

# Stochastic Integrated Assessment Modelling: the Climate Risk Premium

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Climate policy faces uncertainty with respect to both economic and ecological parameters. To date, the inherently stochastic nature is captured mostly by sensitivity analysis and scenario based analysis. This paper provides an innovation to the Integrated Assessment framework by adopting a stochastic growth model. Risk-sensitive agents attach probability distributions to key parameters which feed back into optimal policy design. Key parameters relate to climate damages, – in particular to major disruptions with small probability - long-run economic growth and technological improvements. The stochastic growth approach allows to compute a climate risk-premium on interest rates and energy prices similar to the risk premium on uncertain physical capital returns.

**Keywords:**

Stochastic growth, integrated assessment modelling, climate risk-premium