The World Has Probably Passed "Peak Air Pollution"

Global air pollution levels have likely passed their zenith - a pivotal environmental turning point that remains underappreciated in public discourse. This report examines the evidence for "peak air pollution," analyzes its drivers, identifies remaining challenges, and charts pathways to lock in these gains.

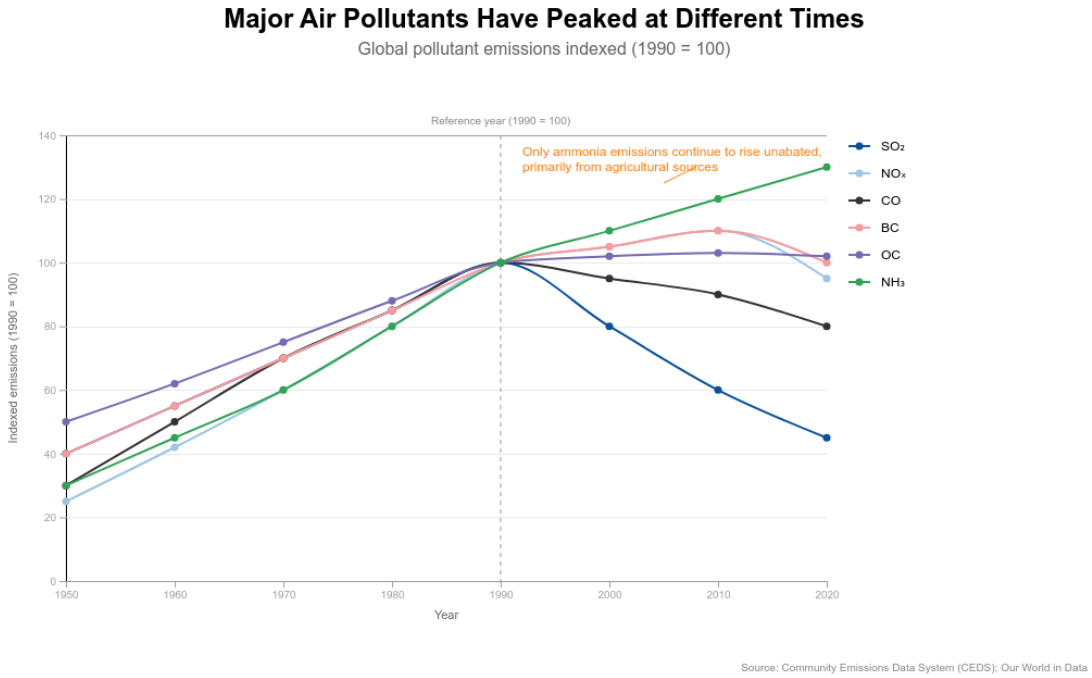
Across developed economies and increasingly in emerging markets, key air pollutant emissions have plateaued or begun declining, despite growing populations and energy demands. This represents both a public health triumph and proof that environmental degradation is not an inevitable consequence of development. However, significant challenges remain with agricultural emissions, wildfires, and persistent pollution hotspots that continue to threaten human health and ecosystems.

Evidence of 'Peak' in Global Air Pollutants and Health Impacts

When examining long-term data on major atmospheric pollutants, a remarkable pattern emerges—most have reached their historical maxima and begun substantial declines. This section examines the evidence that the world has passed "peak air pollution" for most key pollutants, though with important regional variations and remaining challenges.

Peaking and Declining Emissions Across Major Pollutants

The Community Emissions Data System (CEDS) shows that multiple key air pollutants have reached their global peaks at different points over the past century. Sulfur dioxide (SO_2) emissions peaked in the mid-20th century, while nitrogen oxides (NO_x) reached their maximum around the late 20th century. Carbon monoxide (CO) followed a similar mid-century pattern, black carbon (BC) has only recently peaked, and organic carbon (OC) emissions have plateaued. Only ammonia (NH_3) continues to rise unabated, primarily due to agricultural activities.



