Advance Social Science Archive Journal
Available Online: https://assajournal.com
Vol.2 No.4, Oct-Dec, 2024. Page No. 1321-1336
Print ISSN: 3006-2497 Online ISSN: 3006-2500
Platform & Workflow by: Open Journal Systems
https://doi.org/10.5281/zenodo.17144825

FIRES ACROSS BORDERS: INDIA'S AGRICULTURAL PRACTICES AND LAHORE'S AIR QUALITY

Sania Haroon Kiyani	MPhil Scholar International Relations, Fatima Jinnah Women University Islamabad
	Email: saniyakiyani567@gmail.com
Muhammad Salman	PhD Scholar Political Science Department, Islamia University Bahawalpur
	Email: tipu487@hotmail.com
Hina Butt	PhD Scholar International Relations Department, Bahria University Islamabad
	Email: hinasalmanm81@gmail.com

ABSTRACT

Transboundary air pollution threatens South Asia's security and brings serious harm to health, environment and economy. Lahore in Pakistan regularly appears on global pollution rankings because of smoke from Indian farm burn-offs. This research explores the role of climate systems and atmospheric behavior in spreading contaminants from one nation to another. The study shows how Lahore's people suffer from breathing problems while facing money issues and environmental damage. The study uses interdependence theory to demonstrate how ecological challenges create space for diplomatic partnership between India and Pakistan. Air pollution offers a chance for India and Pakistan to work together by sharing monitoring programs and creating unified policies while gaining help from world organizations. The findings underscore the urgent need for bilateral and regional action to address air quality, not only as a public health necessity but also as a means of fostering trust and stability in South Asia.

Keywords: Transboundary air pollution, agricultural residue burning, Lahore air quality, non-traditional security, environmental degradation, socio-economic consequences, meteorological conditions, regional cooperation, South Asia pollution crisis, public health, smog diplomacy.

1. Introduction

India's agricultural practices, especially the yearly burning of crop residue, are a major environmental issue that impacts not only the local population but also nearby countries, especially Pakistan. Lahore, one of Pakistan's major cities, already suffers from poor air quality. Now, with the transboundary problem of agricultural burning, it is listed as one of the most polluted cities in the world.[1] Large amounts of particulate

[1] Sarah Zaman, "Lahore's Poor Air Quality Points to Pakistan's Bigger Pollution Problem," *Voice of America*, November 22, 2023, https://www.voanews.com/a/lahore-s-poor-air-quality-points-to-%20pakistan-s-bigger-pollution-problem/7364035.html.

matter (PM) with carbon dioxide, methane, and other greenhouse gases are released into the surrounding environment due to the seasonal burning of agricultural leftovers in Indian states like Punjab and Haryana.[2]These pollutants, carried by prevailing wind currents, cross international borders and contribute to worsening air quality in Pakistan, particularly in Lahore, exacerbating a complex environmental and public health crisis. This phenomenon has drawn significant attention to the regional dimensions of air pollution in South Asia, which is now regarded as one of the most polluted regions in the world.

Lahore's air quality has gotten terrible in the last few years. Lahore briefly overtook Delhi in terms of pollution, according to data from IQAir (2024).[3] It means how worse it has become for the city's residents, with a terrifying Air Quality Index (AQI) of 232. Lahore's ranking has certainly improved; however, these statistics demonstrate and explain the pressing need to deal with the principal causes of transboundary pollution and its disastrous effects on the overall population. India's pollution levels in Lahore soar during the harvest season when farmers burn millions of tons of rice and wheat straw to clear fields for the next planting season. The economic benefits of this practice cause serious environmental damage through the release of massive particles into the atmosphere, especially PM2.5 particles.[4] The small particles known as PM2.5 threaten human health by traveling deep into our lungs which can trigger different diseases that affect breathing and heart function and may result in early death. Multiple pollution sources inside and outside Lahore keep degrading the city's air quality. Construction work, industrial emissions and vehicle exhaust worsen the city's air quality problem. Agricultural fires from neighboring India intensify the environmental issue most frequently during their harvest periods. Researchers found that Lahore suffers from unsafe air quality yearly because PM2.5 particles multiply to dangerous amounts

---

[2] "Stubble Burning in India: Environmental Concern and Alternative Tools – Current Agriculture Research Journal," n.d., https://www.agriculturejournal.org/volume12number1/stubble-burning-in-india-environmental-concern-and-alternative-tools/.

[3] "Lahore Air Quality Index (AQI) and Pakistan Air Pollution | IQAir," n.d., https://www.iqair.com/pakistan/punjab/lahore?srsltid=AfmBOopZJk_Yykh7NW5-0NozD_hkM4ryUa-oaXts0SyIunAp8GwKM4Zn.

