RESERCH BRIEF: Socio-spatial carbon collaborative, or (SC)²

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Summary

I have begun an interdisciplinary research project at the University of Pennsylvania's Population Studies Center called the Socio-Spatial Carbon Collaborative, or (SC)². (SC)² aims to develop a better understanding of the intersection of social and ecological inequalities through the built environment with an eye to broad public engagement and influencing public policy. The project's first step is elaborating a third-generation, per capita, neighborhood-level carbon footprint database for the United States. The key contribution is combining data on GHG emissions, an explosion of geospatial data in general, and longstanding sources of demographic data into a single database. This will allow us to generate footprint data of unprecedented spatial resolution, in turn helping us better understand how carbon moves spatially through the economy, built environment, and everyday life, and how these processes intersects with a range of social and spatial inequalities. Although initial work is focused on the U.S., we will work to connect to broader global debates. So far, we have held a successful first workshop with scholars from the UPenn community and elsewhere discussing our methods and next steps.

Research motivation

We know that the consumption of goods and services is a massive, albeit often indirect, driver of global climate change. Indeed, most of the greenhouse gas (GHG) emissions resulting from energy production and land use can be traced, through the life-cycles of goods and services, to final consumption by individuals. But we know little about the details of how social and spatial factors shape these relationships. Most of the time, responsibility for GHG emissions is attributed territorially—this makes some sense from the perspective of local jurisdiction, but is a crude misrepresentation of how a 21st century economy of flows actually works. More sophisticated accounting methods should inform a deeper public understanding of where GHG emissions come from, and a broader portfolio of policies designed to tackle them in equitable ways.

At both national and regional levels, we expect this research to shed light on a wide range of questions, like: How do density and income interact in shaping carbon footprints? Are there urban forms that significantly reduce GHG emissions net of income? Net of density? (Eg, from proximity to public services, cultural amenities, sporting infrastructure, etc.) Are there particular forms of high-carbon consumption that we should target with local, regional, or national policy? How do footprints relate to localized perceptions of well-being? Public health indicators?

Can we quantify an "irony gap" between spatially concentrated high exposures to local toxins and low carbon footprints (and vice versa)? Are there forms of high-carbon consumption that ostensibly low-carbon density actually encourages, like plane trips for leisurely escape? Are there significant class or racial patterns in energy-intensive consumption? What is the carbon footprint of suburban racism, whereby largely white and prosperous communities block construction of dense affordable house and/or public transit? What was the carbon footprint of the sub-prime mortgage boom? What is the carbon footprint of the home mortgage interest deduction?

Ultimately, we aim to illuminate strategies to decarbonize and attack inequality at once.