mintessay

Reflections from inside a toxic city

A programme to reduce stubble burning would have far greater positive externalities than many schemes ongoing today

SUDIPTO MUNDLE
is emeritus professor at the National Institute of Public Finance and Policy and was a member of the Fourteenth Finance Commission.

ARVIND YADAV/HINDUSTAN TIMES

Living as I do in the capital city of Delhi, breathing its toxic air, what's more appropriate to write about than the recent spike in Delhi's air pollution? Writing about it is less depressing than thinking about the life years we have already lost or, more important, the life years that our children and grandchildren will lose if we continue to live in such toxicity.

Twenty years ago when my co-authors U. Shankar, Shekhar Mehta and I published our monograph *Controlling Pollution: Incentives And Regulation* (Sage Publications India, New Delhi, 1997), the economics of pollution control was still largely an unknown subject in India though substantial literature already existed abroad. However, an environment regulation and monitoring system was already in place. There were separate Acts for water pollution, air pollution and an overall Environment Protection Act. An administrative framework to enforce the Acts had also been established, consisting of the Central Pollution Control Board and similar state-level boards.

The boards had fairly wide powers to impose penalties, ranging from levies and fines to closure of polluting sources and even imprisonment. A rudimentary system for monitoring pollution was also already in place.

In the past two decades much has changed. The economics of pollution control is now a flourishing sub-discipline within the burgeoning field of environment studies. Air quality monitoring has also become quite sophisticated with continuous monitoring of a whole vector of pollution indicators and readings available, along with an air quality index (AQI), on a daily basis from multiple city locations. However, the regulatory framework has remained largely unchanged, still dependent on the "command and control" (C&C) approach instead of market-based instruments (MBI). The same fatal flaw that had rendered the pollution control Acts ineffective 20 years ago still applies today.

This is the disconnect between the ambient air and water quality standards laid down in the Acts and the source-specific standards which are the only standards that can actually be enforced under the Acts. The consequences are there for all to see. Emission levels from individual sources like motor vehicles and industrial plants did come down progressively after standards were mandated in 1981. Yet the ambient pollution load kept getting worse as the number of vehicles and factories kept growing.

This was already evident and reported in our book 20 years ago. Since then the number of factories has grown manifold, millions of vehicles have been added on to Delhi's roads, and pollution levels have long crossed all critical red lines. During the past week Delhi is experiencing a pollution emergency. For the main pollutant of concern, suspended particulate matter (SPM) the ambient pollution load has been about 7-10 times the specified standard and the overall AQI is well past the danger level.

A 2016 IIT (Indian Institute of Technology), Kanpur study, generally seen as the most authoritative source on air pollution in Delhi, estimated pollution levels for a whole vector of pollutants in different parts of the city. For SPM of size 10 micrograms/cubic meter (mcg/cu m), it identified the four main sources of pollution as road dust (56%), concrete batching (10%), industrial emissions, including power plants and municipal solid waste burning (10%), and motor vehicles (9%). For SPM size 2.5 mcg/cu m, the four leading sources identified were road dust (38%), motor vehicles (20%), domestic fuel burning (12%), and industrial emissions (11%). These are annual averages, with large seasonal variations. Thus road dust is worse in summer while biological residue (stubble) burning is a major source in winter. We are seeing this right now across all of north India and also contiguous parts of Pakistan.

At the time of writing there are forecasts that the pollution crisis may abate. Hopefully the gods will be kind, surface winds will rise and blow the crisis away in a day or two. Meanwhile, the Environment Pollution Prevention and Control Authority has laid down a set of emergency measures to help mitigate the crisis. But what can be done to avoid such crises in the future? The question is best addressed in four parts: pollution drivers over which government has no control, pollution sources which require inter-governmental cooperation, pollution sources which the government can regulate through MBIs and sources or actions which it can directly control.

Factors like wind, temperature and rainfall are important determinants of pollution over which government has no control. But if the weathermen could improve their forecasting that would help governments and the public prepare better for any impending pollution crisis.

