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The Geopolitics of Global Climate Change

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For decades, scientists have known that human activity – primarily the consumption of fossil fuels and the clearing or burning of forested areas – is significantly increasing the volume of carbon dioxide and other so-called “greenhouse gases” emitted into the atmosphere. Since the beginning of the industrial age, CO₂ concentrations have increased by more than 30% and they are forecast to double or even quadruple throughout the current century, depending upon population and economic growth rates. Even while this “large scale geophysical experiment” has been conducted – a label ominously applied by oceanographer Roger Revelle some fifty years ago – scientists have become more-and-more certain that the greenhouse gas increases are contributing to global climate changes that will likely have devastating consequences.¹ The February 2007 “Summary for Policymakers” released by the Intergovernmental Panel on Climate Change confirms key linkages between human activity and climate change. Indeed, the IPCC’s fourth assessment, which has already been criticized for being too cautious about the causes and consequences of climate change, provides a sobering reminder that humans are profoundly transforming the Earth’s environment. The 2500 scientists from over 130 countries signed on to a report declaring a “very high confidence” (defined as “at least 9 out of 10 chance of being correct”) “that the globally averaged net effect of human activities since 1750 has been one of warming.” Climate system temperature increases are described as “unequivocal.”²

Consequently, the planet potentially faces the melting of much of its polar ice caps and glaciers, the unprecedented flooding of its coastal areas and islands, mass extinction of innumerable plant and animal species, worrying shifts in agricultural patterns, and the creation of tens of millions of human environmental refugees. To understand some of the horrific social and economic implications of these changes, imagine dozens of world cities and even entire nations facing prolonged catastrophes as shocking as the 2004 Asian tsunami or the 2005 hurricanes that obliterated much of the southern gulf coast of the United States. Those natural disasters may merely hint at the potential consequences of the weather-related disasters yet to come.

To prevent calamitous global climate change, the world will simply have to reduce its greenhouse gas emissions. Fundamentally, this means altering energy consumption patterns because the burning of fossil fuels is responsible for three-quarters of CO₂ releases. Technologically and economically, changing energy habits will not be easily achieved. The world is heavily dependent upon oil, coal, and natural gas and

current infrastructures associated with energy systems reflect a significant financial commitment to the current methods of extracting, processing and utilizing fossil fuels. Nearly seven hundred million passenger cars and trucks, for example, account for about 10% of global greenhouse gas emissions. No single vehicle emits a globally significant amount of pollution, meaning that a worldwide transformation will be required to make meaningful emission reductions in the transportation sector. Furthermore, most of the world’s electricity is generated by fossil fuel combustion in power plants. This use will not be readily replaced and accounts for about 40% of total emissions. The agricultural sector, air and sea vessels, and factories also rely extensively upon fossil fuels and will need to be retooled at great expense if humans are to move from these energy sources to others across the next decades.

In many ways, however, the political undertaking may be even more difficult than the technical and economic, despite the fact that the international community has been working towards limiting emissions for more than two decades. Perhaps the greatest barrier is raised by the world’s wealthiest and most powerful nation-state, which has essentially abandoned the international effort to prevent climate change. Rather than take a lead role, the United States has clearly been responsible for slowing global cooperative efforts and overtly rebuffs binding international commitments to reduce emissions. For a variety of reasons, a number of other reluctant nations have joined the US in refusing to accept global standards on emissions. Additionally, the entire developing world is currently exempt from those same regulations. In several important ways, unfortunately, the global politics of climate change occurs in a competitive rather than a cooperative negotiation context. Even the existing agreement to reduce emissions – known as the Kyoto Protocol – may fail on its own terms, as many of the industrialized states that have committed to the treaty stand poised to break their promises. Perhaps worst of all, Kyoto must at best be viewed as merely a beginning since it requires only modest reductions in emissions that will not long forestall the worst effects of climate change. Far greater reductions in greenhouse gases must be achieved.