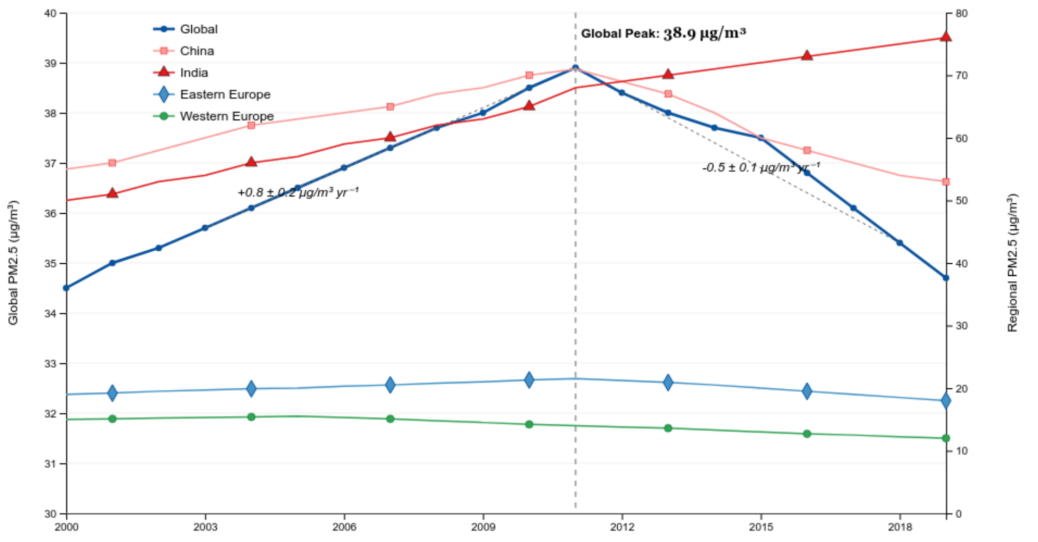
These trends demonstrate a crucial environmental transition: as nations develop economically and implement stricter environmental regulations, they eventually reach a turning point where pollution begins to decrease even as economic activity continues to grow. This pattern is consistent with the Environmental Kuznets Curve hypothesis, which suggests that environmental degradation first increases with economic development but then decreases after a certain level of prosperity is achieved.

Global Exposure to PM2.5 Has Peaked and Begun to Decline

Population-weighted exposure to fine particulate matter (PM2.5) provides perhaps the most relevant metric for human health impacts. According to recent research published in Nature Communications, global population-weighted PM2.5 exposure peaked in 2011 at 38.9 μg/m³ and has since declined to 34.7 μg/m³ by 2019, reflecting an average annual decrease of 0.5 ± 0.1 μg/m³.

Global Population-Weighted PM2.5 Exposure Peaked in 2011

Annual mean concentrations for global and key regional populations, 2000-2019



Source: Hammer et al., 2023, Nature Communications

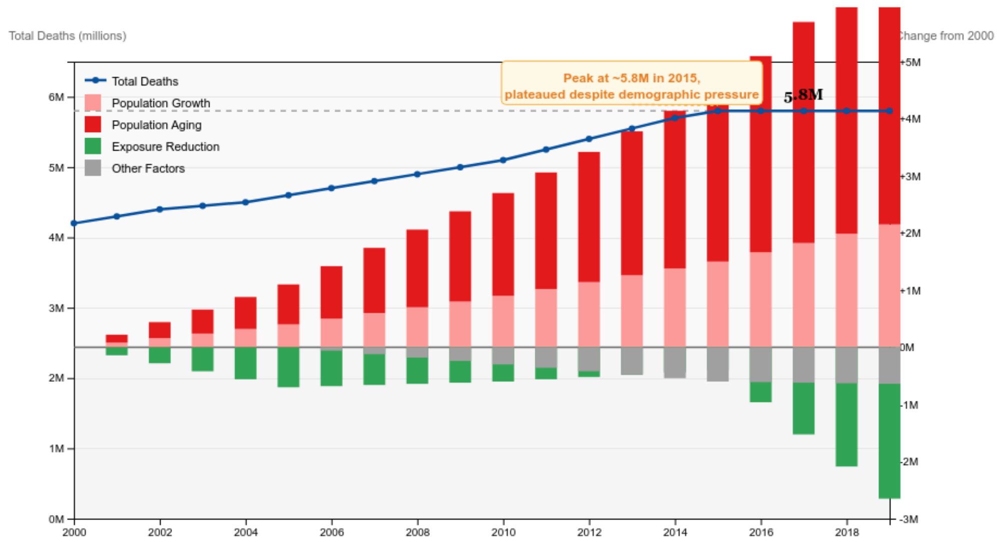
This global trend reflects significant regional variations. Prior to 2011, global increases were primarily driven by rising pollution levels in India (+1.6 ± 0.2 µg/m³ annually) and China (+1.5 ± 0.4 µg/m³ annually). After 2011, however, China's substantial pollution reductions (-2.4 ± 0.8 µg/m³ annually) dominated the global trend, supplemented by continued improvements in Eastern Europe (-0.6 ± 0.2 µg/m³ annually) and Western Europe (-0.4 ± 0.1 µg/m³ annually). India, however, has continued to see rising PM2.5 levels, though recent data suggests it may be approaching its own inflection point.

