

# The Kyoto Protocol: What Next?



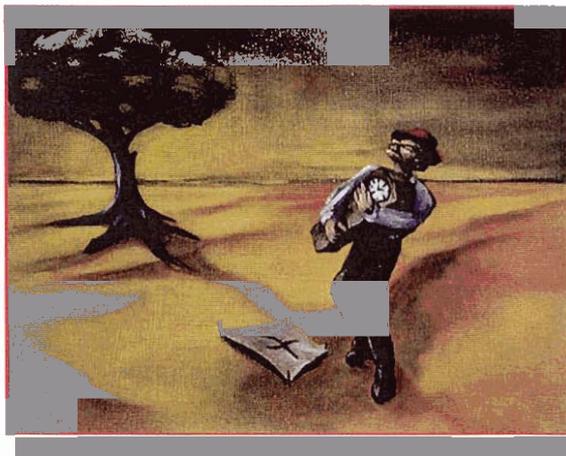
by Roger A. Pielke, Jr.

**T**he Kyoto Protocol to the UN Framework Convention on Climate Change (UNFCCC), an international treaty that was named after the Japanese city in which it was proposed in December 1997, came into effect in February 2005 following its ratification by Russia. Despite the ratification of the treaty, its future is cloudy. Although some have hailed the protocol as the most significant environmental treaty ever negotiated, others have labeled it a dead end, and international responses to climate change remained mired in political uncertainty. How nations and other interests respond to this uncertainty will shape international climate policy for years to come.

The Kyoto Protocol addresses the issue of climate change, which the UNFCCC considers to be the direct or indirect result of human activity that alters the composition of the atmosphere. In particular, the protocol is concerned with the release of greenhouse gases, such as carbon dioxide and methane, which affect the energy balance of the global atmosphere in ways expected to lead to an overall increase in temperature, popularly referred to as "global warming." Although climate change is most often discussed in terms of the global average temperature, the reasons for concern are far less abstract. Among the tangible effects of such climate change would be a general rise in sea level around the world; the melting of glaciers, sea ice, and Arctic permafrost; and possible changes in the number and distribution of extreme

climate-related events such as floods and drought.

The Kyoto Protocol is focused on reducing the emission of six greenhouse gases in 38 developed countries to a level 5.2% below a 1990 baseline by a commitment period of 2008–12. Different emissions-reduction targets were negotiated with each country on the basis of its unique circumstances. Under the protocol, countries have several means at their disposal to reach their targets. One approach is to make use of natural processes, called "sinks," that remove greenhouse gases from the atmosphere. The planting of trees, which



take up carbon dioxide from the air, would be an example. Another approach is the international program called the Clean Development Mechanism (CDM), which encourages developed countries to invest in technology and infrastructure in less-developed countries, where there are often significant opportunities to reduce emissions. Under the CDM the investing country can claim the effective reduction in emissions as a credit toward meeting its obligations under the protocol. An example would be an investment in a clean-burning natural-gas power plant to replace a proposed coal-

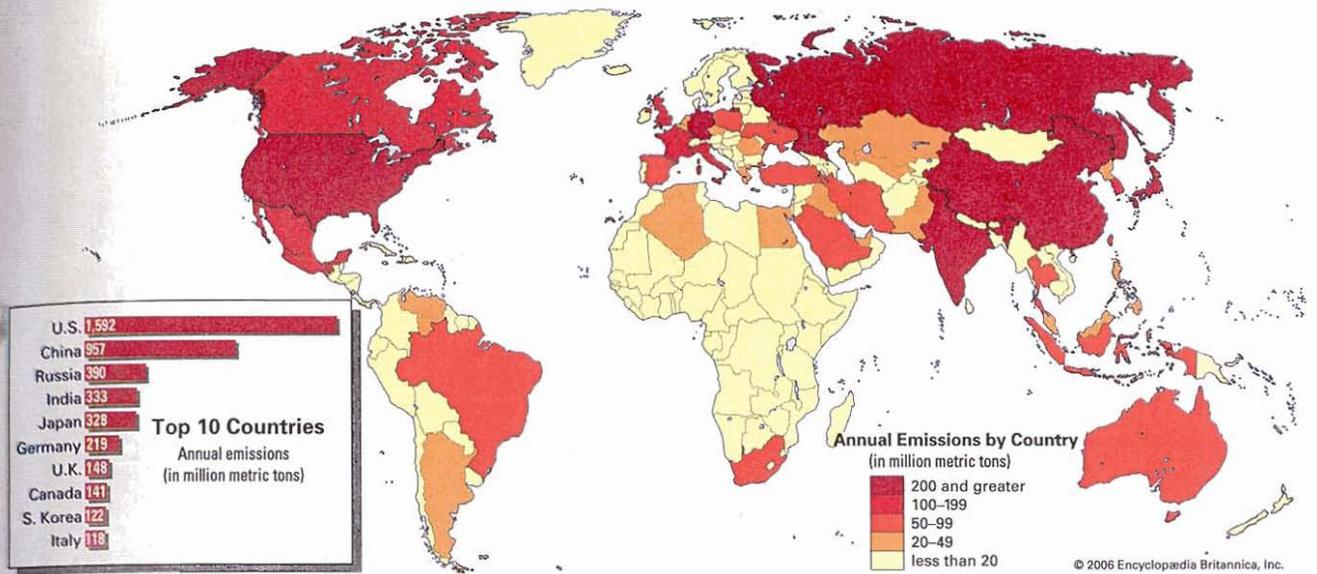
fired plant. A third approach is emissions trading, which allows participating countries to buy and sell emissions rights and thereby places an economic value on greenhouse-gas emissions. European countries have initiated a fledgling emissions-trading market as a mechanism to work toward meeting their commitments under the Kyoto Protocol.