International Politics: the Problem of Anarchy

While 168 countries and the European Union were able to negotiate and put into effect a formal treaty requiring significant reductions in greenhouse gas emissions, the agreement does not oblige the world’s largest polluter to cut its discharges. The United States produces about one-fourth of the planet’s greenhouse gases and is responsible for about one-third of the

emissions among the developed countries now regulated under the Kyoto Protocol by the Framework Convention on Climate Change (FCCC). However, America's unwillingness to ratify that treaty means that the US is not bound by the terms. This is not at all atypical, as environmental agreements, arms control deals, human rights accords, and virtually all other international treaties apply only to those nation-states that agree to obey. International political life is not governed by a central authority that can pass and enforce universal laws. Indeed, scholars use the term "anarchy" to describe the relations among states. The world's territory is divided into sovereign nation-states that are not subservient to anything like a world government. Each state has virtual free reign to design its own energy policy, to clear-cut its own forested areas, or even to refuse to observe pollution emission rules favored by the other states.

Hypothetically, of course, the countries of the world could decide to act together to overcome a common security threat like climate change. In reality, however, the most powerful states, which burn most of the world's fossil fuels and produce most greenhouse emissions, have a long history of rivalry, competition, and even conflict with one another that would seem to belie their working together to solve many communal problems. The past hundred years has been scarred by two world wars, nearly a half century of divisive cold war, and a large number of lesser struggles and disagreements. The collapse of the Soviet Union and the end of bipolar rivalry did not trigger a new friendly era of global cooperation. During the 1990s, the United States and its European allies could not convince Russia that the United Nations should act militarily in the Balkans over Kosovo's fate.

Likewise, the UN's strongest states were unable to agree to act preventively in Rwanda to stop a foreseeable genocide that ultimately killed hundreds of thousands of people. The US in the 1990s refused to join many of its closest western allies in a variety of international treaties that they strongly favored. These accords would have prohibited the deployment of anti-personnel landmines, created an International Criminal Court to prosecute crimes against humanity, and banned all nuclear test explosions. In each instance, the US cited strategic American interests and concerns that kept it from going along with much of the rest of the world.

All too often, in fact, narrow self interests preclude meaningful international cooperation. Unfortunately, the prospects of global cooperation are not especially high even when states

agree about the need for common action to reduce a shared threat. After the September 11, 2001, al Qaeda attacks on the World Trade Center and Pentagon, most nation-states rallied behind the US in an apparently unified global "war on terrorism." Indeed, the surprise assault sparked virtually all of the world's key states to form a "coalition of the willing" to combat terrorism. Practically no states protested when the coalition first directed its attention at Afghanistan in a battle to root out the Taliban government. However, the common cause was short-lived as major powers were soon openly clashing when the prospect of fighting Iraq and toppling Saddam Hussein was elevated to the top of the international agenda. Long-time close American allies like France and Germany worked openly to try to stop the US from starting such a war. These states interpreted the situation very differently and favored their own proposed solutions. Again, these are typical roadblocks to cooperation in international political life.

Unfortunately for the planet, it is nearly impossible to imagine any successful international agreement addressing the problem of global warming without American cooperation. The Kyoto Protocol and any follow-on agreement is likely doomed to fail without a significant change in American policy. To repeat, this is largely because the US, with less than 5% of the world's population, emits about a quarter of greenhouse gases.

For virtually any problem, especially one as complex as climate change, states are likely to have different understandings of the circumstances and may have unique interests that either preclude their working together or compel them to advocate proposals that others will reject. Countries might disagree, for instance, about the level of sacrifice each would need to make towards achieving a common end. Collective action typically cannot be achieved without someone paying at least some costs and not even a shared fear of a mounting threat can assure that every state will voluntarily pay those costs. The problem is especially acute if any single state is asked to make a contribution larger than it is willing to pay – or greater, proportionally, than other states are asked to supply.

In the case of the Kyoto Protocol, neither Bill Clinton, who was President when the deal was struck in 1997, nor his successor George W. Bush, has ever asked the US Senate to consider the climate change treaty. Indeed, shortly after taking office in 2001, President Bush condemned the Kyoto Protocol as "fatally flawed" and Vice President Dick Cheney called it a "dead proposition" that the United States "would not be bound by."³ Unfortunately for the planet, it is nearly impossible to imagine any successful international agreement addressing the problem of global warming without American cooperation. The Kyoto Protocol and any follow-on agreement is likely doomed to fail without a significant change in American policy. To repeat, this is largely because the US, with less than 5% of the world's population, emits about a quarter of greenhouse gases.

