Insights for Change

Pakistan's Air Pollution Calamity—no Quick Fixes

Sanval Nasim

November 2024
PI-11-24

Pakistan faces a severe perennial air pollution crisis, affecting millions across the country and particularly in urban Punjab. Despite a long history of environmental legislation, Pakistan is nowhere close to meeting its air quality targets, leaving its citizens to experience some of the most hazardous air in the world. The crisis's consequences are critical: exposure to dangerously high levels of pollutants like PM2.5 not only shortens life expectancy but also impairs productivity, cognitive ability, and overall quality of life. Recent studies highlight that at current PM2.5 an average Pakistani's lifespan decreases by 4 years, with even worse effects in highly polluted cities like Lahore, where an average resident loses 7.5 years of life. These statistics are more than just numbers—they represent the immense loss of valuable human lives because of misplaced development goals and poor policy.

As the air pollution crisis continues to unfold, citizens expect immediate solutions. However, there are no quick fixes—as an issue that spans multiple sectors, the problem is too complex for our existing state apparatus to quickly address. All we can hope is that policymakers keep chipping away at the problem and that over time, as the economy grows and the state strengthens its institutional capacity, we experience gradual improvements in air quality.

Misconceptions

Many Pakistanis erroneously believe that air pollution is a winter problem since that's the season when they observe smog. While winter does amplify pollution levels, the problem is perennial—pollution remains well above mandated standards throughout the year. During colder months, temperature inversions—when warm air traps colder air near the ground—limit the dispersion of pollutants, exacerbating visible air pollution. Rice-stubble burning in Punjab before the winter sowing season intensifies particulate matter concentration, making the situation visibly worse. However, poor air quality remains dangerously elevated throughout the year, even when it's less apparent. Addressing this pervasive problem requires acknowledging it as an ongoing health and environmental crisis rather than a seasonal inconvenience.

Weak Institutional Framework

Despite Pakistan's extensive legislation around air quality, enforcement remains weak. Environmental laws, beginning with the Pakistan Environment Protection Act in the 1990s and evolving into provincial

environmental protection acts after the 18th constitutional amendment, established a strong regulatory framework on paper. Punjab, for instance, has multiple pollution standards, covering ambient air quality and source-specific emissions. But this framework operates within a poor institutional setting, with our environmental regulatory bodies lacking the capacity and resources to implement their own rules and regulations. Provincial environmental protection departments function with minimal funding, inadequate training, and limited ability for monitoring and enforcement. Thus, provinces continue to fail to achieve their mandated air quality outcomes.

In contrast, countries like China have shown that centralized, well-resourced institutions can dramatically reduce pollution levels. China's success relies on its capacity to implement stringent command-and-control policies, swiftly mobilizing state resources when needed. But the Pakistani state—even with its postcolonial centralized bureaucracy—is nowhere as robust, capable, and well-resourced as the Chinese state. Pakistan's fragmented and under-resourced regulatory structure cannot replicate China's framework. We need to consider comparisons with Chinas with skepticism—the two states are not comparable in their capacity for policy interventions and delivery.

Moving Beyond Band-aid Solutions

In recent years, Pakistan has experimented with short-term measures like temporary school closures, urban greening initiatives, and even attempts to induce artificial rain to combat pollution These are merely band-aid solutions, offering temporary (if any) relief at great cost and without addressing the underlying sources of pollution. To meaningfully improve air quality, we need to directly reduce emissions at sources, which requires a structural overhaul and redesign of our economic sectors, especially transport, industry, power, and agriculture—the largest contributors to air pollution.

Tackling Vehicular Emissions

Vehicular emissions comprise the most significant contributor to Pakistan's urban air pollution. Addressing these entails keeping our roads free of high polluting vehicles such as two-stroke engine motorbikes and rickshaws, diesel cars, bus, and trucks. A phased strategy is necessary. In the short term, congestion charges, incentives for carpooling, smog checks, and vehicle maintenance certificates could help. Long-term measures include a technology transition—encouraging the use of cleaner, more efficient vehicles, mandating emission-reducing technologies like catalytic converters, and adopting stringent fuel standards. In the U.S., Corporate Average Fuel Economy (CAFE) standards played a significant role in driving automotive innovation, incentivizing manufacturers to develop cleaner and more efficient vehicles.

As electric vehicle (EV) technology becomes more affordable, Pakistan should consider scaling EV adoption. This transition would require financial incentives to encourage EV purchases, despite the potential revenue loss from tax exemptions. Additionally, robust EV infrastructure, including accessible charging stations and uninterrupted power supply, is essential for this transition. Given Pakistan's ongoing energy challenges, providing affordable, consistent electricity for vehicle charging poses a significant hurdle—but it's a necessary long-term investment for sustainable urban mobility.

