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Indian politics & policy

Delhi turns to artificial rain to ease air pollution crisis

Indian scientists hope cloud-seeding scheme will help clean the skies over world's most polluted city

Benjamin Parkin in New Delhi NOVEMBER 17 2023

Scientists in India's capital Delhi have drawn up plans to induce artificial rain in an unconventional attempt to reduce smog, as authorities scramble for ways to ease the country's catastrophic air pollution.

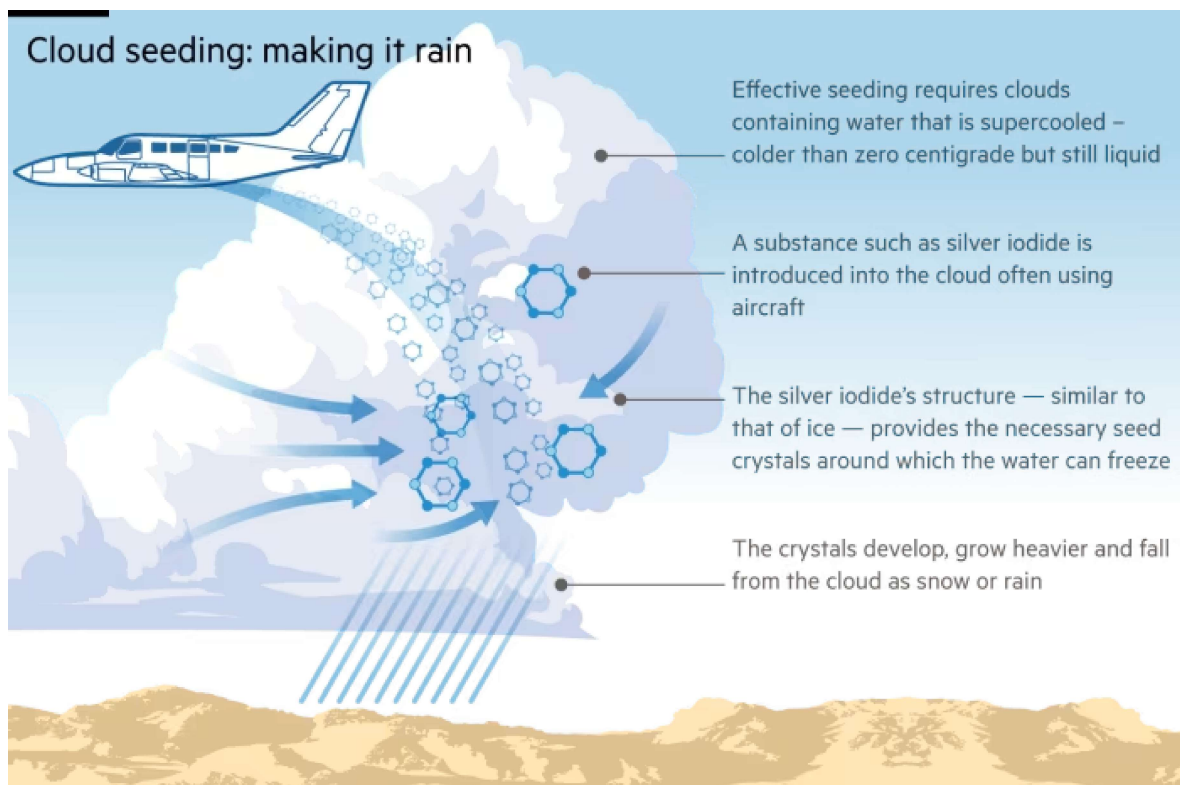
The plan involves dropping salts or silver iodide into clouds from an aeroplane in order to spur the formation of rain droplets in a process known as "cloud seeding". Backers hope the resulting rain will help to clear pollution from the dirty air.

Delhi's regional government, which is organising the project with scientists from the Indian Institute of Technology Kanpur, is waiting for clearances from national government bodies and hopes to finalise the project this week.

The scheme comes after [air quality in north India](#) returned to crisis levels. Delhi was this week the most polluted city in the world, according to Swiss group IQAir.

IQAir's air quality index, which measures levels of deadly pollutants such as very small particles known as PM2.5, routinely soars above 400 in Delhi in November — a level considered “hazardous” for the capital's 30mn people.

A study by the University of Chicago this year called air pollution “the greatest threat to human health in India”, taking more than five years off the life expectancy of an average Indian. Residents of Delhi would have a life expectancy 12 years longer if particulate pollution was cut to meet World Health Organization guidelines, the study found.



Sources: Noaa; FT research

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Cloud seeding is “an intervention to bring some respite”, said Sachchida Nand Tripathi, a professor at IIT Kanpur working on the rain-making project. “When you have a situation like that, when you have several weeks with AQI more than 400 . . . seeding could be a more viable option.”

Others have criticised the plan. “What the government is trying to do is, number one, look like they’re doing something,” said Jyoti Pande Lavakare, a clean air activist. “Number two, bring down temporarily — in kind of a firefighting mode — these toxic levels of pollution when they become an issue of political salience.”

