

The Role of Cities in Climate Change

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Cities are often blamed for contributing disproportionately to global climate change. Numerous sources state that cities are responsible for 75–80 percent of all human-caused greenhouse gases (GHGs)—although the scientific basis for these figures is unclear. One detailed analysis concluded that the number is more like 40 percent.¹

In fact, many cities combine a good quality of life with relatively low levels of greenhouse gas emissions per person. There is no inherent conflict between an increasingly urbanized world and reduced global GHG emissions. Focusing on cities as “the problem” often means that too much attention is paid to the reduction of greenhouse gas emissions, especially in low-income nations, and too little to minimizing climate change’s damaging impacts. Certainly, the planning, management, and governance of cities should have a central role in reducing GHG emissions due to human activities worldwide. But this should also have a central role in the often neglected activities of protecting people in cities from the floods, storms, heat waves, and other likely impacts of climate change.

The main sources of greenhouse gas emissions in cities are the use of energy in

industrial production, transportation, and buildings (heating or cooling, lighting, and appliances) and waste decomposition. Transport is an important contributor to GHG emissions in almost all cities, although its relative contribution varies a lot—from around 11 percent in Shanghai and Beijing (in 1998) to around 20 percent in London and New York and as much as 30–35 percent in Rio de Janeiro and Toronto.²

GHG inventories show more than a tenfold difference in average per capita emissions between cities—with São Paulo responsible for 1.5 tons of carbon dioxide-equivalent per person compared with 19.7 tons per person in Washington, DC. If figures were available for cities in low-income nations, the differences could well be more than 100-fold. In most cities in low-income nations, GHG emissions per person cannot be high because there is scant use of fossil fuels and little else to generate other greenhouse gases. There is little industry, very low levels of private automobile use, and limited ownership and use of electrical equipment in homes and businesses.³

Thus perhaps it is not cities in general that are the main source of greenhouse gas emissions but only cities in high-income nations. Yet an increasing number of studies of particular cities in Europe and North America show that they have much lower levels of greenhouse gas emissions than their national averages. New York and London, for example, have much lower emis-

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sions levels per person than the average for the United States and the United Kingdom.⁴

Of course, it is not cities (or small urban centers or rural areas) that are responsible for greenhouse gas emissions, but particular activities. Figuring out how to allocate emissions to different locations is not a simple exercise. For instance, locations with large coal-fired power stations are marked as very high GHG emitters, even though most of the electricity they generate may be used elsewhere. That is why it is common in GHG inventories for cities to be assigned the emissions generated in providing the electricity used within their boundaries, and it explains why some cities have surprisingly low per capita emissions: much of the electricity they import comes from hydro, nuclear power, or wind and solar, not from fossil-fueled power stations.

There are other difficulties too. For instance, do the emissions from gasoline used by car-driving commuters get attributed to the city where they work or the suburb or rural area where they live? Which locations get assigned emissions from air travel? Total carbon emissions from any city with an international airport are greatly influenced by whether or not the city is assigned the fuel loaded onto the aircraft—even if most of the fuel is used in the air, outside the city.

A more fundamental question is whether greenhouse gas emissions used in producing goods or services are allocated to production or consumption. If they are assigned to the location of the final consumer, much of the greenhouse gas emissions from agriculture and deforestation would go on the tally sheet of the cities where wood products are used and food is consumed. If instead they are assigned to where goods are produced, then a city that was a major producer of windmills, photovoltaic cells, and hydro-

gen-fueled buses could have high greenhouse gas emissions per person even though its products help keep emissions down wherever they are used.

These questions over how to assign GHG emissions have enormous significance for allocating responsibility for reducing emissions between nations and, within nations, between cities and other settlements. If China's major manufacturing cities are assigned all the GHG emissions related to exported goods (including the coal-fired electricity that helped produce them), this implies a much larger responsibility for moderating and eventually reversing emissions than if the nations or cities where goods are used are held accountable. Thus, seeing cities as "the problem" misses the fact that the driver of most GHG emissions is the consumption patterns of middle- and upper-income groups in wealthier nations, including those who live outside cities.

This attitude also misses the extent to which well-planned and well-governed cities can provide high living standards without high greenhouse gas emissions. Consider the large differences among wealthy cities in gasoline use per person. People in most U.S. cities use three to five times as much gasoline as people in most European cities because of much higher private automobile use. But even within U.S. cities people can have a relatively small carbon footprint. On a per capita basis, for example, New Yorkers emit just 30 percent as much greenhouse gas as the national average, in part because of smaller and more concentrated houses and apartments and the greater use of public transportation. Many of the most desirable (and expensive) residential areas in the world's wealthiest cities have high densities and buildings that minimize the need for space heating and cooling—in distinct contrast to houses in suburban or rural

areas. Most European cities have high-density centers where walking and bicycling are common. High-quality public transport can keep down private car use.⁵

Cities also concentrate so much of what contributes to a high quality of life that does not involve high material consumption (and thus high GHG emissions): theater, music, museums, libraries, the visual arts, dance, and the enjoyment of historic buildings and districts. They have long been places of social, economic, and political innovation—something already evident regarding climate change. In many high-income nations, city politicians like Mayor Michael Bloomberg of New York and Ken Livingston (when he was mayor of London) are more committed to reducing greenhouse gas emissions than national politicians are.⁶

How a city is planned, managed, and governed also has important implications for how it will cope with the impacts of climate change. Most cities in low-income nations in Africa and Asia have very low emissions per person. Yet they house hundreds of millions of people who are at risk from the increased frequency or intensity of floods, storms, and heat waves and from the water supply constraints that climate change is likely to bring. Discussions of climate change priorities so often forget this. And these risks are not easily addressed, especially by international aid agencies that show little interest in tackling the reasons so many people are at risk, such as the lack of provision for urban infrastructure (such as drains) and the high propor-

tion of people living in poor-quality homes in informal settlements. A great deal of urban expansion increases risks from climate change, because the only sites that low-income groups can find for their houses are on floodplains or other dangerous sites.⁷



Albert Cesario

Traffic on Avenida Atlântica, Copacabana Beach, Rio de Janeiro, with a pall of pollution on the horizon

But there are some good precedents to show what can be done. Manizales in Colombia, for example—long an innovator in environmental policies—has shown how to reduce risks for vulnerable populations, as people living on dangerous hillsides were provided with alternative sites and the hillsides were turned into locally managed eco-parks. Yet the good examples will remain isolated and unusual unless national governments and international agencies learn how to support these kinds of local innovations on a much larger scale.⁸

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