Why does the US oppose the Kyoto Protocol? Has the US consistently worked in opposition to a convention limiting greenhouse gas emissions? Have the climate change negotiators been undercut by selfishness?

The History of American Intransigence

While the US has long been reluctant to join other states in regulating greenhouse gases, it has not always overtly obstructed the international political process. After a series of informal global conferences in the 1980s about the so-called "greenhouse effect," which often included US representatives and scientists, the United Nations Environment Program and World Meteorological Organization established the Intergovernmental Panel on Climate Change. The IPCC was formed in 1988 to provide a comprehensive and expert assessment of this phenomenon as scientists and policymakers alike wanted to understand the causes of climate change, the potential impacts, and the available options for mitigating the causes and/or effects. The three IPCC Working Groups – the US chaired one on responses to global warming – reported their initial findings to the UN General Assembly and to a World Climate Conference in fall 1990. These first reports reflected a scientific consensus that the greenhouse effect was real and was being worsened by human activity. Thanks partly to this input, the UN General Assembly adopted a resolution in December 1990 that established an Intergovernmental Negotiating Committee (INC) that could meet and bargain towards a formal international treaty to address the problem.

Many optimistic observers hoped that negotiators intended to achieve a climate change pact by traversing the political pathway blazed during the 1980s to address another atmospheric environmental concern. With the active participation and leadership of a US negotiating team appointed by President Ronald Reagan, nations agreed in a series of bargaining sessions to mitigate the environmental hazards linked to a class of man-made chemicals known as chlorofluorocarbons (CFCs). After their use on earth, these chemicals were eventually migrating to the atmosphere and thinning the ozone layer. Sadly, adding CFCs to O₃ was a double whammy because the chemical changes reducing the concentration of ozone yielded CO₂ as one unfortunate byproduct! Simply by limiting production and consumption of these harmful man-made chemicals, the so-called Montreal Protocol could preserve the ozone layer and thereby prevent ultra-violet radiation from causing untold numbers of future skin cancers. It is only a small exaggeration to suggest that the international agreement protected in some fashion virtually all life on the earth, from phytoplankton to humans. In any case, for extremely sound reasons, the 1987 Montreal is viewed as the gold standard for formulating international environmental agreements. Under the pact, a baseline emissions year was established. Next, production and use of CFCs vis-à-vis this base year was reduced — and then CFCs were almost completely banned. States also created a multilat-

eral fund to help poor countries adopt alternative technologies so that they would not be tempted to purchase CFC products prohibited in the industrialized world.

Proponents of international action on climate change, however, must acknowledge that the Montreal Protocol was in many ways unique. The manufacture and use of CFCs was primarily limited to a relatively small number of affluent states. Developing countries as a whole produced less than 5 percent of the chemicals. CFCs had functional purposes – as a refrigerant, a cleaning solvent for electronics, a propellant in aerosol containers, and as the gas that puffed plastic into Styrofoam – but these ultimately proved amenable to relatively inexpensive replacement. The corporations that produced CFCs derived substantial revenues from their goods, but some key manufacturers like DuPont declared quite early on that they were willing and likely able to make viable substitutes. Moreover, CFC consumption did not constitute a significant portion of the global economy. The multibillion dollar CFC production industry was concentrated in only about 20 companies. Finally, the Environmental Protection Agency had already banned nonessential CFC use in 1978 and the US assumed a genuine leadership role in the negotiations. In all, this was a welcoming context in which to negotiate a deal.

Knowledgeable onlookers realize that it would be very difficult to duplicate the success of the Montreal Protocol, with or without active American leadership. The evidence about global warming may be backed by fairly strong scientific consensus, but the US and other states have periodically contested the need to act upon information they viewed as simply too uncertain given the great costs likely associated with a transformation of the world's energy use patterns. Scientists willing to challenge the assembled evidence quickly assumed prominent positions in the American public debate. Numerous transnational corporations, including the world's major oil companies, and many nation-states have a much greater economic interest in the stakes and these actors worked aggressively to stall negotiations. In the US, ExxonMobil played a particularly vigorous role in financing a long-term public relations campaign designed to cast doubt on the science and raised many questions about the economic and technical feasibility of cutting fossil fuel use.

