

## ECONOMIC IMPACTS OF THE LAHORE AIR POLLUTION CRISIS

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Lahore, the capital of the province of Punjab has been facing smog and air pollution problems due to rapid industrial and population growth, which affects public health and the economy. Smoke emissions from vehicles and industries, practices like crop residue from farmers and waste burning, hazardous pollutants like Sulphur and nitrogen oxides, and PM2.5 particles are some major sources of air pollution. These sources are directly associated with various health problems like respiratory issues, heart diseases, and mental illness. The latest report shows that Lahore stands in the top position among the most polluted cities globally.<sup>1</sup> In 2019, 128,000 people died annually due to air pollution diseases.<sup>2</sup> Therefore, Government institutions and other stakeholders should work together to develop an effective framework to mitigate the air pollution crisis in Lahore.

### PM2.5 Level

Lahore, the populated capital city of Punjab, had significantly bad air quality over the past several years. Research studies showed that Lahore's air pollution levels increased up to safe limits, raising

<sup>1</sup> IQ Air, 'World's Most Polluted Cities', n.d. <https://www.iqair.com/world-most-polluted-cities>.

<sup>2</sup> ecohubmap, 'Air Pollution in Lahore, Pakistan', October 2024. <https://www.ecohubmap.com/hot-spot/air-pollution-in-lahore-pakistan/i63klfgtchgg>.

major concerns for human health and the economy. PM2.5, a tiny particle that deeply penetrates the lungs, creates many heart and respiratory problems and premature deaths.<sup>3</sup>

Rank	City	2023	2022	2021	2020	2019	2018	2017
01	Lahore	99.5	97.4	86.5	79.2	89.5	114.9	133.2
02	Faisalabad	88.2	84.5	94.2	73.2	104.6	130.4	-----
03	Murideke	44.1	46.5	47.6	61.6	80.6	-----	-----
04	Rawalpindi	59.5	48.5	51.4	42.4	40.8	----	----

**Table: Punjab Air Quality Index<sup>4</sup>**

The above table shows that the **PM2.5 concentration level** in Lahore is 19.4 times the World Health Organization's (WHO) air quality guidelines, which ranks it as the most affected city of Punjab province by air pollution in 2023.

### **Economic Impacts of Air Pollution in Lahore**

Pakistan's economy is already struggling and air pollution in Lahore has a significant economic impact on public health, agriculture, education, and tourism. The economic burden of air pollution in Lahore is complicated, affecting not only the health of citizens but also hindering economic activities, making it a significant issue for sustainable growth.

Moreover, to tackle this challenge, the Government of Punjab implemented a lockdown policy every year, which also disturbed its citizens mentally and economically as well as caused a loss of \$353 (hundreds of thousand rupees).<sup>5</sup>

### **Healthcare Sector**

Air pollution in Lahore has serious health implications, which indirectly affects the economy. Experience with PM 2.5 pollutants increases the chances of cancer along with cardiovascular and respiratory diseases such as asthma, and bronchitis. Other air pollution-related disorders include obesity, mental illness, cognitive dysfunction, etc. At the current PM 2.5 level, an average Pakistani

<sup>3</sup> Tribune. 'Lahore Records Worst Air Quality', 9 October 2022. <https://tribune.com.pk/story/2380808/lahore-records-worst-air-quality>.

<sup>4</sup> IQ Air. 'World's Most Polluted Cities (Historical Ranking)', n.d. <https://www.iqair.com/world-most-polluted-cities?continent=59af92b13e70001c1bd78e53&country=G4AjQzTgGNNSMWNJ&state=&sort=-rank&page=1&perPage=50&cities=>.

<sup>5</sup> Abid Hussain, 'In Lahore, It's That Toxic, Smoggy Time of Year Again'. ALJAZEERA, 11 November 2023. <https://www.aljazeera.com/news/2023/11/11/in-lahore-its-that-toxic-smoggy-time-of-year-again>.

would like to lose 4.3 years of their life.<sup>6</sup> According to the reports of the Global Burden of Diseases, in 2019, 235,000 deaths happened due to air pollution in Pakistan.<sup>7</sup> Health officials revealed that there has been at least a 50% increase in pediatric patients due to respiratory problems caused by polluted air in Lahore.<sup>8</sup> Also, accidents on roads and highways cause the death of people and a decline in their life years, indirectly hitting the economy.

### ***Tourism Sector***

The tourism industry significantly contributes to the country's economy. Lahore, which is known for its cultural heritage and historical places, sees a decline in tourism due to air pollution in smoggy winter.<sup>9</sup> According to Auqaf & Religious Affairs Department Lahore, about 30,000-40,000 visitors visit the shrine of Hazrat Data Ganj Bakhsh (HDGB) daily, which resulted in the collection of revenue of about 202,595,245 rupees (15 million dollars) annually.<sup>10</sup> Tourists are discouraged from visiting due to health risks and unpleasant air quality experiences that largely affect local businesses, hotels, and the hospitality industry.