PM2.5-Related Mortality Has Plateaued Despite Population Growth

Perhaps the most compelling evidence for "peak air pollution" comes from health impact assessments. Global PM2.5-attributable mortality appears to have plateaued at approximately 5.8 million deaths annually after peaking in 2015, even as the global population continues to grow and age.

Global PM2.5-Attributable Deaths Have Plateaued Despite Growing Population

Annual mortality and contributing factors, 2000-2019 (millions)



Source: Hammer et al., 2023, Nature Communications

The stabilization of air pollution's mortality impact, despite demographic pressures, represents a significant public health achievement. From 2012 to 2019, reductions in PM2.5 exposure prevented approximately 2.65 million premature deaths globally, with China accounting for 63% of these avoided deaths (1.66 million). The United States and Europe contributed another 0.61 million avoided deaths through their pollution reductions.

However, these improvements have been largely offset by continued population growth (adding 2.15 million deaths) and population aging (adding 4.74 million deaths). The net effect is a stabilization of the global health burden rather than a decline in absolute terms—yet this stabilization, in the face of demographic headwinds, still represents a remarkable turning point.

Regional Variations in Air Quality Progress

The United States provides one of the clearest examples of long-term air quality improvements. Under the Clean Air Act, ambient PM2.5 concentrations decreased by 37% between 2000 and 2023 (based on 356 trend monitoring sites) and by 26% across EPA regions from 2010 to 2023 (based on 87 sites). Similar improvements have been documented across developed economies.