[4] "Particle Pollution and Health," n.d., https://www.health.ny.gov/environmental/indoors/air/pmq_a.htm#:~:text=The%20term%20fine%20particles%2C%20or,the%20end%20of%20this%20sentence.

during this season.[5] The high levels of PM2.5 pollution in Lahore's air become hazardous for residents to breathe when they exceed WHO safety standards.[6] South Asian pollution spreads across country lines, showing that regional environmental issues remain strongly linked. The situation requires India, Pakistan, and surrounding nations to develop regional agreements to combat this expanding ecological crisis.

Based on the Interdependence Theory, the political science framework of researchers Joseph Nye and Robert Keohane forms the core of this study. Even in systems without a central authority and power struggle, countries rely on each other, especially when dealing with worldwide problems like pollution and health crises.[7] Studies show that nations depend on one another through trade, safety issues, and environmental matters. Despite being independent states, countries must work together to solve shared challenges, including economic exchanges, security threats, and environmental problems. India and Pakistan depend on each other to solve issues about air pollution that move across their border. The wind carries pollutants from India's agricultural fires into Pakistan, damaging its environment and people's health.

The way pollution spreads between us proves we must collaborate to fix our common air quality problems. The Interdependence Theory states that nations with mutual issues should cooperate on solutions, even if politics between them gets in the way.

More South Asian countries are calling for teamwork after discovering how severely air pollution threatens their shared environment and their citizens' health.[8] Both governments must cooperate to lower the negative impact of crop-burning practices in India. Even though India and Pakistan face the same environmental problems, their political conflicts make it hard for them to work together. For decades, India and Pakistan have clashed politically due to border disagreements and worries about each other's security actions. India and Pakistan rarely work together on environmental issues, mainly because their political conflicts hold more importance. Failed joint

---

[5] Danyal Mahmood, "Smog in Lahore: Air Quality Index (AQI) in Pakistan Breaks Records!," Paradigm Shift, November 18, 2024, https://www.paradigmshift.com.pk/smog-in-lahore/.

[6] Health Product Policy and Standards (HPS), "WHO Standards for Quality, Safety and Efficacy of Health Products: Stakeholder Feedback Report," August 11, 2023, https://www.who.int/publications/i/item/9789240076358.

[7] "Review: Power and Interdependence Revisited," *International Organization* 41, no. 4 (1987): 725–53, https://www.jstor.org/stable/2706764.

[8] Web, "Urgent Action Needed to Address South Asia's Air Pollution Health Emergency - ICIMOD," ICIMOD - International Centre for Integrated Mountain Development, September 19, 2024, https://www.icimod.org/press-release/urgent-action-needed-to-reverse-south-asias-air-pollution-health-emergency/.

efforts to tackle pollution from one country to another are mainly because both sides do not work together well.

The two countries can not effectively control shared pollution because they lack official deals about environmental measures like pollution control and farming sustainability. Both states have distinctive data of the pollution sources but they can not make good policies about farm fires because countries do not share enough research and data to understand how these fires affect the environment.[9] Scholars believe that South Asian countries must work together to manage their environment if they want to solve the problem of air pollution that crosses their borders. Working together, both nations can tackle air pollution and fix environmental problems, creating benefits that support the health and quality of life for everyone involved.

2. India's Contribution to Air Pollution through Agricultural Burning

Farmers in Punjab often burn crop residue left in fields, one of the most significant reasons the area has terrible air pollution. The situation worsened in 2024 as agricultural burning spread, worsening pollution in nearby Pakistan. During the winter harvest period, particularly between October and November following the monsoon season, the CPCB finds that burning farm residue generates 40% to 60% of particulate air pollution. Recent satellite and weather studies from 2024 show that the Punjab region's widespread burning of crop waste is sending large amounts of pollution across the border into Pakistan, worsening air quality. When the wind carries these air contaminants, Lahore's already lousy air quality becomes even more harmful.[10] After harvest, burning wheat and rice straw sends harmful smoke into the air, where tiny particles known as PM2.5 can seriously affect human breathing and lung function. Lahore's Environmental Protection Department found that PM2.5 concentrations regularly rise above WHO's safe levels during specific months, turning air quality into dangerous conditions.

In 2024, Lahore's Air Quality Index (AQI) showed it as one of the world's dirtiest places to live, with pollution levels hitting 232 when rice fields burned after harvest. When IQAir measures this lousy air quality, they say it creates dangerous conditions that put people's health at serious risk.[11] Tiny particles (PM2.5) in the air are making people in

---

[9] "Smog Afflicts Both India and Pakistan. Could Climate Collaboration Help Them Both?," World Economic Forum, January 29, 2024, https://www.weforum.org/stories/2024/01/smog-india-pakistan-collaboration/.

[10] Gemma Dipoppa and Saad Gulzar, "Bureaucrat Incentives Reduce Crop Burning and Child Mortality in South Asia," *Nature* 634, no. 8036 (October 23, 2024): 1125–31, https://doi.org/10.1038/s41586-024-08046-z.

