Act on the source to check air pollution

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In this Q&A, Research Scientist Dr Pratima Singh notes some key issues and observations on India's Air Pollution story, specifically the need for scientific assessments that can provide good quality insights for policies.

Q: **The nationwide lockdown has shown that a vast improvement in air quality is possible. Can we use some of the takeaways from the lockdown in informing policy?**

A: The pandemic has been an eye-opener at many levels. Experts have been struggling to understand the baseline level for air quality standards in India; COVID-19 has given us some insights on this.

During the lockdown, various polluting sources were forced to stop operations, resulting in reduced pollution levels. This just underlines the fact that it is possible to improve air quality by targeting stringent control measures at polluting sources such as transportation, industries, and construction & demolition waste. That, alongside sustainable measures such as green fuel, electric vehicles, and cutting-edge technology, can help bring down the pollution levels in India.

Q. **Air pollution requires both macro- and micro-level studies. You need to study emissions at the local level to understand pollutants; as pollution can spread across regions, you need a systemic and macro-level understanding as well. What role can research institutions and think tanks play in informing policies?**

A: It's true that we need to generate data at both local- and regional-levels to understand the quantum and spread of air pollutants. In order to understand and estimate this, it is crucial to generate evidence using scientific methods such as emission inventories and source-apportionment studies. In addition, modelling studies can help in understanding the spread of pollutants across geographical boundaries. Only when we have a clear understanding of the sources of pollutants, can we prepare

effective control strategies. CSTEP has conducted such studies for three cities in Bihar. This has given Bihar State Pollution Control Board insights on which sectors to target and how. In Patna, we estimate that pollution levels can reduce by 69% if the control measures mentioned in Patna Clean Air Action Plan are strictly enforced.

Research institutions can contribute towards effective policymaking by generating evidence — through analysis, modeling, and forecasting studies — to inform policy.

Q. What are some of the crucial challenges that India faces while formulating effective policies on air pollution?

A: India has a few policies in place to check air pollution from certain sources. The need of the hour, however, is a scientific approach (using data) for developing policies. Such an approach can convince different departments on the severity of the issue, resulting in their wholehearted support to solve it.

It is crucial to understand that air pollution is not the problem of any single department or ministry. Air pollution is caused by various sources and has implications across sectors, while affecting the entire population. Our solutions can be effective only if all the departments and ministries reach a consensus and work together for a better quality of living.

Setting up an environment cell to bridge the knowledge gap among officials can help initiate thought and action to check pollution. To build mass awareness, it's important to include air pollution as a topic in our curriculum. The availability of reliable data will also help spark a debate in the society, initiating change in the existing system.

Q. How can data provide 'evidence' for policy decisions on reducing air pollution?

A: Reliable data is crucial for solving environmental challenges. For the air pollution sector, we need nuanced and micro-level data as well as broader macro-level data. We

also need to understand the specific nature of pollutants and their presence in the environment. Pollutants such as PM2.5, PM10, Black Carbon, Ozone, SOx, NOx, Carbon Monoxide, etc., have serious health implications. Measurement and monitoring studies can provide us with the scientific evidence needed for effective action on ground.

Getting the right data is the first step. The next step involves interpretation of this data correctly in terms of how it affects human population and the ecology. It is also important to interpret data in a time-bound manner. We need to build capacity amongst practitioners, including policymakers, to interpret data correctly.

Understanding the intertwined nature of air pollutants and the different aspects of development is fundamental to comprehend the multiple ways in which air pollution can be anticipated and controlled.

Q. Experts are talking about a network of monitoring and measurement equipment to accurately assess air pollution. What would this network look like and how will it help solve air pollution?

A: The existing number of monitors by state and central pollution control boards needs to be expanded to encompass entire cities, including the suburbs. Adequate monitoring is required not only in Tier 1 cities but also in Tier 2 and Tier 3 cities. This will also help us understand the semi-urban/rural sources of pollutants and their impact on human health.

Inadequate monitoring and measurement have been a challenge due to budget constraints in both the purchase and maintenance of expensive reference-grade equipment. There are emerging techniques that can be explored, validated, and adopted in air-pollution studies. We might not be able to formulate our policies based on non-reference-grade-monitoring. However, such a network can certainly help us

understand the sources of pollutants and their levels at the micro level. Based on these studies, control measures can be initiated.

It has also been observed that various organisations and academic institutions work in silos and generate data for their research and publication work. A centralised data repository needs to be created and shared for further research and collaboration. Such a single platform of data will facilitate better understanding of the geographical challenges associated with air pollution. The platform can have but should not be limited to reference-grade monitors (real-time monitoring and manual monitoring) alone. It should also utilise calibrated low-cost sensors, satellite measurements, and mobile measurements in an attempt to understand the issue better.

One such platform, which hosts data from reference-grade instruments across 93 countries, is OPENAQ (https://openaq.org/#/?_k=iallft). Another platform, which delivers information on various aspects and impacts of air pollution is IQAir (https://www.iqair.com/us/world-air-quality), with around 6,000 community contributors across the globe. They operate the world's largest free real-time air quality information platform and engage with an ever-growing number of global citizens, organisations, and governments.

Collating information, collaborating, and providing technology solutions will help create the momentum for improved air-quality-levels, leading to a better quality of life.

Q. Why are we dealing with inadequate data?

A: As mentioned earlier, inadequate measurement and monitoring Infrastructure due to financial constraints is one of the key challenges India is grappling with. That apart, air pollution issues were relegated to the background till recently. It was with the launch of the National Clean Air Programme (NCAP) last year, that we started taking air-pollution issues seriously.

We still rely on conventional methods of monitoring — for instance, source-apportionment studies to estimate the share of various pollutants — which takes time. There are advanced technologies such as the Aerosol Mass Spectrometer, which can yield quick outputs. However, the cost and intensive maintenance requirements of this instrument significantly hinders its systematic, long-term deployment for a dense network. Moreover, we need efficient technical resources to handle such instruments.

Q. The smog towers in Delhi have invited criticism. What is your take on the issue?

A: Smog towers are expensive yet inefficient when it comes to dealing with the problem. The installation of a smog tower in the national capital is a non-scientific and knee-jerk response to the issue of air pollution. Pollution needs to be curbed at the source, where it is first generated, and not at the ambient or atmospheric level, where it has spread. This is why we have been stressing on accurate data for decision-making. Lack of reliable data can result in misinformation and faulty policy decisions. A core understanding of monitoring and measurement methods and the correct interpretation of data is needed to come up with effective solutions. Only informed policy decisions can address the air-pollution issue effectively.

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Have you registered for the India Clean Air Summit 2020 (ICAS2020) yet? Register now (Day 1 & Day 2) to be a part of this platform, where experts will discuss problems arising from inadequate data on Air Pollution and emerging opportunities that can help resolve this critical challenge.

The India Clean Air Summit is CSTEP's flagship event on Air Pollution, organised by the Centre for Air Pollution Studies (CAPS) at CSTEP. The event brings together subject-matter

experts and is a platform for sharing interdisciplinary knowledge on Air Pollution to help India frame effective policies to improve air quality. Learn more about the summit here.

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