

Energy Policy, Uncertainty and Collapse of the Atlantic Thermohaline Circulation (THC)

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Most climate models indicate the possibility of a complete THC collapse in response to global warming. Climate sensitivity is one of the key parameter influencing such response. The purpose of this presentation is to examine the impact of uncertainty (in particular over climate sensitivity) on the choice of energy policies. We first follow a stochastic programming approach to design, with the MERGE model of Manne and Richels, hedging policies that satisfy THC preservation constraints. We then use a probabilistic optimisation approach to analyse the costs of uncertainty over threshold levels within an adapted version of the DICE model of Nordhaus and Boyer which captures the dynamics of a THC collapse.

Keywords: Abrupt climate change, DICE model, Dynamic programming, Energy policy, MERGE model, Stochastic programming, Thermohaline circulation