[11] "Lahore Air Quality Index (AQI) and Pakistan Air Pollution | IQAir," n.d., https://www.iqair.com/pakistan/punjab/lahore?srsltid=AfmBOopah4pYlkJcIhJU8EpKdBdZoVfmPdRzX-DCOVFmQ52ltUvsDxHG.

Lahore and other border cities sick with breathing and heart issues and causing them to die younger than they should. The big problem with burning crop waste in Punjab continues to grow yearly, and all attempts to stop it are failing.

3. The Role of Local Pollution in Lahore

Lahore's air pollution comes from India's fields burning crops and gets worse from pollution sources within Pakistan. Pollution levels in Lahore rise mainly from car exhaust, factory work, and building construction. Lahore combines industrial growth with heavy traffic, and its growing number of older vehicles releases dangerous nitrogen oxides and carbon monoxide into the air. Based on Pak-EPA findings, Lahore's air pollution levels are primarily bad for health, and cars moving across the city add 30% more pollution to it. The Pakistan National Conservation Strategy and related documents indicate this data.[12] Many particles in our atmosphere come from the same sources: factories, power plants, and brick kilns in this area.

Construction activities, booming in Lahore due to rapid urbanisation, further contribute to the city's pollution levels. The dust generated from construction sites and vehicle emissions creates a toxic mixture that worsens air quality in urban areas. A 2024 report by the Lahore Waste Management Company (LWMC) found that local sources of pollution, including construction activities, contribute approximately 15% to 20% of the particulate matter levels in the city.[13] While these sources are domestic, overlapping with cross-border pollution highlights the compounded challenge Lahore faces in managing its air quality.

4. Transboundary and Domestic Pollution: A Shared Crisis

When we look at Lahore's pollution, we see how countries depend on each other to tackle environmental damage and protect public health across national borders. The issue is difficult to understand because it has two parts - Pakistan's internal pollution and India's agricultural fires - both are connected and must be examined. In places where environmental pollution can quickly move across borders, interdependence theory shows us that the choices made by one nation can create significant and sometimes unexpected effects in neighbouring countries. The pollution crisis in Lahore

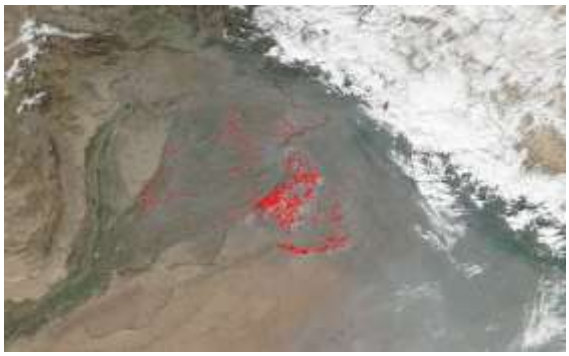
---

[12] Pakistan National Conservation Strategy (NCS), Japan International Cooperation Agency (JICA), Pakistan EPA, Japan, World Bank, Pakistan Environmental Protection Council, Chief Executive of Pakistan, & Royal Netherlands Embassy. (n.d.). *AIR POLLUTION.* https://environment.gov.pk/SiteImage/Misc/files/Downloads/interventions/environmentalissues/ AirPollution.pdf

[13] Asif Iqbal et al., "Evolution of Solid Waste Management System in Lahore: A Step Towards Sustainability of the Sector in Pakistan," *Applied Sciences* 13, no. 2 (January 11, 2023): 983, https://doi.org/10.3390/app13020983.

is made worse because harmful emissions from India's Punjab region mix with local pollutants from Pakistan, showing how connected these areas are.

Health problems caused by pollution moving between countries are severe. Nasa Satellite Data shows that conflagration[14] is higher on the India side which in result sends smog to Pakistan, leading to breathing and heart problems in people living in Lahore.[15] Lahore's Health Department reports that since 2024, the city has experienced more cases of asthma, bronchitis, heart disease, and deaths coming too early, especially when Indian farmers burn their fields.[16]



This November 19, 2017, photograph shows agricultural fires in both India and Pakistan,
with India on the right and Lahore, Pakistan, on the left.

When challenges go beyond borders, nations need each other's help rather than trying to solve everything independently. Lahore's pollution situation perfectly shows how this happens. Air pollution in Pakistan is made worse by vehicles, industry, and construction work, on top of the heavy pollution from India's agriculture.e pollution in Lahore is a prime example of this dynamic.[17] Domestic pollution in Pakistan, such as vehicle emissions, industrial processes, and construction activities, adds to the already

---

[14] "Conflagration" is a massive fire that obliterates a lot of property or land. "Conflagration," in *Merriam-Webster Dictionary*, January 12, 2025, https://www.merriam-webster.com/dictionary/conflagration.

[15] "Agricultural Fires in India and Pakistan - NASA," NASA, n.d., https://www.nasa.gov/image-article/agricultural-fires-india-pakistan/.

