve such ends in our essay, “The Wrong Trousers: Radically Rethinking Climate Policy.”³)

Where emissions reductions have happened—in Eastern Europe, in Germany, and in Britain—they were typically the result of unrelated policies. In the former communist countries of Eastern Europe, the collapse of highly inefficient, polluting industries reduced emissions; in Britain, former Prime Minister Margaret Thatcher’s government engineered the substitution of coal with North Sea gas in the “dash for gas,” significantly reducing the nation’s reliance on coal

power and its attendant greenhouse gas emissions. Strip out Germany and Britain from the original 15 members of the European Union (EU), and between 1990 and 2005, European emissions *increased* 10 percent. In five countries, rates rose more than they did in the United States.

The Kyoto design could never have succeeded. To succeed, international pacts typically agree on a set of objectives and the means to achieve those objectives. The Kyoto Protocol does neither.

However, EU countries used the CDM to spin their compliance with Kyoto targets. Excluding the reduction in emissions due to the collapse of Russia and Ukraine, the overall emissions of all signatories to the protocol have risen since 1990. Despite the protocol's lack of material impact, political support for "Kyoto" has become the acid test by which individuals and nations are judged to be for or against the planet and the poor.

KYOTO HAS BEEN A POLITICAL AS WELL as a technical failure. The protocol gives the impression that countries are taking effective action to reduce emissions, when they are not. Its supporters blame governments that are not party to the protocol, especially the United States and (until recently) Australia, for its woes. But the Kyoto design could never have succeeded.

To succeed, international pacts typically agree on a set of objectives and the means to achieve those objectives. The Kyoto Protocol does neither.⁴ The parties to the framework convention constructed Kyoto by borrowing from plausible but partial analogies with other treaty regimes: the international stratospheric ozone regime, which responded to the discovery that chlorofluorocarbons

(CFCs) were damaging the capacity of the upper atmosphere to filter harmful ultraviolet radiation; the U.S. acid rain program, which allowed U.S. electricity generators to trade sulfur dioxide emissions rights; and the Strategic Arms Reduction Treaty (START), which was designed to

reduce the number of deployed U.S. and Soviet nuclear warheads.

These three regimes had features that *prima facie* seemed to parallel the climate change issue, but there were many ways in which these models did not fit. The stratospheric ozone regime was developed because of scientific concerns about the impact of CFCs, which were used in a wide variety of mundane applications.⁵ The superficial parallel between the challenge of ozone depletion and that of climate change is that both result from the emission of gases from ubiquitous human activity.

The international community, under U.N. auspices, established the ozone regime in 1985 through a framework convention that was agreed on in Vienna. A subsequent protocol for implementation was opened for signature in Montreal in 1987. The Montreal Protocol, as it became known, established targets and a timetable for limiting the production of the offending gases and paved the way for subsequent amendments that eventually banned their production altogether. The work of a scientific advisory body, the Ozone Trends Panel, informed the negotiation of these agreements.

The main features of the ozone regime were subsequently imported into the architecture of the climate change

regime. These features translated into: the Framework Convention on Climate Change (opened for signature in 1992); the 1997 Kyoto Protocol; and the establishment of the Intergovernmental Panel on Climate Change to advise the negotiating parties about the science and policy options.

As for the U.S. acid rain program, in 1993 U.S. regulators established a cap-and-trade system to enable electric utilities to trade sulfur dioxide emissions permits as part of a national policy to reduce acid precipitation. The idea was to optimize the efficiency of the overall acid rain reduction effort by allowing cuts in sulfur emissions to be made where they were cheapest.⁶

The third precedent available for the climate change regime was START, negotiated between the United States and the Soviet Union between 1982 and 1991.⁷ The influence of these negotiations on the design of the climate regime came through the professional and cultural experiences of key players, including Gore (who, as a senator, was at least as well known for his engagement in national security issues as for his commitment to environmental causes) and his principal security policy adviser, Leon Fuerth, who went on to advise Gore on environmental matters as well.

In addition to Gore and Fuerth, many of the diplomats who negotiated the framework convention at the 1992 U.N. Conference on Environment and Development in Rio de Janeiro had professional experience in superpower relations, in which nuclear and conventional arms control had been central. The START precedent provided a strong incentive for the use of targets and timetables in the cause of mutually verifiable reductions. It was an inviting template: With START, the metric was nuclear warheads; with the climate change regime, it was units of greenhouse gases. Make that substitution, and perhaps a repertoire of proven summit-based diplomacy could be tapped?

