

## 'Uncertainty, Ambiguity and Risk in Forming Climate Policy'

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### Abstract

Policy making, or at least sound policy making, is usually about risk management. Thus, science supports sound policy when it informs risk management. Policy measures can influence key aspects of the causal chain: from humans to emissions; from emissions to changes in atmospheric concentrations; from changes in concentrations to changes in weather and climate conditions around the world; from these changes and induced feedbacks to changes in global climate; and from global and local climate and weather changes to changes in risks and the circumstances of individuals. Climate policy aims both to alter future risks (particularly, mitigation) and to take account of and respond to relevant remaining risks (adaptation). While fundamental research increases our understanding of each link, policy profits from tracing understanding along the entire chain thereby informing how to shift the distribution of risks to the left, towards less dangerous impacts, even if the fundamental probability of events remains uncertain. Immediate value lies not only in communicating how risks may change with time and how those risks may be changed by action, but also in projecting how our understanding of those risks may improve with time (via science) and how our ability to influence them may advance (via technology). Guidance on the most urgent places to gather information and realistic estimates of when to expect more informative answers from current research is of immediate value.

Clarifying the criteria for risk assessment requires grappling with the roles of uncertainty and ambiguity, of risk in the Knightian sense. How is one to assess the ethical, logical, philosophical and economic underpinnings of a target of "50% chance of remaining under +2 degrees"? Or evaluate if this target is either 'right' or 'safe'? How do we better stimulate and harvest advances in the deep and difficult analytical and philosophical questions while maintaining foundational work advancing our understanding of the phenomena? And provide immediate help with decisions that must be made. Now.