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Abstract

The goal of the Framew n of greenhouse gases in the atmosphere at levels which avoid dangerous an thropogenic interference with the climate (United Nations, 1992). No consensus currently exists with regard to a concentration that can be regarded as "safe," and the issue remains subject to debate, fuelled at least in part by the enormous difficulties in predicting and valuing the consequences of climate change. The attraction of efficient instruments for achieving atmospheric stabilization is great, and most of the analysis to date has focused on either tradable permits or taxes as the instruments of implementation (Hourcade *et al.*, 1996). Clearly, efficient instruments are a first-best alternative for achieving any emissions mitigation objective. But efficient instruments have their own difficulties, not the least of which is the income distribution problem. The purpose of this paper is to examine the performance and cost characteristics of an alternative, technology based, policy instrument, which might serve as a "backstop" in the event that efficient policy instruments could not be employed. Such instruments are of interest because they potentially offer a strategy for stabilizing the atmosphere, while requiring relatively minor financial transfers and allowing economic development to proceed. They accomplish these goals at the expense of economic efficiency, although our study shows the effect of the economic inefficiency is limited to approximately 30%. On the other hand, a technology strategy approach can offer wide technological flexibility in meeting the performance standard. The backstop protocol we study here requires new powerplant and coal-based synthetic fuels capacity to scrub carbon from the waste gas stream in Annex I nations, and provides a mechanism by which non-Annex I nations can graduate into obligations. We examine this protocol under two alternative reference energy futures: one dominated by coal and the other dominated by unconventional oil and gas.

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