The analogy, however, stopped there. The START tack presumed the involvement of technically competent and politically motivated actors, which was not the case with climate change. Although they may have been tough to negotiate, nuclear

arms reductions were a relatively simple problem in comparison with that presented by climate change. Only two countries were involved in START, and their focus was a single technology, directly under government control. No obvious conflict existed between arms reductions and broader economic and development goals. Finally, but not insignificantly, the use of nuclear weapons technology was basically unthinkable.

THE DESIGN OF THE FRAMEWORK CONVENTION and the Kyoto Protocol that it engendered five years later locked the world into a framing of the climate change challenge based on plausible analogies with these other agreements that were superficially proximate but that overlooked some important distinctions of the climate change issue.

The ozone regime influenced the belief that emissions mitigation is a global commons problem, requiring global consensus. When the Kyoto Protocol was negotiated, however, a few dissenting voices pointed out that only the 20 countries with the greatest emissions really mattered in determining the future of the climate, and that these included India and China, who were to be exempted from emissions reductions under the proposed regime.⁸ These voices went unheard in the diplomatic enthusiasm to establish a universal treaty engaging all the world's governments, matching global threat with universal response.

The precedent of the acid rain program established international emissions trading as the main policy vehicle to deal with climate change. This system was consistent with the broad focus on emissions and the inclusion of both large and small emitters. But trading carbon emissions raised problems. For carbon trading to occur, some parties must have "spare" emissions to trade. The demand for spare emissions gave rise to weird and wasteful ways in which parties fabricated notional credits and traded them through Kyoto's CDM.⁹

One of the worst examples of abuse involves credits gained for destroying the hydrofluorocarbon (HFC) trifluoromethane (HFC-23), a greenhouse gas

that is the by-product of the production of the refrigerant chlorodifluoromethane (HCFC-22), a hydrochlorofluorocarbon (HCFC). Western manufacturers, such as DuPont, have destroyed HFC-23 for free for years, but carbon-trading expert Michael Wara calculates that Asian HCFC manufacturers can earn almost twice as much from Kyoto CDM credits for scrubbing HFC-23 as they can from selling refrigerants, providing a perverse incentive to increase their production. He also estimates that under the CDM, manufacturers will be paid \$800 million for HFC abatement, while the cost to manufacture them is only \$31 million.¹⁰

Far from paying for clean development, as intended, the Kyoto CDM has become a money machine. Brazil, China,

India, and South Korea receive 80 percent of all CDM payments; China alone receives half of the total.¹¹ The early years of carbon trading demonstrate that there is no precedent for the cooperative, top-down creation of the sort of international carbon market envisaged by the architects of the climate regime.

Another faulty premise of the Kyoto approach assumes that climate change is a discrete problem that can be solved independently of broader development imperatives. Powerful governments have consistently acted to keep the issues of climate and development apart, as they are usually the concern of rival bureaucratic empires inside governments. (In Brazil, China, India, and other major emerging industrial

READING LIST

FOR MORE INFORMATION ON THE IDEAS AND ISSUES DISCUSSED IN THIS ESSAY, WE RECOMMEND READING:

Kyoto Protocol (1998). Start with the source, only 20 pages long.

The Collapse of the Kyoto Protocol and the Struggle to Slow Global Warming David G. Victor (2001). This provocative analysis reaches broadly across economics, international law and diplomacy, and political and natural science to explain the failure of Kyoto. A "must-read" for understanding international negotiations on the environment.

Breakthrough: From the Death of Environmentalism to the Politics of Possibility Michael Shellenberger and Ted Nordhaus (2007). A rousing rebuke of what the authors consider an obsolete environmentalist approach to the global warming problem; based on their notable 2004 essay, "The Death of Environmentalism."

"Turning the Big Knob: An Evaluation of the Use of Energy Policy to Modulate Climate Impacts," Roger A. Pielke Jr., Roberta Klein, and Daniel Sarewitz, *Energy & Environment*, vol. 11, no. 3. A thoughtful addition to the adaptation versus mitigation discourse. The authors argue that energy policy may affect future climate, but cannot sufficiently address ongoing and future climate *impacts*, which are due in large part to changing development and demographic patterns.

"Advanced Technology Paths to Global Climate Stability: Energy for a Greenhouse Planet," Martin I. Hoffert et al., *Science*, vol. 298, no. 5595. An encyclopedic evaluation of the carbon-free energy options (such as wind, solar, biomass, nuclear, and carbon sequestration) and technologies (such as efficiency improvements, superconducting global electric grids, and geoengineering) that can contribute to climate stabilization.

"Climate Change: The Kyoto Protocol and International Actions," Congressional Research Service, June 2007. This report effectively summarizes attempts other than Kyoto to mitigate the effects of climate change.

superpowers, growth has decisive political preeminence.) So, too, have the environmental- and development-focused nongovernmental organizations, though for different reasons: They are often rivals for the affections of the same broad pool of activists.