### ***Agriculture Sector***

Agriculture, which is the backbone of Pakistan's economy, has also been affected due to air pollution, which negatively impacts crop yields due to the concentration of particulate matter and the adverse effects of smog on plant health. This increases food insecurity and reduces farmers' incomes, further stressing the local economy. Smog significantly affects agricultural yields, with studies showing reductions of 10% to 40% in crops like wheat, rice, soybeans, corn, and potatoes, depending on factors like crop type, exposure time, and pollution levels. Wheat, an important winter crop in Pakistan, faces major threats due to smog. Between 2007 and 2020, wheat production

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<sup>6</sup> 'Pakistan Fact Sheet'. Air Quality Life Index, n.d. [https://aqli.epic.uchicago.edu/wp-content/uploads/2021/08/PakistanFactSheet\\_update.pdf](https://aqli.epic.uchicago.edu/wp-content/uploads/2021/08/PakistanFactSheet_update.pdf).

<sup>7</sup> 'National Clean Air Policy'. Ministry of Climate Change Government of Pakistan, 2 May 2023. [https://mocc.gov.pk/SiteImage/Misc/files/NCAP%20\(28-02-2023\)%20v1.pdf](https://mocc.gov.pk/SiteImage/Misc/files/NCAP%20(28-02-2023)%20v1.pdf).

<sup>8</sup> Mubasher Bukhari, and Charlotte Greenfield, 'Soaring Pollution in Pakistan's Lahore Fills Wards with Sick Children', 7 December 2023. <https://www.reuters.com/world/asia-pacific/soaring-pollution-pakistans-lahore-fills-wards-with-sick-children-2023-12-07/>.

<sup>9</sup> Zoha Najeeb, 'How Is Pollution Threatening the Future of Tourism in Lahore?' True Talk News, August 2024. <https://www.truetalknews.org/post/how-is-pollution-threatening-the-future-of-tourism-in-lahore#:~:text=These%20issues%20are%20negatively%20impacting,to%20negatively%20affect%20visitor%20experiences.>

<sup>10</sup> Qadri, Hussain Mohi-ud-Din. 'Environmental Sustainability, Increasing Pollution and Religious Tourism in Pakistan', 12 October 2022. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4245712](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4245712).

remained stagnant at 23,295 to 24,946 thousand metric tons, with yield losses calculated between 10% and 30%.<sup>11</sup>

### **Transportation Sector**

Despite the 83% contribution of transport to air pollution,<sup>12</sup> this sector contributes meaningfully to the country's economic growth. Poor air quality badly affects workers' health, leading to respiratory issues and impacting productivity. Vehicle maintenance due to accidents on roads and highways, traffic disruptions, and delays in flight and train operations<sup>13</sup> further worsen the situation, increasing fuel consumption, and travel costs. These combine factors affecting this sector's efficiency and economic stability.

### **Key Policy Initiatives**

The Government of Punjab has initiated a wide campaign against air pollution challenges to ensure a cleaner environment for the well-being of residents. In this regard,

- The Environmental Protection Department has inspected 11,000 brick kilns, and 4,588 sites, issuing notices, demolishing, and sealing. Also, the Government sealed 484 factories and fined 77,166 smoke-emitted vehicles, resulting in the collection of PKR 46 million and PKR 23 million in penalties respectively.<sup>14</sup>
- The government enforced a "green lockdown" in smog hotspot areas of Lahore, closed schools, and offices, and restricted outdoor activities.<sup>15</sup>
- The government has installed a smog-clean tower in Lahore in partnership with the National University of Science and Technology to eliminate harmful particles from the air.<sup>16</sup>

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<sup>11</sup> Abdul Razzaq, and Muhammad Mubashar Zafar. 'Smog: Lahore Needs Global Attention to Fix It'. *ScienceDirect* 16 (August 2024). <https://www.sciencedirect.com/science/article/pii/S2667010024001653>.

<sup>12</sup> Maryam Ayub, and Shakeel Mahmood. 'Analyzing the Contribution of Transportation in Formation of Smog in District Lahore, Pakistan', July 2024. [https://www.researchgate.net/publication/383611418\\_Analyzing\\_the\\_Contribution\\_of\\_Transportation\\_in\\_Formation\\_of\\_Smog\\_in\\_District\\_Lahore\\_Pakistan](https://www.researchgate.net/publication/383611418_Analyzing_the_Contribution_of_Transportation_in_Formation_of_Smog_in_District_Lahore_Pakistan).

<sup>13</sup> Tribune, 'Smog Disturbs Flight, Train Operations in Punjab', 16 November 2024.

<https://tribune.com.pk/story/2509921/smog-disturbs-flight-train-operations-in-punjab>.

<sup>14</sup> Government of Punjab, "Punjab Government's Effective Measures Against Smog and Air Pollution Continue," December 29, 2024.

