How China cut its air pollution

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The Economist explains

The biggest polluters are state-owned, so government efforts to reduce concentrations of the smallest polluting particles have been effective

"I'VE never seen Beijing like this," said Emmanuel Macron, the French president, beneath an unaccustomed cerulean sky at the end of a recent visit. The next day Greenpeace East Asia, an NGO, showed that his impression was accurate. It found that concentrations of PM 2.5—the smallest polluting particles, which pose the greatest health risks—were 54% lower in the Chinese capital during the fourth quarter of 2017 than during the same period of 2016. Concentrations of PM 2.5 in 26 cities across northern China, the province-sized metropoles of Beijing and Tianjin, were one third lower. China genuinely has reduced its notorious air pollution. How has it done it and at what cost?

The country has had draconian anti-pollution measures since 2013, when it introduced a set of prohibitions called the national action plan on air pollution. This imposed a nationwide cap on coal use, divided up among provinces, so that Beijing (for instance) had to reduce its coal consumption by 50% between 2013 and 2018. The plan banned new coal-burning capacity (though plants already in the works were allowed) and sped up the use of filters and scrubbers. These measures cut PM-2.5 levels in Beijing by more than a quarter between 2012-13, the time of the city's notorious "airpocalypse", and 2016. The measures were notable for being outright bans on polluting activities, rather than incentives to clean up production, such as prices or taxes (though China has those, too, including what will be the world's largest carbon market, when it opens this year).

The recent improvement in air quality in northern China has come about through further command-and-control measures, which were imposed in mid-October and are due to last until mid-March. Air pollution spikes in northern China during the winter, because most domestic heating there is fuelled by coal. Those 26 cities, again with Beijing and Tianjin, imposed output controls on steel and aluminium smelters. They mothballed large construction projects in order to reduce smog from cement production and diesel trucks. And they created a new Environmental Protection Agency, with tough enforcement powers, in Beijing and its surroundings. These prohibitions were so tough that in some areas they forced the authorities into an unusual U-turn. The cities had promised to convert almost 4m households from coal-burning to electricity or gas in 2017 and shut off the coal in houses, hospitals and schools even before the replacement systems were ready. When hospital wards froze and schools took to holding classes in sub-zero playgrounds (where at least it was sunny), the government had to allow some coal-burning after all.

The drop in pollution in late 2017 exemplifies why bans in China often work better than elsewhere. First, many of the biggest polluters are state-owned, and so are more easily controlled. And second, with more than half of China's pollution coming from coal-fired power stations, the government can concentrate on coal and do more than regimes in places where the causes of pollution are more varied. Even so, command-and-control measures were most effective when the composition of GDP was anyway switching from heavy industry and infrastructure towards services, as from 2013 to 2016. When infrastructure spending rose again, as in 2016-17, such measures were unable to do more than stop emissions rising, too. Prohibitions in northern China also seem to have shifted some polluting activities elsewhere. National levels of PM 2.5 were only 4.5% lower in 2017 than in 2016, which implies that pollution rose in southern China. Moreover, the costs are high, even leaving aside the impact on schools and hospitals. In 2015 the Clean Air Alliance of China, an advisory group, reckoned that the investment cost of the 2013-18 national plan in Beijing, Tianjin and the surrounding province of Hebei would be 250bn yuan ($38bn). That does not include the opportunity cost of suspending whole industries and construction projects for months on end. In short, China's measures work, but at a cost. The country has won battles against air pollution, but not yet the war.