Clearing our Air of Pollution:
A Road Map for the Next Five Years

SANTOSH HARISH, SHIBANI GHOSH AND NAVROZ K. DUBASH

The Big Challenge

Air pollution levels are unsafe across the country, all-year round. While pollution levels spike to dangerously high levels during the winter in north India, those in several parts of the country are poor or worse for large parts of the year. High pollution levels are not restricted to cities; several industrial areas along with rural areas across the Indo-Gangetic plain are also polluted. There are several kinds of pollutants in the air: particulate matter, carbon monoxide, ozone, oxides of nitrogen and sulphur. Fine particulates (PM2.5) form a useful proxy indicator for air pollution. The population-weighted annual average concentration of PM2.5 across the country, estimated using satellite data, was 91 microgram/m3 in 2017 – more than twice the national standards.[1]

Air pollution is a public health emergency. The health impacts of poor air quality are staggering and of growing concern as we discover the full range and degree of its effects with new research. Air pollution is estimated to reduce the average life expectancy of a child born in India by at least 1.5 years.[2] In 2017, air pollution is estimated to have contributed to one in eight deaths in India.[3] Cardio-respiratory diseases and lung cancer in adults, and acute lower respiratory infections in children, are the more commonly known impacts of air pollution. In addition, new research indicates a much wider range of health impacts of air pollution such as on birth weight, child growth, obesity and bladder cancer. There is growing evidence on the adverse impacts of pollution on cognitive abilities in children.

Multiple sources contribute at different regional scales.
Industries, power plants, vehicles, waste burning, road and construction dust, and household sources are significant sources of air pollution. At the national level, household burning of polluting fuels for cooking and heating purposes forms the single largest contributor to average PM2.5 exposure (in addition to the exposure to PM2.5 within these households themselves).[4] Industries and power plants that burn coal are the second and third largest sources of exposure at the national level. Within cities, other sources like transportation, construction dust and waste burning play an important role. Because of these different geographical scales of influence, pollution control measures need to target different sources at appropriate levels. These different sources and scales make the role of the central government critical in framing policy at regional and national scales, coordinating implementation across states, and providing necessary financial and technical assistance.

The Existing Policy Framework

The National Clean Air Programme (NCAP), launched by the Ministry of Environment, Forest and Climate Change (MoEFCC) in January 2019, looms large over the newly elected government's policy landscape. The NCAP identified 102 non-attainment cities — which have particulate matter levels that exceed the annual standards — and set a reduction target of 20-30% by 2024. However, in its approach, the NCAP is a status quo-ist document, which adheres to city-specific templates from the past, and wholly misses addressing governance gaps. It reinforces India's policy response to air pollution, which has largely been reactive and overly reliant on administrative solutions. The existing regulatory design has proved to be entirely inadequate to meet the scale of the problem, and the monitoring and enforcement capacity of government agencies (such as the pollution control boards) is insufficient, especially for dispersed sources of pollution like vehicles, stubble and waste burning. An effective air pollution control strategy must break away from the status quo, and instead strategically prioritize key, implementable actions.

Air pollution reduction needs greater commitment from the executive. So far, pollution control has largely been driven by the judiciary. The new government should assume leadership in crafting and implementing an effective national air pollution reduction strategy. This could take different forms. One important example is empowering and giving greater autonomy to pollution control boards (PCBs) to discharge their responsibilities and act against polluters. Currently, interference in the functioning of these boards is visible in multiple ways: (i) the boards are typically led by generalist bureaucrats despite court judgments that have backed domain experts for chairpersons and member secretaries;[5] (ii) their funding is often dependent on grants-in-aid by the state governments; and (iii) routine administrative decisions like hiring need approval from the environment department. State PCBs also seem to be facing a trade-off between their functions of monitoring and enforcement, and promoting 'ease of doing business'. All of these curtail their ability to discharge their statutory mandate effectively.

The new government should also enable resolution when there are complex political and economic factors contributing to a polluting activity. For instance, consider the case of stubble burning where Minimum Support Prices, groundwater management, farm mechanization, the agrarian crisis, and unfavourable meteorology all contribute to episodic peaks in pollution in north India. Banning burning or subsidizing technical solutions such as 'Happy Seeders' are unlikely to solve the problem, unless some of the structural factors mentioned above are tackled through political negotiation.

