ESTIMATION OF HOUSEHOLD CARBON EMISSIONS IN CHINA BY USING MICRO LEVEL SURVEY DATA

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Overview

The Paris Agreement sets landmark goals for combating climate change, with a view to keep the global average temperature rise "well below 2° C above pre-industrial levels". The unequal distribution of household carbon footprints is one of the main debate issues related to the deep decarbonisation policies. As the largest population country and carbon dioxide (CO_2) emitter in the world, China's household carbon emissions are also growing quickly.

Methods

Most of the current studies estimate Chinese household carbon emissions by using macro level data. This paper links urban household surveys with Input-Output analysis together to reveal the relationship between urban household consumption and carbon emissions in China at micro level. Combining household survey data with Input-Output analysis, this study uses 17,200 urban households and their 49,684 members into 20 groups according to different income classes to get the structural composition of China's household carbon emissions at micro level. A Muti Regional Input Output (MRIO) method was also used to estimate the overall emission from those income groups.

Results

We find that the difference between production-based carbon emissions and consumption-based carbon emissions is considerable, which is mainly caused by whether emissions from the production of exports is taken into account. Furthermore, the changes in 57 sectors show that consumption upgrade in some sectors has taken place during recent years. We also find that consumption patterns and related emissions differ significantly by household size, the employment status, behaviour pattern and other demographic and behaviour characteristics.

Conclusions

We estimated the consumption based emission in urban China by using detailed micro-level household survey data. We find that consumption patterns and related emissions are significantly different among various households in terms of the size, age, house type and employment status. Our estimated result shows that poor family are more carbon intensive than rich families. The results of this research can be used for analysing government policies on energy and carbon emissions, especially carbon control policies.

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