Without a doubt, the Kyoto Protocol is a landmark diplomatic accomplishment, and it represents a tremendous effort by many countries around the world, most notably the major members of the European Union. Yet the future of the protocol is uncertain for at least three reasons.

**First, there are signs that most participants under the protocol will fail to meet their commitments to reduce emissions.** For example, the European Environment Agency reported in 2004 that 11 of the 15 EU "member states are heading towards overshooting their emission targets [mandated under the protocol], some by a substantial margin." Furthermore, the remaining 4 member states are meeting their targets only because of unique, nonrepeatable circumstances of politics, economics, or geography that are independent of the protocol, such as the long-term move away from coal-based energy generation in the U.K.

Second, the U.S. (the leading greenhouse-gas emitter) is not party to the protocol, and China (the next leading emitter) and other less-developed countries that are party to the protocol are not required to restrict their greenhouse-gas emissions. The architecture of the Kyoto Protocol focuses on a country-by-country accounting of emissions and tends to place countries that have a moderate to high population growth at a disadvantage. For example,

## Annual CO<sub>2</sub> Emissions (expressed in metric tons of carbon)



the U.S. is expected to see a 40% increase in its population between 1990 and 2025, whereas the population of Europe as a whole is expected to be about the same in 2025 as it was in 1990. Assuming that greenhouse-gas emissions remain constant on a per capita basis, then most countries in Europe need only follow business as usual to equal its 1990 emissions, whereas the U.S. would need to achieve a 30% decrease in its per capita emissions.

Third, and perhaps most crucial, even complete success in meeting the emissions targets under the protocol would do little to address projected climate change. In 1998 Tom Wigley, a scientist at the National Center for Atmospheric Research in Boulder, Colo., and a longtime participant in climate-change-assessment activities, sought to study the effectiveness of the protocol by using a climate model similar to those underlying assessment reports by the Intergovernmental Panel on Climate Change. He ran the climate model under one scenario in which greenhouse-gas emissions were reduced as called for by the Kyoto Protocol and under another scenario in which no reductions were made. He found that the influence of the protocol would be not detectable for many decades.

Since the world is certain to undergo some amount of climate change and the economic and human toll of weather-related disasters is inexorably

rising, many less-developed countries have advocated that improved adaptation to climate variability and change receive an equal standing to greenhouse-gas reduction in order to address their priorities of poverty reduction and development. This approach, however, has proved to be challenging for several reasons, not least of which is the explicit focus of the UNFCCC on greenhouse gases. There is also a sense among the protocol's advocates that discussion of adaptation will necessarily divert attention from efforts to control emissions.

The challenges that implementation of the protocol has faced to date raise questions whether the protocol can form the basis for international climate-change policies or whether a new approach may be needed. For example, U.K. Prime Minister Tony Blair, who has been a leader on the issue of climate change, has called into question the viability of the Kyoto framework. In the United States not only did Republican Pres. George W. Bush in 2001 withdraw U.S. participation in the Kyoto Protocol, but the major Democratic presidential candidates in 2004 did not support the treaty (although some favoured participation in international climate-change negotiations). In addition, China, the country with the world's largest population, has routinely emphasized poverty reduction through continued development as a higher national priority than

reductions in greenhouse-gas emissions, and India, the country with the world's second largest population, has signed the Kyoto Protocol but has not agreed to adopting emissions-reduction targets. These positions suggest the possibility that post-Kyoto climate policy may see dramatic changes.

There is reason for optimism that progress will be made on dealing with climate change. Europe remains steadfastly committed to the issue, and Japan and Russia have both agreed to emphasize it during their upcoming turns as hosts of G-8 summits. In the U.S., municipalities and several states have taken proactive steps to reduce their greenhouse-gas emissions by using strategies that some observers say foreshadow broader actions by the federal government. Also, less-developed countries have continued to emphasize the importance of adaptation in the face of their significant vulnerability. As nations and other interests grapple with climate policy in the first year following the ratification of the Kyoto Protocol, it is clear that much has been learned about the challenges of confronting climate change but the task of turning those lessons into improved climate policies has only just begun.

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