A New Policy Agenda
Strengthening the National Clean Air Programme (NCAP)

NCAP was a missed opportunity to outline a systematic strategy. Beyond the national outreach and the reduction targets, it is a compilation of ongoing efforts, and leaves the details of new efforts to future action plans. Specific gaps include:

- NCAP is largely a continuation of the traditional policy approach of developing long lists of unprioritized action points. It does not put implementation capacity at the heart of designing our mitigation policies, thus risking non-implementation.

- The programme is urban-centric, focusing on a limited group of cities, and following the National Capital Region template by relying on city action plans. However, air pollution is not restricted to cities, and air quality in cities is typically influenced significantly by sources from outside. Addressing this problem requires moving the conversation towards addressing pollution at regional 'airshed' levels, and having more flexible system boundaries for air pollution control. The NCAP does not outline a road map for defining these airsheds and developing processes that cut across jurisdictions and departments.

- NCAP misses addressing governance gaps directly. It introduces new committees at the central and state levels, and declares that individual ministries will 'institutionalise' action points in their charge. However, it does not specify what institutionalizing entails, and who would be held responsible if targets are not met, and what legal or financial implications would follow.

To strengthen the NCAP, there is a need to focus efforts on a prioritized shortlist of solutions in the short term, improve the enforcement capacity of the PCBs while increasing their accountability, and begin extensive consultations about governance reforms needed in the longer term. We elaborate on these below.

Prioritizing concrete actions

Given the number of sources that contribute to the problem, and the many mitigation efforts needed (several of which are included within NCAP), how do we prioritize policy efforts? Prioritizing solutions needs active consideration of the implementation capacity needed to introduce measures and enforce them. In addition, we need to ensure that the programme does not adversely impact vulnerable groups.

In particular, with dispersed sources of pollution, such as transportation, households, waste burning and construction dust, administrative solutions that require monitoring and enforcement are likely to fail. Instead, enforcement could work better for policy changes targeted at higher, more centralized levels, where possible. For instance, with vehicles, although there is a pollution control mechanism in place, several issues inhibit inspections from being a reliable way to keep the on-road fleet within standards. These include low rates of compliance among vehicle owners in getting tested and compromised inspections (poor calibration of testing equipment and corrupted inspection results). Policy changes aimed higher up in the manufacturing process, such as the requirement to comply with Bharat Stage VI norms, are likely to be better implemented.

Keeping these factors in mind, three key priority areas within the NCAP are identified below.

- **Power plant emission norms**
  India's formal regulatory infrastructure has traditionally focused on 'point sources', with good reason. Industries and power plants burning coal are the second and third largest sources in India (only behind the numerous but highly dispersed household sources of emissions), in terms of contributions to average national exposure to air pollution and the resultant burden of disease.[6] Power plants are the largest source of sulphur dioxide and a major source of nitrogen oxide. Sulphur and nitrogen oxides are key precursors that react with other substances to produce secondary particulate matter. MoEFCC introduced new emissions standards for power plants in 2015, which required the installation of pollution control equipment. Although the power plants were required to comply with these standards by 2017, the Central Pollution Control Board (CPCB) later announced that the compliance date had been pushed to 2022, as per a timeline prepared by the Central Electricity Authority. Ensuring that these

standards are complied with, and the requisite control equipment installed by this revised timeline, if not at an accelerated rate, is critical.

• **Revamp Ujjwala to increase LPG use**

The Pradhan Mantri Ujjwala Yojana (Ujjwala) is an important initiative. While primarily an energy access programme, it has also tackled household solid fuel use, which is the largest contributor to pollution exposure in India. Ensuring universal continued usage of clean cooking fuels should therefore be a critical pillar of our air pollution control efforts. To facilitate continued usage of LPG, the government needs to ensure that prices are affordable for the beneficiaries, and in parallel, run campaigns to change behaviour and attitudes. This is unlikely to be a rapid transition, but some important first steps have been taken.

• **Invest in public transportation**

Reducing transportation emissions would require a combination of ensuring easy access to affordable public and non-motorized transport, while simultaneously working on reducing emissions from the vehicles on the road. Investments in clean public transport can reduce transport emissions as well as make mobility easier and cheaper, thereby improving the quality of life in cities. Planning the public transit strategy for the long term is key.

Strengthening regulatory capacity

The formal air pollution regulatory architecture in India is built around the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, and rules and notifications issued under these. As per existing law, the state PCBs have very limited flexibility to take action proportional to the polluting activity.[7] Currently, they can send show cause notices, shut down industries through a closure notice or by shutting access to utilities, cancel regulatory consents, or initiate criminal prosecution by taking the industries to court. With court cases taking several

years to reach any meaningful conclusion, PCBs rarely pursue this route, and restrict themselves to either a rap on the wrist through show cause notices, or shut down the industries – making enforcement expensive and ineffective.