A technology transition of this magnitude is easier said than done. Over several decades, Pakistan has protected local automotive assemblers with heavy tariffs on imported vehicles. As a result, the assemblers now have a captive market, which provides uncompetitive, low-quality vehicles. The

entrenched political economy of automotive assemblers makes curtailing their captive power quite difficult. Moreover, with limited fiscal space and a tight balance of payment constraint, the government is not able to offer adoption subsidies and reduce import tariffs.

Moreover, local policies such as enforcing smog checks and vehicular standards only work if they function within a strong institutional framework. Without the necessary capacity for enforcing such rules and regulations—as well as the inherent risk of petty corruption by local enforcers as is the norm in such cases (think traffic police or customs)—we have very little guarantee of realizing desired outcomes.

Smarter Urban Planning

Redesigning Pakistan's cities to reduce urban sprawl could further reduce vehicular pollution. Many Pakistani cities lack consolidation, where they can't take advantage of agglomeration and the resulting economies of scale. For example, the lack of centralized business and commercial districts implies lengthy commutes and increased pollution. Building smarter cities with centralized downtowns, expanded public transit, and pedestrian-friendly areas would streamline commuting. A paradigm shift in urban planning—that too within an environment in which policymakers favor warped aesthetics such as mega infrastructure projects—seems ambitious but is crucial for developing livable cities.

Agriculture's Role in Pollution: Sustainable Crop Management

Rice stubble burning before the winter wheat sowing season generates significant air pollution, affecting both rural and urban regions. Although the government has banned crop burning, enforcement remains challenging, particularly in rural areas where labor migration drives up wages, making it financially unviable for farmers to hire labor to clear fields. As a result, many farmers opt for burning—a low-cost alternative.

Emerging research from South Asia suggests that "payments for ecosystem services" may be an effective approach to mitigate crop burning. In this model, farmers receive financial incentives to adopt alternative practices, such as using machinery like the Happy Seeder to clear stubble without burning. Scaling this approach would require subsidies and financing options, as well as training through agricultural extension services to support adoption. Other agricultural practices also need review and reform. For example, discouraging water-intensive crops like rice by adjusting water pricing could reduce wastewater runoff pollution and encourage a transition to more sustainable practices.

Once again, the standard caveats apply: these policies require fiscal space to support subsidies as well as an institutional framework to manage water charges—demanding tasks for the existing Pakistani state.

Learning from India

India's experience offers far more external validity for Pakistan than does China given similarities in state and social structures. India has experimented with several pollution control measures in recent years. In Gujarat, randomized independent emission audits have reduced false reporting to some extent, while in Odisha, a program that publicly discloses industrial emissions has improved industry compliance via community pressure. Additionally, a PM2.5 emission trading scheme in Surat has shown some promise in cost-effectively managing emissions. These policies leverage both regulatory enforcement and market-based incentives, offering flexible and scalable models that Pakistan could adapt. But such policies won't immediately clean our air—they constitute a step towards

chipping away at the problem rather than a panacea.

Public Awareness and the Role of Civil Society

Addressing Pakistan's air pollution crisis requires not only government intervention but also active participation from civil society. Public awareness campaigns can help shift the perception of air pollution from a seasonal inconvenience to a public health emergency, fostering community support for tougher regulations. Civil society organizations and local leaders can play a critical role in advocating for cleaner practices, supporting pollution monitoring efforts, and holding polluters accountable.

A Path Forward

Pakistan's air pollution is a grave multi-sectoral issue with far-reaching consequences for health, productivity, and quality of life. The path to cleaner air is neither straightforward nor quick—it requires an integrated approach, combining regulatory reforms, technology adoption, economic incentives, and public engagement to reduce emissions at sources. Effective action demands commitment and collaboration across government agencies, industry, and society. Pakistan cannot afford to delay or remain complacent—the health, welfare, and future of millions of citizens across generations depends on what we choose to do today.

CDPR's new series "Insights for Change" contains think pieces that take an analytical approach to devising action oriented policy solutions. They are authored by economists and practitioners who are experts in their field. All views expressed are the author's own.

Sanval Nasim

About the Author

Sanval Nasim is an Assistant Professor of Economics at Colby College and holds a PhD in Environmental and Natural Resource Economics and Policy from the University of California, Riverside.

cdpr Consortium for Development Policy Research

IGC

This Activity is Supported by the International Growth Centre