

Suburban Carbon Footprints of a Global City: The Case of Sydney

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There is an urgent need for cities to take more ambitious actions against climate change, as current targets can only deliver about half of the carbon savings required to meet the Paris agreement goals. Suburbs are the focal point of the emissions mitigation for cities under the background that many countries around the world are undergoing suburbanization in terms of intensely and diversely suburban development. Previous suburb-scale studies have demonstrated the mitigation potentials in urban planning using economic input-output life cycle assessment at national scale combining with the household survey data. However, there is a need of suburb-scale multiregional input-output (MRIO) table to model the suburbs specific carbon intensity showing the heterogeneity of production in different suburbs. In this study, we first show household Carbon footprint (CF) breakdowns into 111 sectors at 248 divisions of Greater Sydney by employing a suburb-scale MRIO model. The CF of transport sector is further divided into direct private, indirect private, public and infrastructure. We model the change of household CF with a time series of data during 2009-2015, and allocate them to different ethnical immigrant groups. The implications of mitigation for ongoing metropolitan planning are discussed to the end. The results suggest that residents in highly dense inner city core generate a total CF as high as residents in disperse outer city suburbs.