



THE URBAN EQUATION

After spending tens of thousands of years living mostly in small settlements, humans have entered an urban stage of evolution. As of 2008, more than half the world's people live in cities, and the urban population is swelling by 1 million every week. By 2030, almost 6 in 10 people will live in metropolitan areas, which exert a powerful pull as economic and social magnets.

That concentration of people gives rise to some of the world's greatest problems, such as air and water pollution, poverty-stricken slums and epidemics of violence and illness. Yet throughout history, urbanites have produced soaring achievements, ranging from Notre Dame Cathedral to the mobile-phone networks that have revolutionized communication.

Cities are also home to considerable scientific capital; they hold most of the world's top universities and the vast majority of its researchers (see page 900). This week, *Nature* examines that special relationship between scientists and cities and how each can bring out the best in the other. The resources that cities offer can stimulate outstanding science for reasons that researchers are just starting to explore (see page 906). On the other side of the equation, scientists can assist cities in tackling their biggest problems. The Nobel laureate Mario Molina sets a good example, having

redirected his research to improving the environment in Mexico City, one of the world's biggest megacities (see page 902).

Scientists are also helping cities to assume a lead position in combating global warming. With nations largely paralysed on this front, cities have emerged as a testing ground for cutting greenhouse-gas emissions and for adapting to the changes that warming will bring (see page 909). But these efforts are hampered by a disproportionate lack of data at the city level (see page 883). Cities must find a way to grow sustainably, which will require scientists across many disciplines to collaborate with leaders in other sectors of society to develop general rules for urban expansion (see page 912).

The threats to cities and the opportunities they present are attracting increasing attention from researchers in many areas. Synthetic biologists, for example, are exploring molecules that could clad skyscrapers and trap carbon dioxide (see page 916). Scientists have a responsibility to supply many more advances of that nature to ensure the viability of humans as an urban species. ■

ILLUSTRATIONS BY OLIVER MUNDAY



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