[16] TOI World Desk, "Lahore Reports Over 15,000 Respiratory Cases in One Day Due to Toxic Haze, Nasa Shares Smog Photo," *The Times of India*, November 14, 2024, https://timesofindia.indiatimes.com/world/pakistan/lahore-reports-over-15000-respiratory-cases-in-one-day-due-to-toxic-haze-nasa-shares-smog-photo/articleshow/115297467.cms.

[17] Abdullah Nasir et al., "Air Pollution From Industrial Emissions and Its Control in Pakistan: Current Situation, Challenges, and Way Forward," in *IntechOpen eBooks*, 2024, https://doi.org/10.5772/intechopen.1004052.

severe pollution levels caused by India's agricultural practices. When pollution comes from two directions simultaneously, it creates problems so big that one country's efforts alone won't fix it. We need countries to work together across borders to handle this problem effectively.

According to Pakistan's Ministry of Health 2024 findings, one-third of early deaths in Lahore are caused by air pollution outside.[18] The numbers reveal the immediate harm from shared pollution and show why India and Pakistan need to cooperate to fight against these dangerous airborne pollutants. When India and Pakistan recognise they need each other to fight dirty air, they can better handle India's agricultural fires and Pakistan's pollution problems at home.

However, despite growing awareness and mounting evidence, political tensions hinder meaningful cooperation. The long-standing disputes between India and Pakistan, particularly over issues like Kashmir, have overshadowed environmental concerns, making diplomatic efforts to address shared ecological threats difficult. This lack of cooperation manifests the limitations of interdependence theory in practice. While the theory suggests that cooperation is essential to mitigate shared risks, political realities often prevent states from pursuing collaborative solutions, even when the need for collaboration is evident.

In 2024, there were efforts to initiate dialogue, such as Maryam Awaz's suggestion to write a letter to the Chief Minister of Punjab in India regarding climate change.[19] However, these efforts have largely failed to result in substantial progress. The political climate remains mired in the blame game, where both nations continue to point fingers at each other without taking concrete steps toward joint action. This failure to move beyond political conflict and engage in effective environmental diplomacy illustrates the interdependence theory's challenges in regions where historical animosities and territorial disputes hinder collaborative efforts.

Finally, neither India nor Pakistan can fix the pollution problem in Lahore alone. Cooperation is required because air pollution is a shared problem that directly affects people's health and well-being in both countries.[20] It is indisputable that these two

---

[18] Elaine Ruth Fletcher, "Pakistan'S 'Super Seeders' Show Promise in Curbing Stubble Burning, but Uptake Is Slow -," *Health Policy Watch* (blog), December 5, 2024, https://healthpolicy-watch.news/new-pakistani-super-seeders-show-promise-in-curbing-rice-stubble-burning-but-uptake-too-slow-to-clear-smog-this-year/.

[19] Our Correspondent, "Maryam Seeks to Pursue Smog Diplomacy With Indian Punjab," *The Express Tribune*, October 31, 2024, https://tribune.com.pk/story/2506449/maryam-seeks-to-pursue-%20smog-diplomacy-with-indian-punjab.

[20] Syed Mohammad Ali, "Lahore Is the World's Most Polluted City. Here's Why.," *Foreign Policy*, November 29, 2021, https://foreignpolicy.com/2021/11/29/pakistan-lahore-pollution-fossil-fuels-climate/.

countries are interdependent in the face of environmental issues. However, the biggest barrier to genuine collaboration between them continues to be their enduring political differences. If this gap is not closed, the pollution issue will probably worsen, seriously affecting regional stability and public health. As a result, even while interdependence is theoretically understood, the practical realities.
Geopolitics frequently hinder the essential cooperation that could result in a long-term solution for South Asia's common environmental problems.

5. Meteorological and Atmospheric Conditions Facilitating Transboundary Pollution Movement

The transboundary movement of air pollutants from India to Lahore, particularly during the post-harvest months, is influenced by a combination of meteorological and atmospheric conditions that allow pollutants from agricultural burning in India's Punjab region to travel across the border. Several key factors play a role in this phenomenon. One of them is the direction of the winds, one of the most essential meteorological factors that facilitate the transboundary movement of pollution.[21] During the winter, the northwesterly winds, typical in South Asia, blow from India toward Pakistan, carrying smoke, particulate matter (PM2.5), and other pollutants that significantly worsen the air quality in Lahore. Research indicates that these winds carry pollutants from the northern Indian states of Punjab and Haryana, where burning of crop residue is particularly common.
The way temperatures stack up in the atmosphere (temperature inversion) moves pollutants from one place to another. In Punjab and Lahore, the colder months bring frequent temperature inversions.[22] The warmer air above the ground rises higher, taking pollutants with it and allowing these contaminants to move into higher regions of the atmosphere. When temperature inversion happens, pollutants can't escape upward and stay trapped near the ground as the cold surface air holds them in place. Winds carrying these dense air pockets of pollution can travel between areas, affecting regions across the border.
Timing the burning of crop waste matches the patterns of the current season's weather. When October and November come to northern India, farmers burn rice straw and leftover crops the most, and the strong winds help carry the smoke across

[21] Nirwan Nirwan et al., "Determining Hotspots of Gaseous Criteria Air Pollutants in Delhi Airshed and Its Association With Stubble Burning," *Scientific Reports* 14, no. 1 (January 10, 2024), https://doi.org/10.1038/s41598-023-51140-x.