Nonetheless, countries completed a Framework Convention on Climate Change (FCCC) in advance of the UN Conference on Environment and Development, which was held in June 1992, in Rio de Janeiro, Brazil. Because negotiators knew that the "Earth Summit" was a symbolically important event, they effectively operated under a deadline and made remarkably rapid progress in the sessions leading up to the June conference. During the negotiations, however, the US under the administration of George Herbert Walker Bush refused to allow the proposed agreement to establish either targeted emission reductions or a legally binding timetable. As the world's lead-

ing emitter of gases, the US was already viewed as vital to any solution. It could thus effectively use its position and establish informal veto power by blocking emission reduction requirements. Though the FCCC signed at the Rio "Earth Summit" included no provisions requiring states to reduce emission of greenhouse gases and thus reflected minimal agreement, parties preferred this to inaction.

Under the 1992 treaty, industrialized nations (included in Annex I of the Convention) agreed merely to "aim" to return their emissions to 1990 levels by the year 2000. Annex I countries were also charged with developing national policies to mitigate greenhouse gas emissions, though they were allowed the option of "joint implementation." In practice, this meant obtaining credit for emission reductions by helping other states, potentially including those in the developing world, reduce their pollution. The convention also created measures requiring states to provide inventories of greenhouse gas discharges and to report on their development of national emission reduction plans. Poor developing states of the Global South tried to obtain pledges of increased development assistance in order that they too might be able to achieve emission reductions, but the final version of the original treaty did not include a provision for this purpose. Yet, the world's richest states agreed in the treaty to "provide new and additional financial resources to meet the agreed full costs" for developing countries to meet their reporting requirements.⁴ This would at least allow states a way to calculate accurately the rate of emission growth – and would provide baseline data for joint implementation. At the Earth Summit, a pilot Global Environment Facility was named the interim agency that would pool and distribute these financial resources. In 1999, after a significant restructuring that more clearly distinguished its mission from that of the relatively unpopular World Bank, the GEF became the convention's permanent financial mechanism.

More than 150 states signed the FCCC in Rio and it entered into force in March 1994, three months after the fiftieth ratification. The US was the first industrialized state to ratify the convention. As of February 2007, 189 countries have joined the treaty. Most importantly, given the failure to require emissions reductions, the FCCC established a Conference of the Parties (COP) to continue negotiations. The COP, which is comprised of all state members to the pact, met formally on a number of occasions over the next few years to discuss the key unresolved issues. At the COP-1 in Berlin in spring 1995, an Alliance of Small Island States (AOSIS) pressed mightily for a convention protocol that would require emission reductions. The leaders of AOSIS had very strong interests in global warming since their nations were potentially quite vulnerable to future increases in sea level caused by melting ice caps. No agreement on emissions reductions emerged from COP-1 as very few states were prepared to take that step and the AOSIS states were simply too weak to have influence on their more powerful peers. The COP-2 meeting in Geneva in 1996 also failed to reach an agreement on this issue. One important concession was attained, however, as President Clinton's negotiators did agree that the US would commit to legally binding reductions on emissions. The devil was in the details, as is so often said, because precise cuts were yet to be settled.

After some additional heated negotiations, participants in 1997 ultimately approved specific binding emission reductions in the Kyoto Protocol. This deal established 1990 as the baseline year for emissions and set the years 2008-2012 as the target dates for reductions. The developed states, again known as Annex I countries, commit on average to 5.2% emission reductions from the 1990 base. However, states were assigned different responsibilities and developing countries were exempted altogether from the requirements. By agreement, the US was assigned a target of 7% reduction in greenhouse gas emis-

sions from the 1990 base year, though its actual obligations were mitigated significantly by the acceptance of an American plan to credit states for the successful management of so-called "carbon sinks" by employing environmentally friendly land use techniques and innovative forestry practices. Article 12 of the Kyoto Protocol additionally creates a Clean Development Mechanism to allow Annex I states to gain credits for emission reductions in developing states not bound by the treaty. The major negotiating parties had been deeply divided about many proposed provisions and the Protocol actually reflected only limited agreement. To its credit, the Protocol overcame most national divisions about the specific emission reductions to be required and the various gases that would be covered by the treaty.

