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Abstract

Global warming and the associated risks for natural and human systems have been major global concerns. The International Panel on Climate Change (IPCC) has projected average global surface temperature to increase by between 0.3°C and 4.8°C by the end of this century, depending on the greenhouse gas emission scenarios assessed. In the tropical and sub-tropical regions increases in temperature will lead to greater use of electricity for space cooling, a development that is undesirable from energy and sustainability viewpoints. We investigate how temperature increases affect electricity consumption in Singapore and Hong Kong. This is done by consuming sector, i.e. residential, commercial and industrial. Singapore and Hong Kong are respectively two tropical and subtropical cities with comparable physical, population and economy sizes. Two different approaches are used to relate their sectoral electricity consumption to temperature using regression analysis. It is estimated that total annual electricity consumption would increase by between 3% and 4% in Singapore in 2015 if there were to be a 1°C rise in temperature. The corresponding estimates for Hong Kong are between 4% and 5%. In both cities, increases would be the greatest in the residential sector, followed by the commercial sector and the industrial sector.

Keywords: Electricity consumption; climatic factors; Singapore; Hong Kong

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