[22] Rabia Majeed et al., "Solving the Mysteries of Lahore Smog: The Fifth Season in the Country," *Frontiers in Sustainable Cities* 5 (January 5, 2024), https://doi.org/10.3389/frsc.2023.1314426.

into Pakistan.[23] Pakistan gets polluted when farm waste burns in the region, the wind carries it, and the air stays put.

Being just next to Punjab, India - the main area where farmers burn agricultural waste - makes Lahore's pollution problem even more severe. Lahore gets a lot of pollution from India because it's so close to the border, and Indian pollutants don't need to travel far to reach the city. Being so near the border, Lahore often deals with harsh pollution waves entering the city from across. The city's border location means it gets hit more often by severe pollution that crosses over.

6. Influence of Recognizing Environmental Threats on Diplomatic Actions

India and Pakistan's diplomatic relationship may suffer even more if they accept that pollution crossing their borders is a serious environmental challenge. Despite their difficult political relationship, India and Pakistan can join forces to tackle environmental problems that spread across their shared border.

When countries see cross-border pollution as an environmental risk, they will likely give it more international money and focus. WHO and UNEP might step in to support India and Pakistan by giving them funds, helping with technical problems, and organizing platforms where they can collaborate.

Working with global partners can boost India and Pakistan's ability to handle pollution, while also bringing in more money to do it righten management. Working together to fix pollution that travels between India and Pakistan could build better relations between them. By joining forces against air pollution, India and Pakistan stand to gain stronger trust between them and fewer risks of getting into arguments. Joint environmental initiatives may lead to better cooperation in other areas between the countries.re funding for efficient pollution management. Resolving common environmental issues, such pollution across international borders, may help to increase trust between India and Pakistan. By working together to manage air pollution, both nations may increase mutual trust and lower the likelihood of miscommunication and conflict. A successful environmental cooperation effort might pave the way for future improvements in bilateralties broadly. Despite their differences, India and Pakistan must concentrate on finding solutions and ignore political disputes to deal with the problem of air pollution. Our basic plan starts from the fact that fighting air pollution requires countries to join forces and cooperate worldwide.

Neighbors should join forces by making joint environmental teams, installing devices to measure air quality, and working together on public campaigns to reduce pollution while supporting farmers who want to farm in a healthy way.

7. Health Impacts of Transboundary Air Pollution on Lahore's Population

[23] S. Bhuvaneshwari, Hiroshan Hettiarachchi, and Jay N. Meegoda, "Crop Residue Burning in India: Policy Challenges and Potential Solutions," *International Journal of Environmental Research and Public Health* 16, no. 5 (March 7, 2019): 832, https://doi.org/10.3390/ijerph16050832.

On the other hand, air pollution of transboundary nature in Lahore has very severe health effects as its air quality often reaches quite dangerous levels. Exposure to high levels of particulate matter (PM2.5) and other pollutants has been linked with a variety of health problems, particularly to the lungs and heart.Air pollution that crosses the border is a key component of PM2.5, a measure of fine particulate matter, and long term exposure to PM2.5 has been strongly associated with conditions like asthma, bronchitis and chronic obstructive pulmonary disease (COPD). Elevated sales of pollution masks to sell in the country's 'respiratory capital' of Lahore shows that its population may be having it even worse, as the problem amplifies already existing lung diseases. But that's not the only organ that air pollution damages — pollution is also bad for your heart. Heart attacks, strokes and other cardiovascular diseases are more likely if the fine particles enter the bloodstream. Due to the fact that pollution levels in Lahore over regularly over the safe limits set by the World Health Organization, cardiovascular diseases are on the rise.

Lahore is no exception: the World Health Organization (2019) reports that air pollution is behind millions of premature deaths around the world each year, and inhaling the city's pollution levels leads to a high number of premature deaths from respiratory and heart problems.[24] They are particularly vulnerable for children, the elderly and those with pre existing health conditions.

It is even more worse for the poor and marginalized communities in Lahore. It already faces issues in getting to quality healthcare and it takes the hit of the health impacts of transboundary pollution. Without medical care, their risks are compounded which then translates into higher rates of illness and death.