Strengthening the ability of the PCBs to tackle point sources could provide a pathway to a broader reform process. In the long term, India needs a modern environment governance structure with teeth, nimbleness and resources to plan and drive a multi-sectoral strategy. NCAP is largely silent on how this structure could look, and on a road map for reforms. We outline below near-term and long-term milestones to strengthen regulatory capacity.

In the near term, PCBs must be resourced better, and in parallel, be made more accountable through disclosure efforts.

• *Increased resources of PCBs:* Human resources currently available in PCBs are not sufficient to meet their mandate. There is a need to rapidly expand their capacity, particularly on the technical side. In the short term, existing vacancies in the CPCB need to be filled with qualified people. Working with CPCB and the states, filling up vacancies in the state PCBs should be another area of priority. Increased staff resources should translate to increased inspections and monitoring.

• *Increased accountability through public disclosure of regulatory data:* The operations of the PCBs are extremely opaque, and it is unclear to the public where the big polluting sources are, and whether they are compliant with regulatory norms. Ensuring that PCBs release regulatory information (details of consents granted, inspections, online monitoring data, enforcement actions, etc.) into the public domain would make the industries and state PCBs more accountable to local communities, civil society and the media.

Longer-term reforms will require extensive dialogue; therefore, it is important for the government to start deliberations early. We outline below three broad elements for change that should be considered in the reforms process.

- *Remove legal barriers for effective enforcement:* There is a need for statutorily empowering PCBs so that they can initiate systematic and proportional responses to polluting activities. Amending the law to allow for a more diverse regulatory toolbox, which includes both existing powers and additional ones such as levying financial penalties, would increase the flexibility of the PCBs and make them more responsive.

- *Institutionalized airshed-level management:* Tackling air pollution effectively requires looking beyond administrative boundaries and focusing on reducing emissions across the 'airshed' over which pollutants disperse. This will need new modes of coordination across city and state administrations, and across line departments; it may also require the creation of new authorities with wider jurisdictions. Airshed level regulation will require a regulatory rethink and would involve extensive consultations which should commence on priority.

- *Development of a sector airshed approach:* The long-term strategy will need a careful application of sectoral approaches at the airshed level, or the national or state level, which utilize an appropriate combination of administrative, technical, economic and behavioural solutions.

4. Concluding Remarks

Air pollution is a complex problem, with multiple sources operating at different regional scales, under the jurisdictions of disparate agencies, and requiring a variety of mitigation measures. We need to unambiguously acknowledge the terrible impacts of air pollution on our health, move beyond the urban-centric approach, and tackle each of the big sources with a sense of urgency. The policy for tackling air pollution needs to shift from the reactive approach we have taken so far to one that is more systematic: focusing on some efforts in the near term, and beginning the process to reform our environment institutions to make them better resourced as well as more nimble and effective in the longer term.

END NOTES

1.   Health Effects Institute, 'State of Global Air 2019', http://www.stateofglobalair.org/.

2.   Apte, Joshua S., Michael Brauer, Aaron J. Cohen, Majid Ezzati, and C. Arden Pope. 2018. "Ambient PM 2.5 Reduces Global and Regional Life Expectancy." *Environmental Science and Technology Letters* 5(9): 546-551. https://doi.org/10.1021/acs.estlett.8b00360.

3.   K. Balakrishnan et al., India State-Level Disease Burden Initiative Air Pollution Collaborators, 'The Impact of Air Pollution on Deaths, Disease Burden, and Life Expectancy across the States of India: The Global Burden of Disease Study 2017, *Lancet Planet Health* 3: e26–e39 (2019).

4.   S. Chowdhury et al., 'Indian Annual Ambient Air Quality Standard is Achievable by Completely Mitigating Emissions from Household Sources', *Proceedings of the National Academy of Sciences of the United States of America* 116(22): 10711-10716 (2019).

5.   See, for example, Techi Tagi Tara v Rajendra Bhandari & Ors (2018) 11 SCC 734.

6.   GBD MAPS Working Group, 'Burden of Disease Attributable to Major Air Pollution Sources in India' (Health Effects Institute, 2018).

7.   S. Ghosh, 'Reforming the Liability Regime for Air Pollution in India', *Environmental Law and Practice Review* 4 (2015): 125-146.