

CLIMATE CHANGE: DESIGNING AN EFFECTIVE RESPONSE

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ABSTRACT

Reversing the atmospheric buildup of carbon dioxide (CO₂) and other greenhouse gases will require a radical transformation in the world's economies. Such changes are difficult to plan and imply coordination of policies on a scale not yet experienced. Not only is the task difficult, but the problem of climate change has many attributes that historically are associated with policy failure—namely, the perception of high immediate costs for uncertain and highly diffuse future benefits. This paper explores the historical experience with addressing partially analogous global challenges. The paper is pessimistic that societies will have much effect on their emissions trajectories in the next few decades, implying that substantial amounts of climate change are likely and the risk of abrupt changes in climate will also multiply. It is optimistic about the longer-term—the period from five decades on—when zero carbon technologies can diffuse into widespread use through the normal turnover of energy infrastructures.

The difficulty in crafting an effective global response is found in the weakness of international institutions. Advocates for the creation of new institutions are prone to fantastic optimism and have embraced a conventional wisdom that legally binding treaties, such as the Kyoto Protocol, are the best way to force international coordination. Yet the experience with binding international environmental law reveals a profound conservatism in the way that law is actually crafted and applied. Diplomats control the final drafting of treaties with instructions to create obligations that countries are sure they can implement; governments that find such commitments inconvenient can simply exit (as the U.S. did when it left the Kyoto regime). The challenge is particularly great for developing countries because their present interests do not include—and, in many cases, are hostile to—curtailing the use of carbon-intensive fossil fuels and incurring the cost of developing energy sources that are emission-free.

Here, I outline what can be done to assemble a more robust global apparatus for weaning industrial society from carbon. Although the problem is global in its geophysics, the most effective institutional responses require the opposite approach: they must be cultivated through local efforts that address the particular concerns of localities while also contributing to the global goal of cutting greenhouse gas emissions.

The most important examples of localism are found in the burgeoning markets for greenhouse gas emissions. The architects of the Kyoto Protocol imagined a single global market for carbon; in reality, six markets have emerged—each with its own rules and procedures. The European Union's Emission Trading System is the most active and well-designed of these, reflecting the EU's strong commitment to addressing climate dangers. These markets are emerging from the bottom up (with only loose coordination around the Kyoto regime) because markets succeed only where property rights are strictly enforced. Monitoring and enforcement are particularly difficult tasks for international institutions. For example, in the formation of the World Trade Organization (the area of international cooperation that is most advanced in building strong global enforcement procedures) five decades of efforts were required before a strong global system emerged.

The wellspring for optimism in the paper is with technological change. Making the deep cuts in emissions needed to stabilize and reverse the rising concentration of CO₂ in the atmosphere appears costly with today's technology. However, the technological changes required to make these cuts cost-effectively are highly consistent with the types of changes that normally occur in energy systems over a timescale of five decades. What matters most today is a credible signal that carbon will be constrained, along with substantial. R&D support for radical new technologies that could diffuse into service in the coming decades. This paper's optimism regarding the long-term outlook for a less carbon-intensive energy infrastructure is contingent upon the flow of capital today towards the development of carbon-free technologies. Interestingly, the countries that have done the most to impose credible caps on emissions have done the least to invest in zero-carbon energy technologies. And those (notably the U.S.) that are investing heavily in technology have done little to send a credible signal to firms that the technologies actually will be required.