Pollutants blowing into Delhi from neighbouring states include dust, industrial emissions and emissions from stubble burning. Not much can be done about dust, the most important source of pollution. But the present spike in SPM is mainly driven by stubble burning in Delhi and the neighbouring states. Addressing it requires cooperation among the concerned states, and the observed moves towards cooperation are most welcome. What can they do collectively?

Following the "polluters pay" principle, some suggest that farmers burning stubble should be penalized to contain the burning. This is a non-starter. No state government would have either the political courage or the administrative capacity to impose such penalties on millions of farmers who are already under stress. However, a reduction in stubble burning can also be achieved by the opposite policy of rewarding farmers who incur the cost of disposing of stubble by other means, e.g, processing it for manure. Space limitations pre-empt a discussion of details, but schemes can be worked out, drawing on the armies of *sarpanches* and *patwaris* present in every village.

No doubt there will be corruption and leakage, errors of inclusion and exclusion in paying out rewards. But that applies to most government programmes. It cannot justify avoiding a stubble burning reduction programme. In fact, such a programme would have far greater positive externalities than many schemes ongoing today. A more serious question is how such a programme could be funded without unduly burdening the fisc. Since the National Capital Region (NCR) would be a major beneficiary of the programme, the Central government should lead with a centrally sponsored scheme, partnering with concerned states on a cost-sharing basis. The Central share could be financed by cutting poorly targeted non-merit subsidies, like on fertilizers or kerosene. The states' share could be similarly financed by cutting their tax expenditures and non-merit subsidies, like on power.

Merely enforcing vehicle-emission standards will not help to achieve air quality standards if the total number of vehicles grows without any limit

The NCR states should also cooperate on programmes for cross-border industrial emissions. The traditional approach is to close down polluting units. While helpful, such C&C policies also encourage "inspector raj" and rent seeking. A combination of penalties for dirty technologies and rewards for adoption of clean technologies may be the best way forward to give the right incentives without a high fiscal cost.

Industrial emission is also an important internal source of pollution within Delhi as shown by the IIT-Kanpur study, hence the same approach could be adopted by the Delhi government within its own jurisdiction. In several advanced countries established carbon credit markets help to discover the market-clearing price to support a target carbon cap. However, it would be premature to jump to such a sophisticated system in India. It may be prudent to first establish a fiscal penalty-reward system, then gradually introduce a pollution permit market over the long term.

Motorized vehicles are the other important source of high SPM 2.5 pollution in Delhi, especially in winter. As explained earlier, merely enforcing individual vehicle-emission standards will not help to achieve ambient air quality standards if the total number of vehicles grows without any limit. To achieve ambient standards, it is essential to restrain the growth in number of vehicles. How can that be done? To simply cap the total number of vehicles of a given type and ban further registration once a cap is reached is a blunt C&C policy which is neither practical nor desirable.

In well-governed cities like Singapore, Shanghai, London and elsewhere, the total number of motorized vehicles is contained through MBIs like a high registration price or high entry and parking fees in restricted zones. This is the way vehicle growth can be contained in Delhi as well, by charging much higher registration fees, introducing zoning and drastically raising public area parking fees, with strict enforcement.

However, such an approach can be considered only if there are adequate alternative means of public transport like the mass transit systems seen in most modern cities. For this, the rapidly expanding Delhi Metro network has to be complemented by other transport modes, especially for last-mile connectivity. Particularly, important here is the acute shortage of buses. When the present government took over nearly three years ago, there were only 5,000 buses on the road instead of the estimated requirement of 10,000. Since then needs have grown but the number of buses is reported to have further declined.

Expanding the bus fleet is most urgent to help contain the growth of personal vehicles. Other important areas of direct intervention by the government would include switching from dirty to cleaner fuels in the city's power plants, and introducing cleaner technologies for municipal solid waste disposal.

The Delhi government cannot by itself fix the air pollution problem. There is much that is beyond its control. But there is also much that it can do in collaboration with other neighbouring states, and much that it can do on its own to help mitigate the problem.

Comments are welcome at views@livemint.com