



Smog once again plagues India and Pakistan

Air pollution is having extremely harmful health effects in south Asia. Why is the problem so bad? And what can be done about it? Talha Burki reports.

Step outside in Lahore, Pakistan, or in the Indian capital of New Delhi, over 400 km to the southeast, and it will not take long before your throat starts to feel itchy and your eyes start to sting. The cloud of smog blanketing vast swathes of Pakistan's Punjab province and northern parts of India can now be seen from space. Hospitals on both sides of the border are reporting a surge in cases of respiratory illness. Every year, around 12 000 residents of Delhi die as a result of exposure to air pollution. On Nov 11, Abdullah Fadil, UNICEF Representative in Pakistan, stated that he was "extremely concerned" about the wellbeing of millions of children in Punjab. "Prior to these record-breaking levels of air pollution, about 12% of deaths in children under 5 in Pakistan were due to air pollution", added Fadil. "The impact of this year's extraordinary smog will take time to assess but we know that doubling and tripling the amount of pollution in the air will have devastating effects."

According to IQAir, which monitors air quality, Lahore and Delhi are the most polluted major cities in the world. As *The Lancet* went to press, Lahore was experiencing

concentrations of small particulate matter, which can penetrate deep into the lungs, 77 times higher than the WHO-recommended average annual upper limit. Delhi was not far behind. How did this situation come to pass?

The quality of air in Pakistani Punjab and northern India is poor all year round. Nonetheless, October marks the beginning of an especially dangerous period. The air cools and the wind drops, which allows the smog to settle. At the same time, there are thousands of fires as rice farmers burn the crop residue.

"Rice is a water-intensive crop", explained Bhargav Krishna, Convenor at the Sustainable Futures Collaborative (Delhi, India). "To reduce the impact on water, you delay the sowing season. When you delay the sowing season, you arrive at this short harvesting season between cropping cycles [rice and wheat]. So, you end up with residue burning. It is a cheap and easy way to clear the field." India and Pakistan both mandate fines for farmers who burn their residue, but enforcement is poor. There are alternative means of removing residue, such as shredders, but encouraging uptake would require subsidies. The affected governments could also try to jump-start a market for biomass, for example in energy generation. Another option is to push for crop diversification, which would stagger harvest periods and thereby reduce the urgency to clear the field.

Crop-burning season comes on top of the perennial sources of emission: transport, which accounts for 40% of pollution in Pakistani Punjab; industry; and power generation. There are 5 million motorcycles in Lahore alone. Lumbering heavy-goods vehicles spewing acrid black

smoke are a common sight on the roads of the subcontinent. Trucks can be retrofitted with technologies that reduce their emissions, but to do so for the entire fleet would be enormously expensive. Delhi and the surrounding regions have had some success in upgrading older domestic vehicles to newer ones compliant with the Euro 6 emission standards, although this decision merely shifts pollution to wherever the older cars end up. In Pakistan, the provincial Government in Punjab has cracked down on the brick kiln industry, closing down the most polluting centres.

"There is no magic bullet", stressed Tanushree Ganguly, Director of the Air Quality Life Index at the Energy Policy Institute at the University of Chicago (Delhi, India). "Air pollution reduction requires sustained action, especially given that in cities like Delhi and Lahore citizens are likely to lose more than 5 years of their life because of polluted air. You need to focus on enforcement of standards. Urban infrastructure should incentivise people to move to less polluting options." Much of Lahore is positively hostile to pedestrians—pavements peter out or are blocked by vehicles or electrical cables.

After the smog descended, schools in Punjab were closed and motorised rickshaws were banned. Delhi suspended non-essential construction work and mandated that office occupancy should be capped at 50%. "People are now being advised to work from home", said Krishna. "The reality is that the vast majority of people who live and work in Delhi do not have that luxury. They work outdoors and they have no way to protect themselves".

Talha Burki



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