



# MEXICO CITY

*Hoy No Circula*—No Driving Today. That is the message that at least 20 percent of drivers in Mexico City get every day. If pollution levels spike, the number can double. In an effort to crack down on the city's long-standing pollution problem, in 1989 the national government enacted a plan to limit the number of cars driving into the city.

The government had ample reason to take such a step, and more. For decades Mexico City had some of the worst air pollution in the world. There were reports of birds dying in mid-flight and dropping from the sky. Children colored the sky gray, because they never saw anything else. In 1992, Mexico City earned the dubious distinction of being number one on the United Nation's list of the 20 most polluted cities.

The sheer size of the city is one problem. With 9 million people in the city proper, and roughly 21 million in the surrounding Valle de Mexico, it is the most populous urban area in the western hemisphere. Migration from other parts of Mexico has slowed in recent years, but the city will still add millions of more residents by 2020.

The geography of Mexico City compounds the pollution problems. It lies on what was once an enormous lake, the floor of an ancient crater surrounded by mountains, including an active volcano, Popocatepetl. Eruptions, the last of which occurred in the spring of 2016, add even more dust and ash to the atmosphere.

Mexico City sits at over 7,000 feet in elevation. The lower level of oxygen reduces the efficiency of vehicle engines, so they are more polluting. Finally, warm air frequently settles above the valley, creating an inversion that seals in the pollution.

In the 1990s, the Mexican government developed a comprehensive plan called ProAire to tackle the problems. *Hoy No Circula* is one element, and keeps as many as 2 million cars at home. As part of ProAire the city also tests vehicles for compliance with emissions regulations; requires all new cars to have catalytic converters; reduced the levels of sulphur in diesel fuel; increased the number of buses powered by natural gas; built dedicated bike lanes; and retired 1,500 of the most polluting small and medium-size buses. Mexico City has expanded its public transit options, and it has the largest bike-sharing program in the region.

ProAire was so successful at reducing pollution that in 2013, the C40 Cities Climate Leadership Group awarded Mexico City its air-quality prize. The award noted the diversity of actions but also the impressive achievement of reducing ambient air concentrations of primary pollutants, including 97 percent of lead emissions, 89 percent of SO<sub>2</sub>, 79 percent of CO<sub>2</sub> and 66 percent of PM<sub>10</sub>, over a 25-year period.

Over the past several years, however, improvements in air quality have slowed, or even reversed. In early 2016, authorities declared the first air-pollution warning since 2005 and pronounced an environmental emergency. Two months later, with no end to the crisis in sight, the city banned about 40 percent of the more 5 million vehicles that daily transit the city and suburbs.

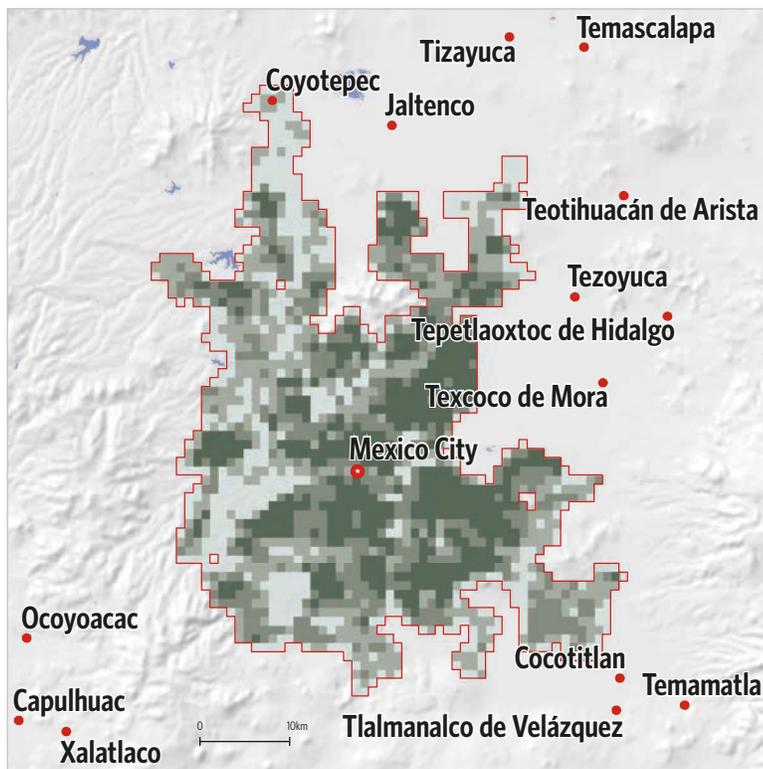
Continued population growth, increased automobile traffic, and industrial activity—along with inconsistent enforcement of environmental laws—have undercut some of the gains Mexico City has made. *Hoy No Circula* has, ironically, created an incentive for people to own more than one car: The system is based on the last digit of the car's license plate, so as long as the two plates do not match, then the owner can get around the one-day driving ban.

Federal and municipal officials have vowed to take new steps to reduce pollution, including tighter emissions controls and a crackdown on cheaters. Promoting new technologies for more efficient energy use in buildings and offering tax incentives for sustainable construction and green roofs are among the other initiatives Mexico City has undertaken.

Reforestation and creation of green areas will help as well, and the city has committed to collecting the necessary data. In January 2014, the Mexico City government started a real-time monitoring program to determine black carbon concentrations at five sites across the city.

Mexico City has, compared to other cities globally, a moderate ROI of tree planting. The neighborhoods with the highest ROI are in central and east Mexico City. Moreover, our estimate of planting cost was relatively low for Mexico City, which increases the ROI shown in the scenarios in the table.

## Results from the Mexico City study



Map 22. Neighborhood-level ROI for Mexico City (PM reduction).

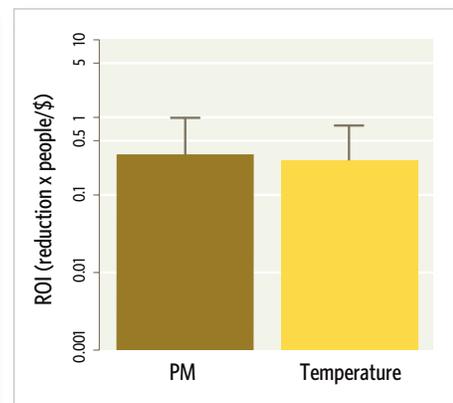


Figure 27. ROI for tree planting for Mexico City.

Investment	Annual Cost (\$)	> 1 ug/m <sup>2</sup> PM <sub>2.5</sub>	1.5 deg C
10% of sites	430,000	203,000	205,000
20% of sites	861,000	358,000	361,000
Full Investment	3,850,000	869,000	869,000

Table 15. Temperature and PM reduction benefits under three investment scenarios for Mexico City.