President Clinton signed the Kyoto accord in November 1998, but pointed to an unwelcoming Senate resolution from 1997 (which passed 95-0) and indicated that he would not submit the agreement to that body for its "advice and consent" until a subsequent additional deal more satisfactory to US interests was concluded. Specifically, the Senate resolution identified two key American policy concerns that were not successfully resolved in the Kyoto deal. The Senate recommended that the U.S. not become a signatory to any international protocol that would "result in serious harm to the economy" or that would "mandate new commitments to limit or reduce greenhouse gas emissions for the Annex I Parties, unless the protocol or other agreement also mandates new specific scheduled commitments to limit or reduce greenhouse gas emissions for Developing Country Parties within the same compliance period."⁵

American Economic Interests

To keep Kyoto-related costs down, the US very much favored market-friendly emissions trading plans, along the lines of joint implementation. Economists often argue that such

approaches are the preferred method of pollution abatement because they encourage much greater efficiency as compared to fixed regulatory standards. In other words, such mechanisms would meet environmental goals at lower costs. Critics of environmental regulations have long claimed that standards can be too costly if they require every company to meet requirements. While newer industries might already meet and exceed a new standard thanks to their use of the latest technologies, older industries might not be able to meet a toughened standard without making prohibitively expensive changes. Under a trading plan, every company in every participating country could be allotted a specific number of pollution credits under the law. The number of total credits would be pegged to the target goal of emission reduction. The greenest companies (or nation-states), with credits to spare, could sell some of theirs to the most polluting industries (or nation-states) who might prefer buying credits to closing shop. The overall standard would therefore be met at the lowest feasible cost, as set in the marketplace. Moreover, the market could be open to environmentalists as well, since they too could buy pollution credits. By purchasing and retiring credits, environmental groups could effectively toughen international pollution standards without additional regulatory action.

For fairly obvious reasons, American businesses vulnerable to environmental standards often strongly prefer these kind of market-based mechanisms. The US Clean Air Act, in fact, has for many years allowed pollution trading. However, other countries have been greatly divided as to whether to embrace these mechanisms. Influential environmental groups from around the world especially fear that industrialized states will not make any technological or resource use changes if granted the option to comply merely through emissions trading or joint implementation. These advanced states might simply build new factories in the Global South or buy pollution credits from states with

surpluses to offset their own obligations. Effectively, opponents argued, the richest states and their industries would be allowed to pay to pollute. In the end, resolution of this particular dispute was deferred until future COP negotiations.

Likewise, the Kyoto agreement did not address the US demand that developing countries should be required to reduce their emissions. The US claimed that industrialized states might make significant and costly reductions in pollution, but that countries like China and India would offset even effective changes by substantially increasing their own fossil fuel consumption and emissions. China already emits 15% of the world's greenhouse gases and has one of the world's fastest growing economies to go along with an enormous population. Its future may include tens of millions of new automobiles and hundreds of new coal-fired power plants. While US officials often called for Chinese and Indian inclusion as a means to strengthen the treaty, they were also well aware that the exclusion of these states effectively provided them with advantages in the global marketplace. Transnational and domestic companies could build new factories in China and not have to worry about the overall level of greenhouse gas emissions. If some likewise closed more polluting plants in Annex I countries, emissions credits would even be granted. While economists may be correct about the relative efficiency of such a plan, this does not relieve politicians from fears about trade deficits and lost manufacturing jobs.

Poorer countries, including China and India, argued that they should be exempted from making reductions since they had not contributed very much to the atmospheric buildup of greenhouse gases from the start of the industrial revolution and even now expel only a small fraction of the emissions of wealthier countries on a per capita basis. They often framed their opposition around the issue of international justice. Would it be fair to require citizens of the world's poorest states to reduce their greenhouse

gas emissions even if each American, on average, released five to ten times as much CO₂? Many nongovernmental organizations, who are increasingly influential on this and other environmental topics, agreed that it was unjust for wealthy states to demand reductions in fossil fuel usage by the world's most impoverished inhabitants.