International attention on India’s air pollution has become a source of embarrassment for Prime Minister Narendra Modi’s government. During this month’s Cricket World Cup, players from Sri Lanka, Bangladesh and England skipped practice sessions or used asthma inhalers to cope with the dirty air.

Scientific evidence of the effectiveness of weather modification efforts is limited, but Indian authorities say previous cloud seeding around the monsoon season has had some success in increasing precipitation in drought-prone areas. The scientists hope to seed about 300 sq km of cloud over Delhi, but accept the plan depends on having enough moisture in the air over the coming weeks.



India’s government launched a national clean air programme in 2019 and claims to have made some progress in Delhi © Anushree Fadnavis/Reuters

China has for decades maintained an arsenal of aircraft and artillery for cloud seeding, which is tasked with reducing damage from hail storms, easing droughts and improving air quality, as well as helping ensure good weather around high-profile events [such as the 2008 Beijing Olympics](#). But it was China’s strict campaign to control industrial emissions around Beijing that has helped clear the capital’s notoriously hazy air.

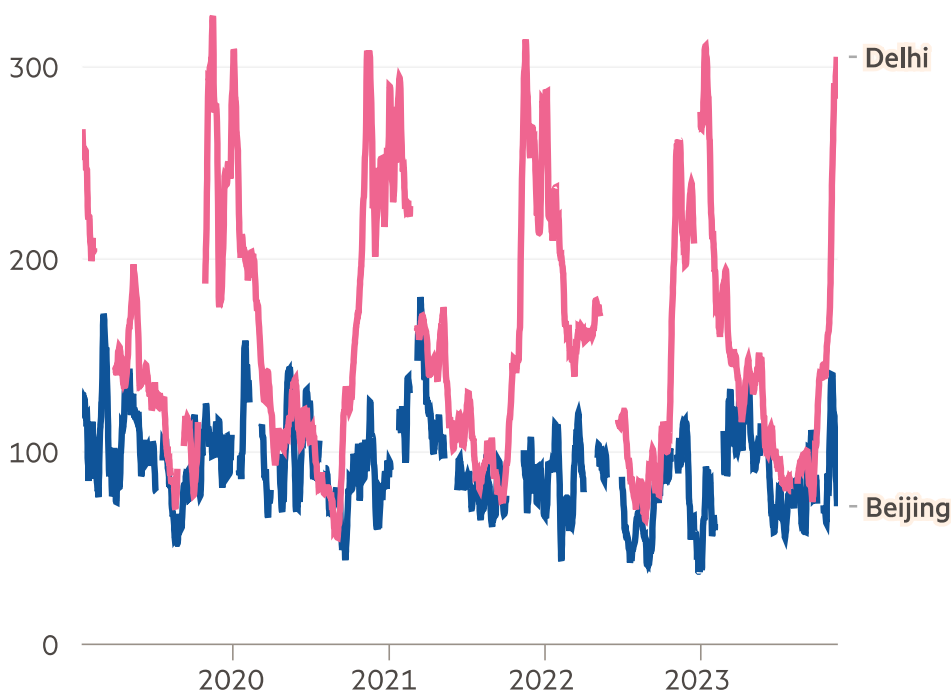
Delhi’s cloud-seeding plan is “kind of a Hail Mary”, said Bhargav Krishna, an expert on air quality and health. “It reflects the failure of institutions tasked with regulating air pollution in the first place . . . It seems to be a last resort effort to try something in the absence of anything else working.”

India’s air pollution is an annual hazard caused by a confluence of factors, including industrial emissions, car fumes and smoke from crop-residue burning in nearby states. It was also exacerbated this week by fireworks to celebrate the festival of Diwali on Sunday.

But finding a lasting solution has consistently confounded Indian policymakers.

Delhi’s air pollution has been significantly worse than in Beijing during autumn and winter

PM2.5 levels detected at US embassies, 14-day moving average



Source: aqicn.org, FT calculations
FT Data: Andy Lin / @imandylin2

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India's government in 2019 launched a national clean air programme to tackle the problem, and authorities argue that they have had some success in reducing PM2.5 levels in Delhi and elsewhere. But a series of other steps, from so-called smog towers designed to purify nearby air to long-delayed plans to clean power plant emissions, have done little to ease the crisis.

Analysts said that, in contrast to China, India's efforts have been hobbled by a lack of both political will and state capacity. A study earlier this year by Krishna and then-colleagues at the New Delhi-based Centre for Policy Research think-tank found seven out of eight state pollution control boards — the bodies tasked with regulating air quality — had a vacancy rate for technical staff of at least 40 per cent.

Official inaction is enabled by low public awareness about the dangers of air pollution and the steps needed to address it. Though politicians from Modi's Bharatiya Janata party and the rival Aam Aadmi party, which governs Delhi, routinely bicker over who is responsible, analysts said air quality had not become an electoral issue, leaving officials with limited incentive to tackle the problem.

"There is only one way to reduce pollution, and that is by cutting emissions," Lavakare said, adding Modi needed to take responsibility for fixing the issue. "There is no political will to make this happen . . . That's because it's not coming from the top."

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