The conduct and outcome of the 2007 U.N. climate change conference in Bali suggests that Kyoto supporters are not yet ready to learn from the protocol's failures.

All this is predictable and unhelpful. The relationship between climate and sustainable development is asymmetrical. In principle, it may be possible to deal with climate change in ways that prove unsustainable for other reasons. Yet achieving a sustainable development trajectory must include a sustainable solution to the challenge of climate change. This was made all the more difficult as scientific consensus drove actors to converge on a single policy pathway: prioritizing radical emissions reductions by developed countries.

THE KYOTO PROTOCOL'S INITIAL MISstatement of the climate change problem is forgivable; its failure to adjust as evidence has changed deserves condemnation. At the 1992 Rio conference, participants in the framework convention identified carbon dioxide as the problem and reducing fossil fuel use as the answer. We now know from accumulating evidence that this was an incomplete formulation. Reducing emissions is not a "silver bullet" solution. Countries must try a spread of competing strategies simultaneously, because it is unclear which one will be decisive.

The conduct and outcome of the 2007 U.N. climate change conference in Bali

(the 13th meeting of the Framework Convention on Climate Change) suggests that Kyoto supporters are not yet ready to learn from the protocol's failures. The Bali roadmap, the statement that resulted from the meeting, recognizes the need for new investments in

technology research, development, and transfer, and highlights the still woefully under-resourced Kyoto Adaptation Fund, which is intended to help developing nations vulnerable to the adverse effects of climate change. But the parties to the treaty have not demonstrated the will to significantly revise the regime's fundamental structural weaknesses.

At the Bali conference, the entrenched camps that have been at loggerheads for the past 15 years found no new common ground—an overwhelming but not surprising result. The camp advocating for a bigger and better Kyoto, including Gore, the EU, and the current British government, advocated for fixed targets for carbon dioxide reductions, on a timetable. The United States, Canada, India, China, and often-overlooked Japan will not agree to this. Neither will Australia in practice, despite the symbolic gesture of incoming Australian Prime Minister Kevin Rudd, who signed Kyoto mainly to distinguish himself from his predecessor. Despite the booing and hissing reported in the press, the United States was not isolated, and the European position did not prevail. In fact, the Bali conference saw the geopolitical center of gravity for climate policy move decisively away from Europe and into the Pacific. While Europe

will continue to exert an influence, five nations—China, India, Japan (supported by Canada), and the United States—are likely to be decisive in shaping the future of climate policy.

The shift of diplomatic and technological efforts away from the global, multilateral arena that brought us Kyoto will likely pick up speed. U.N. Secretary-General Ban Ki-moon saw this coming at Bali and began to position the United Nations to give it sea room from the European position. The U.S.-driven climate change mitigation process, which focuses on "big emitters" may well fuse with the Group of Eight (G-8) dialogue, which also focuses on big emitters and which Japan will drive as a centerpiece of the forthcoming Hokkaido G-8 meeting in July 2008.

Eventually Kyoto diehards are likely to join in such a process, as the limitations of the Kyoto-style mechanisms become more apparent. This could be a painful process. The political and emotional investment in Kyoto has been great, making it a wrench for some parties to discard it. Unlike economic decisions, where it is rational to walk away from a failure's sunk costs, in politics, these investments represent political capital. This is evident in the reaction to our critique of Kyoto published in *Nature* shortly before the Bali conference. Critics acknowledged the validity of our analysis while still clinging to the Kyoto security blanket.¹²

Politicians, diplomats, and scientists have invested much personal effort and conviction in creating the Kyoto regime. They seem to find it psychologically and emotionally difficult to move beyond its entrenched communities and ideas. The special bubble of international summitry that accompanied the Bali conference reinforced these feelings, but in the end, bubbles burst. ■

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4. Janne E. Nolan, *An Elusive Consensus: Nuclear Weapons and American Security after the Cold War* (Washington, D.C.: Brookings, 1999), pp. 35-39.

5. *Ibid.*, p. 40.

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9. Keith Bradsher, "Outsize Profits, and Questions, in Effort to Cut Warming Gases," *New York Times*, December 21, 2006, p. A1.

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12. Gwyn Prins and Steve Rayner, "Time to Ditch Kyoto," *Nature*, vol. 449, no. 7165, pp. 973-975 (2007). See responses from John Schellnhuber, "Kyoto: No Time to Rearrange the Deckchairs on the Titanic," *Nature*, vol. 450, no. 7168, p. 346 (2007), and from Barry W. Brook, Nick Rowley, and Tim F. Flannery, "Kyoto: Doing Our Best Is No Longer Enough," *Nature*, vol. 450, no. 7169, p. 478 (2007).

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