8. Environmental Consequences of Transboundary Air Pollution

Air pollution in Lahore affects not only human health but environmental effects from ecosystem to agriculture to urban life of the city. Also, toxins from India combined with already bad air quality in Lahore turn into thick smog, severely restricting visibility.[25] This has a long lasting effects on the environment causing serious damage to vegetation, buildings and infrastructure. The constant exposure to pollution weakens the health of the entire urban ecosystem over time. Agriculture in Lahore and nearby areas is also suffering. Pollutants, especially nitrogen from the agricultural fires, can degrade soil quality, making it harder to grow crops.[26] This harms food security and

[24] "Types of Pollutants," n.d., https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/health-impacts/types-of-pollutants.

[25] Syed Mohammad Ali, "Lahore Is the World's Most Polluted City. Here's Why.," *Foreign Policy*, November 29, 2021, https://foreignpolicy.com/2021/11/29/pakistan-lahore-pollution-fossil-fuels-climate/.

[26] "Stubble Burning in Pakistan: Why It Continues and How Can It Be Curtailed," International Growth Centre, June 1, 2022, https://www.theigc.org/blogs/climate-

disrupts the livelihoods of farmers, who are already struggling with the impacts of pollution on their work.

Transboundary pollution also threatens local biodiversity. The high levels of particulate matter and other harmful substances in the air affect plants and animals, disturbing the natural balance of local ecosystems. For instance, poor air quality leads to slower plant growth and reduced crop yields, which in turn affects the entire food chain. Beyond local effects, this pollution also contributes to climate change. The greenhouse gases released by agricultural burning, like carbon dioxide and methane, intensify global warming, making the region's environmental challenges even more severe.

9. Socio-Economic Impacts of Air Pollution in Lahore

The socio-economic impact of air pollution in Lahore is huge, touching nearly every aspect of life, from public health to the economy.[27] The healthcare costs alone are a major strain, as treating diseases caused by pollution falls heavily on both the government and individuals. Hospitals are overwhelmed with a growing number of patients dealing with pollution- related illnesses, which leads to increased medical expenses and a loss in productivity.

Pollution also takes a toll on labor productivity. Many workers are forced to take sick leave because of respiratory and heart issues, which reduces their earnings and has broader effects on industries and businesses, especially those that rely on outdoor work.[28] Part of what this does is it actually drops what the productivity that people are putting in and that has a ripple effect across the entire economy. Health and labor are not the only thing that's damage, but infrastructure as well. Buildings and roads slowly degrade due to the pollutants in the air, and it costs more to maintain them. It also lowers property values, and thereby discourages investment in Lahore along with declining its financial appeal.

If things get bad enough some people will even consider changing their place of living. More economic migration could follow from people moving away from Lahore to escape the pollution. But this could force more pressure on other areas, exacerbating the scarcity of under resourced areas.

10. Diplomatic Efforts and Cooperation in Response to Shared Environmental Threats

---

priorities-developing-countries/stubble-burning-pakistan-why-it-continues-and-how-can.

[27] Rima J. Isaifan, "Air Pollution Burden of Disease Over Highly Populated States in the Middle East," *Frontiers in Public Health* 10 (January 6, 2023), https://doi.org/10.3389/fpubh.2022.1002707.

[28] Zhong Fang et al., "Air Pollution's Impact on the Economic, Social, Medical, and Industrial Injury Environments in China," *Healthcare* 9, no. 3 (March 1, 2021): 261, https://doi.org/10.3390/healthcare9030261.

Despite increasing evidence of wide ranging impacts to human and ecosystem health, the environment and social economic systems, India and Pakistan have not yet made major diplomatic strides to address transboundary pollution. But despite the fact that studies and reports abound, saying that the pollution crisis is a crisis that has to be tackled immediately, tensions remain politically between the two countries. But both nations are in a cycle of finger pointing instead of looking for collaborative solutions.[29] For instance, Maryam Nawaz had suggested writing to the Chief Minister of Indian Punjab last October to discuss climate change, but nothing came of it. This is indicative of the wider diplomatic paralysis, where talk too frequently does not result in action to end the dispute. In this regard therefore, there is scope for them to jointly tackle these common environmental challenges. Both India and Pakistan could manage and reduce pollution by having joint monitoring programs, data sharing mechanisms and research initiatives. The broad scientific consensus on the need for this kind of collaboration has rarely come to fruition in the face of opposition from the political landscape. Diplomatic barriers remain in place as there is little formal joint monitoring programs or agreements to share pollution related data.

As a crucial opportunity to curb cross border pollution remains bilateral dialogue in pollution control. India and Pakistan could negotiate on pollution reduction treaties or agreements. Crop residue burning, industrial emissions or vehicular pollutants, could be covered in these agreements. Unfortunately though, the political deadlock between both countries stunted these conversations, such that all we hear are more blame games over the supposed solutions. With political leaders such as Maryam Nawaz urging the government to address climate change, it is even more frustrating that nothing real follows which is indicative of the diplomatic challenges in finding solutions.

