

AN ELABORATED PROPOSAL FOR GLOBAL CLIMATE POLICY ARCHITECTURE: SPECIFIC FORMULAS AND EMISSION TARGETS FOR ALL COUNTRIES IN ALL DECADES



BY JEFFREY FRANKEL

OVERVIEW

This proposal builds on the foundations of the Kyoto Protocol, but strengthens it in important ways. It attempts to solve the most serious deficiencies of Kyoto: the absence of long-term targets, the absence of participation by the United States and developing countries, and the lack of motivation for countries to abide by their commitments. Although there are many ideas to succeed Kyoto, virtually all the existing proposals are based either on science (e.g., capping global concentrations at 450 ppm) or on the economics (weighing the economic costs of aggressive short-term cuts against the long-term environmental benefits). This plan for emissions reductions is more practical because it is partly based on politics, in addition to science and economics.

DISCUSSION

The proposal calls for an international agreement to establish a global cap-and-trade system. The emissions caps are set using formulas that assign quantitative emissions limits to countries in every year until 2100. Three political constraints are particularly important in developing the formulas. First, developing countries are not asked to bear any cost in the early years. Second, even later, developing countries are not asked to make any sacrifice that is different from the earlier sacrifices of industrialized countries, accounting for differences in incomes. Third, countries are not asked to accept targets that cost more than 5% of GDP in any given year.

Under the formulas, rich nations immediately begin to make emissions cuts. Developing countries agree to maintain their business-as-usual emissions in the first decades, but over the longer term agree to binding targets that ultimately reduce emissions below business as usual. This structure precludes energy-intensive industries from moving operations to developing countries (so-called “carbon leakage”) and gives industries a more even playing field. However, it still preserves developing countries’ ability to grow their economies, and they can raise revenue by selling emission permits. In later decades, once developing countries cross certain income and emissions thresholds, their emissions targets become stricter, following a numerical formula. However, these emissions cuts are no greater than the cuts made by rich nations earlier in the century, accounting for differences in per-capita income, per-capita emissions, and baseline economic growth.

This system of targets results in a world price of carbon dioxide that reaches \$30 per ton in 2020, \$100 per ton in 2050, and \$700 per ton in 2100, according to economic simulations using the WITCH climate model. Most countries sustain economic losses that are under 1% of GDP in the first half of the century, but then rise toward the end of the century. Atmospheric concentrations of CO₂ stabilize at 500 ppm in the last quarter of the century, and world temperatures increase by about 3 degrees.

KEY FINDINGS & RECOMMENDATIONS

► *Any future climate agreement must comply with six important political constraints.* First, the US will not commit to quantitative targets if China and other major developing countries do not commit to quantitative targets at the same time, due to concerns about economic competitiveness and carbon leakage. Second, China and other developing countries will not make sacrifices different in character from those made by richer countries that have gone before them. Third, in the long run, no country can be rewarded for having “ramped up” its emissions high above the levels of 1990. Fourth, no country will agree to participate if, in any year, the present discounted value of its future expected costs is more than 1% of GDP.

Fifth, no country will abide by targets that cost it more than 5% of GDP in any year. Sixth, if one major country drops out, others will become discouraged and the system may unravel.

► *Future emissions caps should be determined by a formula that incorporates three elements: a Progressivity Factor, a Latecomer Catch-up Factor, and a Gradual Equalization Factor.* The Progressivity Factor requires richer countries to make more severe cuts relative to their business-as-usual emissions. The Latecomer Catch-up Factor requires nations that did not agree to binding targets under Kyoto to make gradual emissions cuts to account for their additional emissions since 1990. This factor prevents latecomers from being rewarded with higher targets, or from being given incentives to ramp up their emissions before signing the agreement. Finally, the Gradual Equalization Factor addresses the fact that rich countries are responsible for most of the carbon dioxide currently in the atmosphere. During each decade of the second half of the century, this factor moves per capita emissions in each country a small step in the direction of the global average of per capita emissions.

CONCLUSION

The framework here allocates emission targets across countries in such a way that every country is given reason to feel that it is only doing its fair share. Furthermore, the framework – a decade-by-decade sequence of emission targets determined by a few principles and formulas – is flexible enough that it can accommodate major changes in circumstances during the course of the century.

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ABOUT THE HARVARD PROJECT ON INTERNATIONAL CLIMATE AGREEMENTS

The goal of the Harvard Project on International Climate Agreements is to help identify key design elements of a scientifically sound, economically rational, and politically pragmatic post-2012 international policy architecture for global climate change. It draws upon leading thinkers from academia, private industry, government, and non-governmental organizations from around the world to construct a small set of promising policy frameworks and then disseminate and discuss the design elements and frameworks with decision-makers. The Project is co-directed by Robert N. Stavins, Albert Pratt Professor of Business and Government, John F. Kennedy School of Government, Harvard University, and Joseph E. Aldy, Fellow, Resources for the Future.

Major funding for the Harvard Project on International Climate Agreements has been provided by a grant from the Climate Change Initiative of the Doris Duke Charitable Foundation. Additional support has been provided by Christopher P. Kaneb (Harvard AB 1990); the James M. and Cathleen D. Stone Foundation; Paul Josefowitz (Harvard AB 1974, MBA 1977) and Nicholas Josefowitz (Harvard AB 2005); the Enel Endowment for Environmental Economics at Harvard University; the Belfer Center for Science and International Affairs at the Harvard Kennedy School; and the Mossavar-Rahmani Center for Business and Government at the Harvard Kennedy School.

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