<https://punjab.gov.pk/node/6358#:~:text=Efforts%20to%20curb%20fugitive%20dust,PKR%2023%20million%20in%20penalties>.

<sup>15</sup> Zulqernain Tahir, "Lahore Goes for 'Green Lockdown' to Tackle Smog." DAWN, October 31, 2024. <https://www.dawn.com/news/1868819>.

- The government has launched a Climate Leadership Development Internship program to involve young blood to curb air pollution and promote awareness. Some other key initiatives include the formation of the Smog Monitoring Unit (SMU), the launch of the Punjab Green Application, the provision of super seeders to rice farmers, the Green Transit program (E-buses, E-bikes), etc. <sup>17</sup>

### **National Clean Air Policy**

In 2023, the Federal Ministry of Climate Change introduced a Comprehensive National Clean Air Policy in collaboration with provinces to provide a detailed framework to improve air quality and mitigate economic impacts. If all stakeholders successfully implement the National Clean Air Policy recommendations, it will reduce PM2.5 emissions by 38% by 2030 and 81% by 2040. With a 2.77% annual GDP growth, Pakistan's GDP could reach USD 480.11 billion in 20 years by addressing the air pollution challenge. The policy could provide health benefits of USD 24.56 billion annually by avoiding health impacts. Additionally, crop growth improvement due to reduced ozone pollution could result in USD 2.79 billion in avoided crop losses annually. <sup>18</sup>

### **Recommendations**

Addressing the air pollution problem requires a comprehensive strategy from various stakeholders including the government, the public and civil society. To ensure clean air,

- The government should take immediate steps to curb the sources of air pollution rather than to mitigate its impacts i.e. closing brick kilns, residue burning, and strict regulations on industrial and vehicle emissions.
- The lockdown policy does not present long-term sustainable solutions, causing economic loss to the already suffering economy.

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<sup>16</sup> News Desk, "Smog Clean Tower Installed in Lahore to Combat Pollution." Tribune, December 15, 2024. <https://tribune.com.pk/story/2516140/smog-clean-tower-installed-in-lahore-to-combat-pollution>.

<sup>17</sup> Government of Punjab. "CHIEF MINISTER PUNJAB ROADMAP FOR SMOG MITIGATION IN LAHORE 2024-2025," October 2, 2024. [https://epd.punjab.gov.pk/system/files/CM%20Punjab%20Smog%20Mitigation%20Plan%202024\\_FD\\_11102024.pdf](https://epd.punjab.gov.pk/system/files/CM%20Punjab%20Smog%20Mitigation%20Plan%202024_FD_11102024.pdf).

<sup>18</sup> 'National Clean Air Policy', Ministry of Climate Change Government of Pakistan, 2 May 2023. [https://mocc.gov.pk/SiteImage/Misc/files/NCAP%20\(28-02-2023\)%20v1.pdf](https://mocc.gov.pk/SiteImage/Misc/files/NCAP%20(28-02-2023)%20v1.pdf).

- Some experts say that the installation of a smog control tower is not beneficial. The city needs about 20,000 towers to normalize pollution levels, which would be costly.<sup>19</sup>
- Climate diplomacy with India is a need of time to initiate a joint effort to address air pollution on both sides of the border.
- Long-term strategies should focus on urban planning and the expansion of green spaces in the city to improve air quality levels. More investment in the public transport sector, clean energy initiatives, and promoting the use of electric vehicles can help to reduce air pollution emissions.
- The government should make a structure to establish a joint working action group with China. During her visit to China, CM Maryam Nawaz proposed a joint working group named “ Punjab- Beijing” joint groups, which will help in data sharing, capacity building, and technology transfer from China to ensure, green urban planning, green energy, and E-vehicles to reduce carbon emissions.<sup>20</sup>
- Invest in research and development, sharing the data and research findings with the public, relevant departments, and international bodies will help to make evidence-based decision-making on air pollution.
- Most importantly, public awareness and youth involvement are important in tackling air pollution impacts. Educational campaigns about the health effects of pollution and practical steps that an individual can take to reduce the impacts of air pollution.

## Conclusion

The air pollution problem in Lahore poses a significant threat to public socio-economic sectors. Immediate steps are required to tackle this critical issue which includes investing in sustainable projects, promoting the use of electric vehicles, and introducing solar and wind energy for electricity production instead of coal-burning. In addition, Public-Private partnerships, awareness campaigns in educational institutions, and youth involvement are necessary to mitigate the air pollution challenge in Lahore, to ensure a safer environment for upcoming generations.

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<sup>19</sup> Asif Mehmood, “Lahore’s First Smog Control Tower Ineffective, Experts Say.” Tribune, January 8, 2025. <https://tribune.com.pk/story/2520858/lahores-first-smog-control-tower-ineffective-experts-say>.

<sup>20</sup> Government of Punjab, “CM Maryam Nawaz to Establish Joint Working Group with China to Curb Environmental Pollution,” December 12, 2024. <https://punjab.gov.pk/node/6346>.