



In late 2014, Beijing hosted an important regional meeting: the Asia-Pacific Economic Cooperation (APEC) summit. Heads of state from 21 countries attended. China's leaders saw the gathering as an opportunity to showcase its progress and economic vitality.

One area of progress was apparent: China has made impressive strides in recent years in cutting coal emissions, switching to natural gas for electricity generation and replacing coal-fired boilers with electric heating systems in the city center. In outlying areas, the government has encouraged residents to switch from cheap, untreated smoky coal to smokeless coal—though many continue to use the dirtier version.

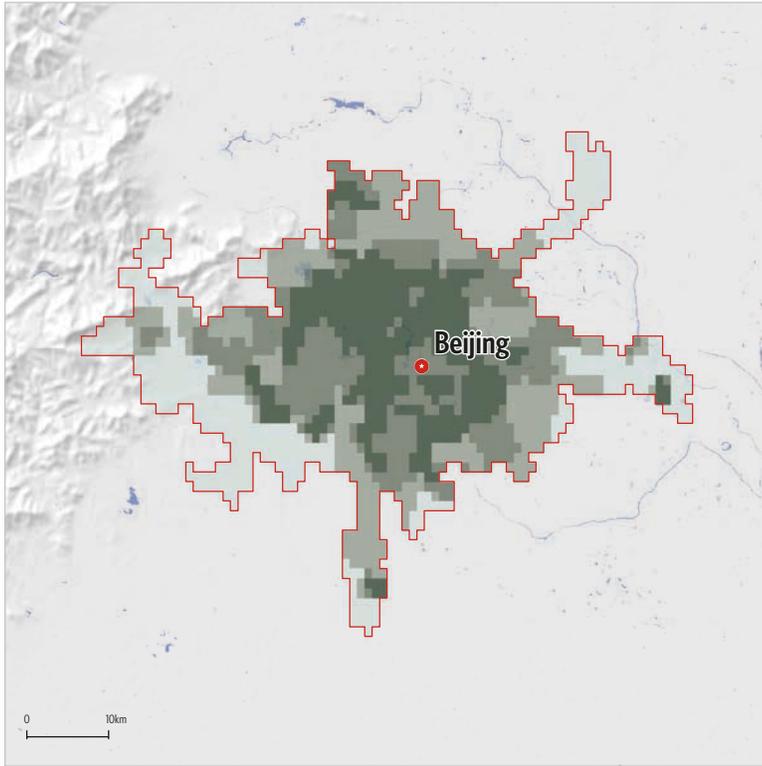
Still, like most megacities around the world, Beijing faces air-quality challenges. On the worst days, visibility drops to a few hundred yards. The problems can worsen during cold winters, when households, particularly on the outskirts of the city, burn more coal for heat.

Beijing's pollution problem is hardly a secret. In March, 2014, more than six months before the APEC summit, Premier Li Keqiang promised to "declare war" on pollution and fight it with an "iron fist."

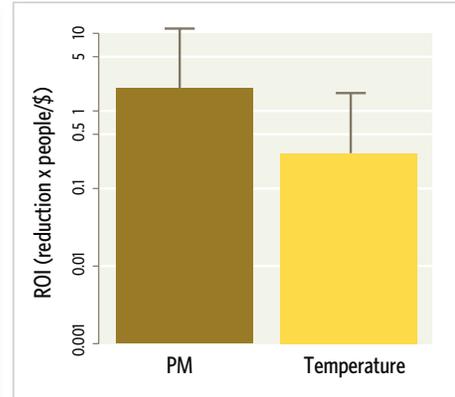
The government's efforts have had some success. Beijing has more days when skies clear and the mountains are visible in the distance. Longer lasting solutions, however, will require more fundamental changes. Planting trees can be a part of that effort. Overall, the city has a high ROI of tree planting, relative to other cities. The central neighborhoods of the city have the highest ROI for PM reduction. We estimate that for an annual additional investment of \$2.9 million in street tree planting, 2.2 million people could have a greater than  $1 \mu\text{g}/\text{m}^3$  reduction in  $\text{PM}_{2.5}$ . Note that for many people in Beijing, reduction would be much greater, exceeding  $10 \mu\text{g}/\text{m}^3$  for most people near trees.

Planting trees can play a role in clearing Beijing's air, but it will not suffice. Beijing is now well into a five-year effort to cut coal burning by more than half, restrict the number of cars on the road, introduce a pilot cap-and-trade program, and urge factories to disclose their emissions publicly. The city has shut down manufacturing firms for polluting and taken thousands of inefficient vehicles off the roads. The city hopes to reduce  $\text{PM}_{2.5}$  concentrations by 25 percent by 2017.

# Results from the Beijing study



**Map 15. Neighborhood-level ROI for Beijing (PM reduction)**



**Figure 20. ROI for tree planting for Beijing.**



Investment	Annual Cost (\$)	> 1 ug/m <sup>2</sup> PM <sub>2.5</sub> *	1.5 deg C
10% of sites	2,940,000	2,220,000	2,230,000
20% of sites	5,890,000	3,600,000	3,610,000
Full Investment	29,400,000	7,510,000	7,510,000

\*Note: Most people will receive a reduction of > 10 ug/m<sup>2</sup> PM<sub>2.5</sub> in this city.

**Table 8. Temperature and PM reduction benefits** under three investment scenarios for Beijing.