While states individually debated whether or not to ratify Kyoto, the parties kept meeting to address unresolved issues. In several successive COP meetings through the late 1990s, in fact, representatives from the US and other states engaged in ongoing talks about enforcement of the Kyoto-mandated emissions reductions, emissions trading proposals, and possible credits for greenhouse gas "sinks." In the various meetings, the US continued to bargain for both adoption of market mechanisms and regulation of developing countries. The parties were apparently close to a deal that would satisfy some US concerns in late 2000, but they were unable to finalize an agreement before the Clinton administration ended.

Unsurprisingly, given that her boss had already renounced Kyoto, international environmental diplomats meeting in Bonn in 2001 booed the new chief US Delegate, Paula Dobriansky, when she proclaimed a continuing US commitment to action on climate change. In short order, the mantle of leadership was grabbed by the European Union in hopes of assuring the survival of the FCCC process. Tough bargaining led to new standards describing how industrial states would limit greenhouse emissions, and a last-minute decision by Japanese Prime Minister Junichiro Koizumi to go along saved the treaty. The Europeans achieved a new deal, the Marrakesh Accords, largely by accepting the Japanese position on carbon-trapping sinks, or forested areas that absorb CO₂, and by compromising on a Russian desire for emissions trading. While these concessions would have greatly pleased many Clinton-era negotiators representing US and private busi-

ness interests as recently as November 2000, the Bush administration still worried that binding reduction targets would harm the US economy, and its representatives reiterated complaints that the treaty did not go far enough to require action by developing countries such as China and India. On many occasions, President Bush and some Republican members of Congress even questioned the strength of the scientific evidence.

Recent Developments

The Kyoto Protocol became binding on the member states in February 2005 once it was ratified by 55 nation-states, including enough industrialized countries to account for at least 55% of all 1990 emissions. Most crucially, a set of "likeminded" affluent states led the way. The European Union, Japan and Canada ratified the Kyoto Protocol in 2002, primarily because these states genuinely favored the agreement. Russia was convinced to join them two years later, but geopolitics figured prominently in an odd end game. Because it was impossible to reach the 55% threshold without either the US or Russia's acceptance of the accord, the latter held a remarkably advantageous bargaining position vis-à-vis the member states, which desperately wanted Russia to join them. President Vladimir Putin was therefore able to extract Europe's backing for Russian accession to the World Trade Organization in exchange for a commitment to ratify Kyoto. This was a win-win outcome for Putin as Russia was already in compliance with the deal after closing many of its most polluting and inefficient factories in the early 1990s. In fact, rather than paying costs associated with emissions reductions, Russia would have emission credits to sell on a global market and knew this long before gaining the WTO side deal.

The United States has been joined in vocal opposition to Kyoto by Australia's relatively conservative government under Prime Minister John Howard. Additionally, a number of African and Middle Eastern states have more quietly ignored the treaty. Member states of the Organization of Petroleum Exporting Countries (OPEC) have overtly raised a critical problem that will inevitably influence the global politics of climate change. While publicly stating their general support for Kyoto goals, OPEC states argued that they should receive assistance if climate-related policy changes significantly undermine the international market for their oil. Though OPEC economies are heavily dependent upon petroleum export revenues, their calls for aid commitments have not found a receptive audience. Indeed, many other key pivotal states have significant fossil fuel reserves and other natural resources that may well become central issues in future bargaining rounds. China has vast coal supplies, Canada retains enormous reserves of petroleum in oil sands, Russia is already tapping its significant oil supplies, and Brazil controls the largest remaining forested areas. If the international community is going to slow the dramatic increase of greenhouse gas emissions through this century, many of these natural resources may have to remain

unused. The only alternative would be remarkable technological change that would somehow limit carbon emissions.

