Quantifying Macroeconomic Impacts of Climate Change: Compiling Damage Function Parameter estimates for Integrated Economic Models

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The objective of this endeavor is to compile diverse evaluations of parameters within climate change damage functions, which have the potential to be incorporated into comprehensive economic models such as computable general equilibrium (CGE)[1] models and integrated assessment models (IAMs). This contributes to the analysis of the broader macroeconomic consequences of climate change.

Damage functions serve as bridges between environmental factors (e.g., temperature increases, humidity, heating degree days) and economic indicators (such as reductions in potential income, labor efficiency, and other resource provisions). [2] A plethora of estimates are available within the academic literature. The primary focus of this undertaking revolves around the specific damage function parameters related to sea level rise-induced loss of agricultural land, fluctuations in crop yields, and the heat-related effects on labor productivity.

A literature review on this topic was conducted last year. Minor updates might be necessary to ensure the integration of the available damage estimates into macroeconomic models. If time permits, these estimates may be used within a global, multi-sector general equilibrium growth model to evaluate the macroeconomic repercussions resulting from physical damages, both in Canada and other geographical regions.

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[1] Roson, Roberto and Martina Sartori (2016). Estimation of climate change damage functions for 140 regions in the GTAP9 database (English). *Policy Research Working Paper*, WPS 7728. https://documents1.worldbank.org/curated/en/175901467994702565/pdf/WPS7728.pdf

[2] Roson, Roberto and Martina Sartori (2016). Estimation of climate change damage functions for 140 regions in the GTAP9 database (English). *Policy Research Working Paper*, WPS 7728. https://documents1.worldbank.org/curated/en/175901467994702565/pdf/WPS7728.pdf