It's also a good way to get international support to combat the pollution. These things can be provided by organizations like the United Nations Environment Programme (UNEP) and World Bank for joint India-Pakistan projects both technical as well as financial. The latter have the experience to handle cross border environmental endeavors and might assist in fostering trust and increasing data sharing between the countries. However, relying only on foreign aid won't accomplish much unless the political bristling thwarts actual cooperation between the two nations. If neither India nor Pakistan have the political will to make this work, the international community can only do so much.

But the environment always remained a bridge that India and Pakistan have still not crossed. Addressing the challenge of transboundary pollution is an opportunity for both countries to use a shared environmental crisis as a driver for better bilateral relations, and to mutual benefit. The two nations were never exactly the best of friends

[29] Jonathan Awewomom et al., "Addressing Global Environmental Pollution Using Environmental Control Techniques: A Focus on Environmental Policy and Preventive Environmental Management," *Discover Environment* 2, no. 1 (February 6, 2024), https://doi.org/10.1007/s44274-024-00033-5.

— yet the historical mistrust between the two keeps getting in the way. Still, global environmental diplomacy is unlikely to ease the tensions because there are other more critical political issues that trump any attempts to settle pollution.

Air pollution also needs attention through public awareness and advocacy. Together, we could educate people in India and Pakistan to pollute is a joint issue and for how imperative that joint hand work is. But if people become more aware, they can give pressure to their governments to do something. And the big hurdle is there has not been much coordinated advocacy between India and Pakistan. Efforts to engage the public on the environment will remain limited as long as both countries remain focused on their internal politics.

The pollution isn't just an Indian and Pakistan problem; it's a regional issue. Major problems with pollution also affect countries like Bangladesh and Nepal, which provide the foundations for broader regional cooperation.[30] If India, Pakistan, and their neighbors worked together to create a shared framework from which to address pollution, all of South Asia would benefit. If they worked together, they could then share knowledge and best practices to make the effort sustainable. However, under today's political circumstances, it's nearly impossible to foresee any scenario where the US and its neighboring countries can work on such a regional front.

Despite clear potential for joint action, the political deadlock between India and Pakistan \still stands in the way of any real progress. However, if the two countries wish to tackle transboundary pollution, they need to look more at environmental diplomacy and common challenges to solve the latter, rather than continuing the blame game. India and Pakistan may be able to mitigate the horrific results of pollution only through meaningful dialogue, shared information, and international cooperation that allows for a better and more normal life for all in the region

11.Conclusion

The cross-border air pollution in Lahore creates serious problems for people's health while also harming the environment and local economy across all areas of life. The continuous pollution emergency requires immediate solutions from within our country and cooperative efforts between nations. The mutual environmental crisis offers India and Pakistan a chance to solve this problem together despite their historical differences. Joint action between these two nations against air pollution will help save lives and benefit their economies while protecting the ecosystems they share. When nations partner to share pollution data and enforce similar air standards they achieve noticeable air quality benefits. When both nations tackle this common environmental challenge they will build trust with each other and establish a foundation for future regional teamwork. Working together might improve environmental issues and create better diplomatic relationships between the countries. The nations can prove their

[30] Associated Press, "Air Pollution, Politics Pose Cross-Border Challenges in South Asia," *Voice of America*, January 21, 2024, https://www.voanews.com/a/air-pollution-politics-pose-cross-border-challenges-in-south-asia/7448790.html.

ability to unite on this crisis for regional benefit even though they have significant political disagreements. When both sides take responsibility to reduce air pollution they can improve daily life and develop better ways to work together in the future

Reference

"Particle Pollution and Health," n.d., https://www.health.ny.gov/environmental/indoors/air/pmq_a.htm#:~:text=The%20term%20fine%20particles%2C%20or,the%20end%20of%20this%20sentence.

Sarah Zaman, "Lahore's Poor Air Quality Points to Pakistan's Bigger Pollution Problem," *Voice of America*, November 22, 2023, https://www.voanews.com/a/lahore-s-poor-air-quality-points-to-%20pakistan-s-bigger-pollution-problem/7364035.html.

"Stubble Burning in India: Environmental Concern and Alternative Tools – Current Agriculture Research Journal," n.d., https://www.agriculturejournal.org/volume12number1/stubble-burning-in-india-environmental-concern-and-alternative-tools/.

"Lahore Air Quality Index (AQI) and Pakistan Air Pollution | IQAir," n.d., https://www.iqair.com/pakistan/punjab/lahore?srsltid=AfmBOopZJk_Yykh7NW5-0NozD_hkM4ryUa-oaXts0SyIunAp8GwKM4Zn.

Danyal Mahmood, "Smog in Lahore: Air Quality Index (AQI) in Pakistan Breaks Records!," Paradigm Shift, November 18, 2024, https://www.paradigmshift.com.pk/smog-in-lahore/.

Health Product Policy and Standards (HPS), "WHO Standards for Quality, Safety and Efficacy of Health Products: Stakeholder Feedback Report," August 11, 2023, https://www.who.int/publications/i/item/9789240076358.

