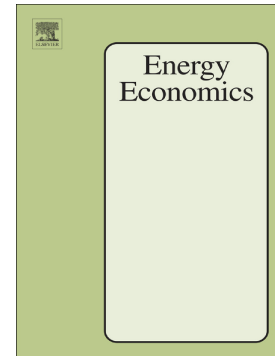


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Effects of Long-Term Climate Change on Global Building Energy Expenditures

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Abstract

This paper explores potential future implications of climate change on building energy expenditures around the globe. Increasing expenditures result from increased electricity use for cooling, and are offset to varying degrees, depending on the region, by decreased energy consumption for heating. The analysis is conducted using a model of the global buildings sector within the GCAM integrated assessment model. The integrated assessment framework is valuable because it represents socioeconomic and energy system changes that will be important for understanding building energy expenditures in the future. Results indicate that changes in net expenditures are not uniform across the globe. Net expenditures decrease in some regions, such as Canada and Russia, where heating demands currently dominate, and increase the most in areas with less demand for space heating and greater demand for space cooling. We explain these results in terms of the basic drivers that link building energy expenditures to regional climate.

Keywords: Climate change impacts, integrated assessment, buildings energy demand

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