International negotiators have continued to meet and discuss climate change since the Kyoto deal was agreed in 1997, but the only successful follow-up agreement to Kyoto was the COP-7 Marrakesh Accords, which were agreed in 2001. That deal set detailed rules for implementation of the Kyoto Protocol and was politically necessary to make Kyoto work better, but it was not a substantial step towards a more comprehensive plan to reduce emissions. Given the years that have now passed, it seems apparent that states are not strictly following the Montreal Protocol model, which relatively quickly reduced and ultimately banned CFC production. The most recent COP-12 meetings were held in Nairobi, Kenya, in November 2006 and those talks continued to focus extensively on implementation issues. Parties to the convention discussed questions about the capacity of developing countries to meet many of the adverse impacts of global climate change, the development of clean technology projects in Africa and other poorer regions, and the future of financial mechanisms to help assist these states. There is no deal to require additional emission cuts, nor even a timetable for bargaining about such reductions. Independently, however, European Union countries have announced plans to reduce emissions by 20% by 2020.

Meanwhile, numerous reports suggest that many affluent state parties to the Kyoto deal are not making significant strides towards reducing emissions, even though the target dates are now imminent. Thanks to the various market mechanisms included in the treaty, a state like Japan, which has seen increased emissions since the 1990 base year, can "buy its way out" of noncompliance by trading emissions or by financing environmentally-friendly projects in the developing world. This is just as many environmentalists feared. Technically, this would mean that these states are meeting their international commitments, but the world will not be able to slow and reduce the effects of climate change until even the most affluent states bring their emissions under control. This is especially important given the most recent findings from an array of scientific reports, including the IPCC's latest consensus assessment, which suggest that emissions reductions far in excess of Kyoto will ultimately be needed if the most disastrous consequences of climate change are to be avoided. The European Union states, for instance, want to see total global emissions peak within the next two decades, followed by a 15 to 50% reduction in total emissions by 2050. Those kinds of ambitious targets, as already noted, will require remarkable transformation of the world's energy systems. Developing states, including China and India, eventually must make commitments and changes to reduce their net emissions.

Obviously, a successful global plan will require participation by the United States. Is there any reason to believe that the US will finally embrace the world's efforts to limit climate

change? Actually, there are many reasons to believe that Americans are starting to think seriously about global warming. The aftermath of Hurricane Katrina shocked the nation's psyche and many scientists publicly blamed the phenomenon of increasingly powerful hurricanes on climate change and human activity. Former Vice President Al Gore's critically acclaimed film, "An Inconvenient Truth," won the Academy Award for Best Documentary. At the box office, it is the third highest grossing documentary released since 1982. Public opinion poll results reveal that the overwhelming majority of Americans consider global warming a threat to future generations. Indeed, nearly 70% of Americans think that their government should do more to address global warming.⁶ Even President Bush called global climate change a "serious challenge" in the 2007 State of the Union speech, which marked the first time he had referenced the problem in his annual agenda-setting address.⁷

Previously, the Bush administration had merely announced a series of related efforts that encouraged voluntary public-private partnerships to reduce emissions. Meanwhile, US greenhouse gas emissions have increased about 1% per year through the Bush presidency – just as they did throughout the 1990s. While the new Democratic majority in Congress hints at new energy and climate policies, and many cities have committed to the Kyoto Protocol goals, the US still has a long road to travel before it catches the leading green states.

Conclusions

Currently, fossil fuel production and consumption seems integral to the economic livelihood of the global community. After all, these energy sources power a substantial portion of electricity generation and heating, nearly all automobiles, and a great deal of worldwide industrial activity. Therefore, they provide prosperity to innumerable individuals, many giant corporations and dozens of nation-states. Significantly reducing either energy demand or fossil fuel consumption will require a concerted effort unlike any other environmental achievement to date. Indeed, meeting the challenges posed by global warming will require extraordinary political effort and will – perhaps the apt comparison is the collective exertion put forth by the allied states during the second World War, when the leaders of the United States and United Kingdom joined the forces under their respective commands with those of the Soviet Union to defeat a common and dangerous foe. Halting global warming is not literally equivalent to war, of course, but it will require costly and prolonged commitments by diverse and powerful political actors. Proponents of greener policies will confront well-entrenched forces that will not yield their economic position without a political fight. Enormous barriers must be surmounted for the US alone to make the necessary transformations – and such progress would necessarily have to be matched all over the world. The great hope for the planet will, as it did in the 1940s, rest upon the prospect of a basic common interest

that must become the motivating impetus for collective action. Scientists warn that the costs and negative consequences will be devastating if the world does not attempt to meet this challenge.

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