"Review: Power and Interdependence Revisited," *International Organization* 41, no. 4 (1987): 725–53, https://www.jstor.org/stable/2706764.

Web, "Urgent Action Needed to Address South Asia's Air Pollution Health Emergency - ICIMOD," ICIMOD - International Centre for Integrated Mountain Development, September 19, 2024, https://www.icimod.org/press-release/urgent-action-needed-to-reverse-south-asias-air-pollution-health-emergency/.

"Smog Afflicts Both India and Pakistan. Could Climate Collaboration Help Them Both?," World Economic Forum, January 29, 2024, https://www.weforum.org/stories/2024/01/smog-india-pakistan-collaboration/.

Gemma Dipoppa and Saad Gulzar, "Bureaucrat Incentives Reduce Crop Burning and Child Mortality in South Asia," *Nature* 634, no. 8036 (October 23, 2024): 1125–31, https://doi.org/10.1038/s41586-024-08046-z.

"Lahore Air Quality Index (AQI) and Pakistan Air Pollution | IQAir," n.d., https://www.iqair.com/pakistan/punjab/lahore?srsltid=AfmBOopah4pYlkJcIhJU8EpKdBdZoVfmPdRzX-DCOVFmQ52ltUvsDxHG.

Pakistan National Conservation Strategy (NCS), Japan International Cooperation Agency (JICA), Pakistan EPA, Japan, World Bank, Pakistan Environmental Protection Council, Chief Executive of Pakistan, & Royal Netherlands Embassy. (n.d.). *AIR POLLUTION.* https://environment.gov.pk/SiteImage/Misc/files/Downloads/interventions/environmentalissues/ AirPollution.pdf

Asif Iqbal et al., "Evolution of Solid Waste Management System in Lahore: A Step Towards Sustainability of the Sector in Pakistan," *Applied Sciences* 13, no. 2 (January 11, 2023): 983, https://doi.org/10.3390/app13020983.

By Reality Check Team, "Is India's Crop Burning Polluting Pakistan's Air?," November 8, 2019, https://www.bbc.com/news/world-asia-india-50333985.

"Agricultural Fires in India and Pakistan - NASA," NASA, n.d., https://www.nasa.gov/image-article/agricultural-fires-india-pakistan/.

"Conflagration," in *Merriam-Webster Dictionary*, January 12, 2025, https://www.merriam-webster.com/dictionary/conflagration.

TOI World Desk, "Lahore Reports Over 15,000 Respiratory Cases in One Day Due to Toxic Haze, Nasa Shares Smog Photo," *The Times of India*, November 14, 2024, https://timesofindia.indiatimes.com/world/pakistan/lahore-reports-over-15000-respiratory-cases-in-one-day-due-to-toxic-haze-nasa-shares-smog-photo/articleshow/115297467.cms.

Abdullah Nasir et al., "Air Pollution From Industrial Emissions and Its Control in Pakistan: Current Situation, Challenges, and Way Forward," in *IntechOpen eBooks*, 2024, https://doi.org/10.5772/intechopen.1004052.

Our Correspondent, "Maryam Seeks to Pursue Smog Diplomacy With Indian Punjab," *The Express Tribune*, October 31, 2024, https://tribune.com.pk/story/2506449/maryam-seeks-to-pursue-%20smog-diplomacy-with-indian-punjab.

Syed Mohammad Ali, "Lahore Is the World's Most Polluted City. Here's Why.," *Foreign Policy*, November 29, 2021, https://foreignpolicy.com/2021/11/29/pakistan-lahore-pollution-fossil-fuels-climate/.

S. Bhuvaneshwari, Hiroshan Hettiarachchi, and Jay N. Meegoda, "Crop Residue Burning in India: Policy Challenges and Potential Solutions," *International Journal of Environmental Research and Public Health* 16, no. 5 (March 7, 2019): 832, https://doi.org/10.3390/ijerph16050832.

Syed Mohammad Ali, "Lahore Is the World's Most Polluted City. Here's Why.," *Foreign Policy*, November 29, 2021, https://foreignpolicy.com/2021/11/29/pakistan-lahore-pollution-fossil-fuels-climate/.

"Stubble Burning in Pakistan: Why It Continues and How Can It Be Curtailed," International Growth Centre, June 1, 2022, https://www.theigc.org/blogs/climate-priorities-developing-countries/stubble-burning-pakistan-why-it-continues-and-how-can.

Zhong Fang et al., "Air Pollution's Impact on the Economic, Social, Medical, and Industrial Injury Environments in China," *Healthcare* 9, no. 3 (March 1, 2021): 261, https://doi.org/10.3390/healthcare9030261.

Jonathan Awewomom et al., "Addressing Global Environmental Pollution Using Environmental Control Techniques: A Focus on Environmental Policy and Preventive Environmental Management," *Discover Environment* 2, no. 1 (February 6, 2024), https://doi.org/10.1007/s44274-024-00033-5.