**[Smog season](https://www.dawn.com/news/1792911/smog-season)**

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LARGE parts of Pakistan are currently engulfed by toxic air, amounting to nothing short of a public health catastrophe. The onset of ‘smog season’, Pakistan and north India’s substitute for autumn and early winter, seems to be worsening with each passing year, and cities in the region regularly top the charts for the worst air quality anywhere in the world.

For the first few smog seasons, public authorities chose not to pay much attention, instead highlighting their own ‘data’ that showed the air wasn’t actually as poisonous as environmentalists were making it out to be. Once this make-believe data was thoroughly debunked, authorities gradually stepped into action with a range of seemingly haphazard measures.

Clampdown on stubble burning during the Kharif season has reportedly produced some results. Data shared by environmental policy specialist Dawar Butt shows that till Nov 20, crop fires in Pakistani Punjab were down by nearly 60 per cent compared to the average for this period between 2016 and 2020.

Some of the punitive and administrative measures taken by local officials have induced behavioural change in farming populations, thus contributing to lower frequency of crop burning.

However, clamping down on crop burning addresses a relatively small segment of the problem, given the widespread and multifaceted nature of poor air quality. The fact of the matter is that crop fires only emerge ahead of winter sowing, while air quality is poor pretty much the year round. It becomes more visible during the last quarter of the calendar year because of changes in climatic and meteorological conditions.

Given what needs to be done to clean up Pakistan’s air, the scale of the task is daunting.

To date, all existing work on toxic air quality in Pakistan has shown that vehicular emissions are a central part of the problem. Even when smog is not functionally visible, air quality indicators continuously show high levels of particulate matter and toxicity. This means that any interventions designed to clean up the air will also have to address these year-round causes, rather than just tackling time-bound issues.

A recent article by Pakistani scientists Abdullah Bajwa and Hassan Sheikh, based at Oxford and Cambridge respectively, in the journal Air does a comprehensive job of summarising the literature and evaluating the contribution of road transport to urban air pollution.

Their analysis of existing source apportionment studies shows that vehicular emissions are responsible for anywhere between a third to more than half of poor air quality, depending on the parameters of evaluation.

While existing research may be insufficient to provide more precise estimates, there is a general consensus among environmentalists that a) vehicle emissions are a major part of the problem, and b) within emitting vehicles, two- and three-wheelers are likely responsible for most of the issue.

As per the authors mentioned, “The emissions profile presented for Pakistan’s urban automotive fleet identifies two-/three-wheelers, almost all of which are carburetted and a significant fraction are powered by 2SC engines, as the largest (36-64 per cent) vehicular pollution source.

High sulphur content in fuel (especially diesel) and lube oil, poorly tuned and maintained engines that burn rich, and lack of exhaust after-treatment systems are recognised as reasons for Pakistan’s disproportionately high vehicular emissions.“

Given what needs to be done to clean up Pakistan’s air, the scale of the task is daunting for several political and institutional reasons. It is true that many cities around the world have cleaned up their air, contributing to better public health outcomes for their citizens.

London, Chicago, Los Angeles, and a host of other Western cities have all done remarkably well on this front. Closer to home, the example of Chinese cities and their ability to improve domestic environmental conditions over the preceding three decades is frequently cited as an example worthy of emulation.

The issue of using China as a model for environmental policies is a complex one. Recent analyses by environmental economist Dr Sanval Nasim identifies exactly why: China is a high-capacity, well-resourced state, with a bureaucracy and local governance apparatus that can take a range of difficult, often very costly, steps to control local populations.

Given the political system in China, administrators have the capacity to absorb political and social blowback with little consequences. Simply put, they have a centralised, disciplined governance apparatus that can successfully ban old vehicles, sanction polluters, impose heavy fines etc.

While no system is entirely free from leakages, the Chinese have the ability to coordinate across multiple governing tiers and departments to produce desired outcomes.

The Pakistani state, on the other hand, is a low-capacity state with limited infrastructural power, ie, it has reduced the ability to coordinate across multiple state and societal actors; has a hard time getting orders implemented; and suffers from leakages and resource constraints that limit the effectiveness of field officers tasked with implementing legislation and policy directives. In other words, punitive and administrative steps to evaluate engine fitness, stop polluting vehicles or banning two-stroke engines from the road are unlikely to succeed.

Should Pakistanis then wait for a high-capacity, more disciplined governing system to emerge before thinking about a resolution to the smog issue? It is a luxury that citizens of the country unfortunately do not have.

Instead, as part of his analysis, Dr Nasim identifies pricing-based interventions for the short to medium term, such as congestion charges and subsidies that can help make transitions to better, cleaner technologies possible.

Ultimately, though, the issue of poor air quality can only be resolved by taking polluting vehicles off the road and by offering citizens the opportunity to meet their mobility requirements through public transport. And, unfortunately for Pakist­anis, progress on the latter seems to have stalled, with billions, instead, continuously being spent on private-vehicle-supporting infrastructure in cities such as Lahore.

With no change in priorities on this front, citizens will have to bear the toxic brunt of smog seasons for the foreseeable future.

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