

URBAN SCIENCE

Energy and transformation

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Credit: Aiqingwang / Getty image

The ‘urban transition’ is occurring worldwide and refers to the increasing proportion of people living in cities. Despite the much-discussed upsides of cities, the movement of resources into and out of them and the greater per-capita resource use of urban dwellers is fuelled by energy.

Joseph Burger, of the Duke University Population Research Institute, and colleagues created a model of this transition linking resource flows to demographic changes. They analysed World Bank data and found that, across and within nations over time, per-capita Gross Domestic Product (GDP), energy use and CO₂ emissions increase rapidly and massively with urbanization and coincide with characteristic shifts in employment, with rural economies

driven by resource extraction and urban economies mostly by service work. Economies transform and productivity rises, while energy use per unit GDP falls, suggesting an economy of scale. Moving ever more resources into ever tighter confines to power urban lifestyles carries an energetic price, however, one linked to our changing climate and planet. The characteristic accompaniment of fossil fuel use and carbon emissions to our transition to city living challenges the growing juxtaposition of ‘urban’ with ‘sustainability’.

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