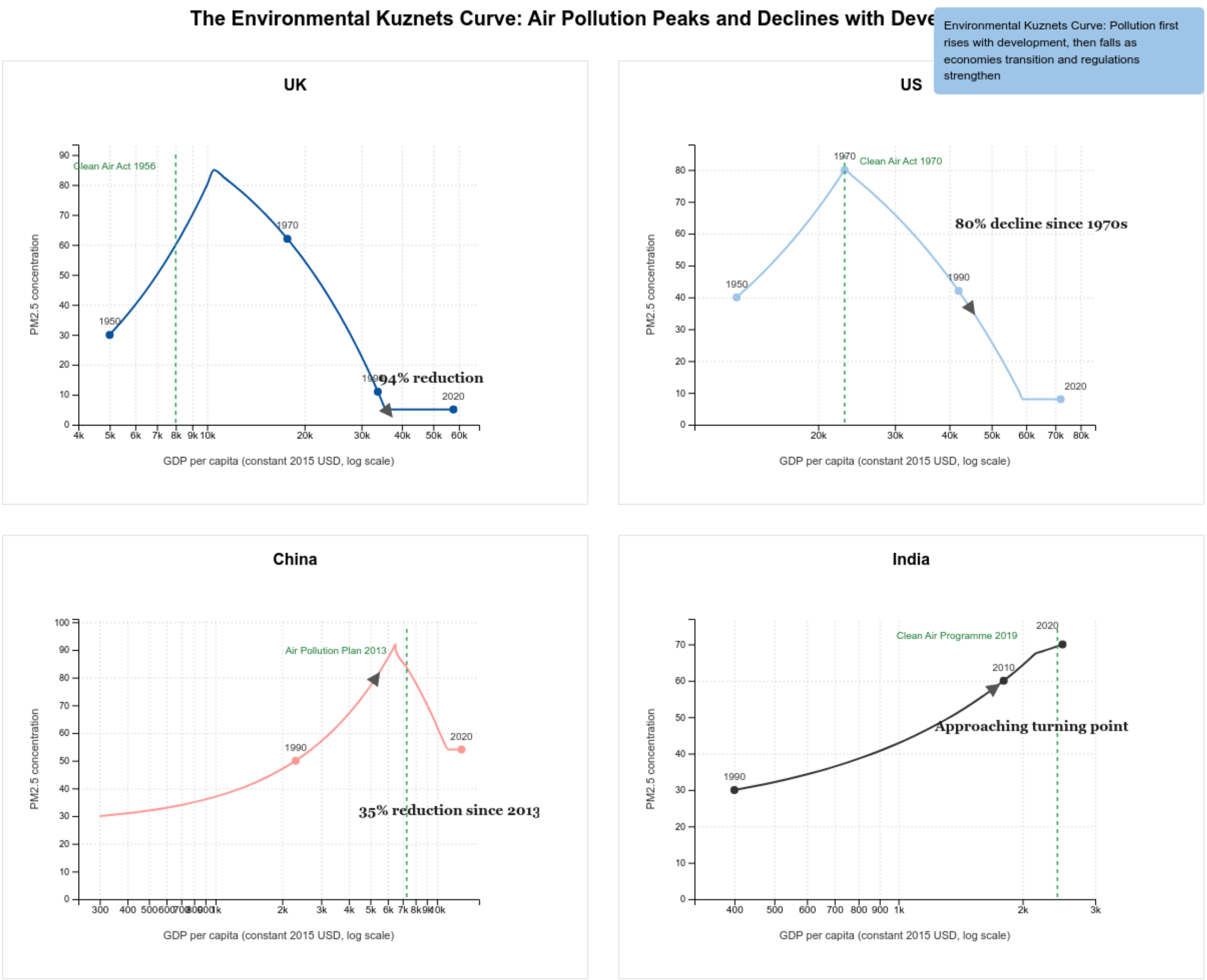
However, significant regional disparities persist. According to the State of Global Air report [1], 99% of the global population still breathes air with PM2.5 concentrations exceeding the WHO guideline of 5 μg/m³. About 81% of people live in areas meeting the less stringent interim target of 35 μg/m³. Despite improvements in many regions, total air pollution deaths increased by approximately 23% from 2010 to 2021, primarily due to faster population growth and aging in highly polluted regions—India and China alone account for 58% of the global PM2.5 mortality burden.

Policy and Economic Drivers of the Clean-Air Transition

The observed peaks and subsequent declines in air pollution levels across various regions did not occur by accident. They reflect deliberate policy choices, economic development patterns, and technological transformations. This section examines the key drivers behind the clean-air transition in both developed and developing economies.

The Environmental Kuznets Curve in Action

The Environmental Kuznets Curve (EKC) hypothesis suggests that environmental degradation first increases with economic development but eventually decreases after a certain level of prosperity is achieved. This pattern has been observed in the air pollution trajectories of numerous countries.



Source: Our World in Data; Clean Air Fund; national air quality monitoring networks

The UK's Clean Air Act of 1956, passed in response to the Great Smog of London, initiated a dramatic improvement in British air quality. From peak levels, the UK has achieved reductions of 76% in NO_x, 94% in black carbon, 73% in volatile organic compounds, and 90% in carbon monoxide. The United States followed a similar trajectory after the passage of its Clean Air Act in 1970, which created the Environmental Protection Agency and established federal authority to set and enforce air quality standards.

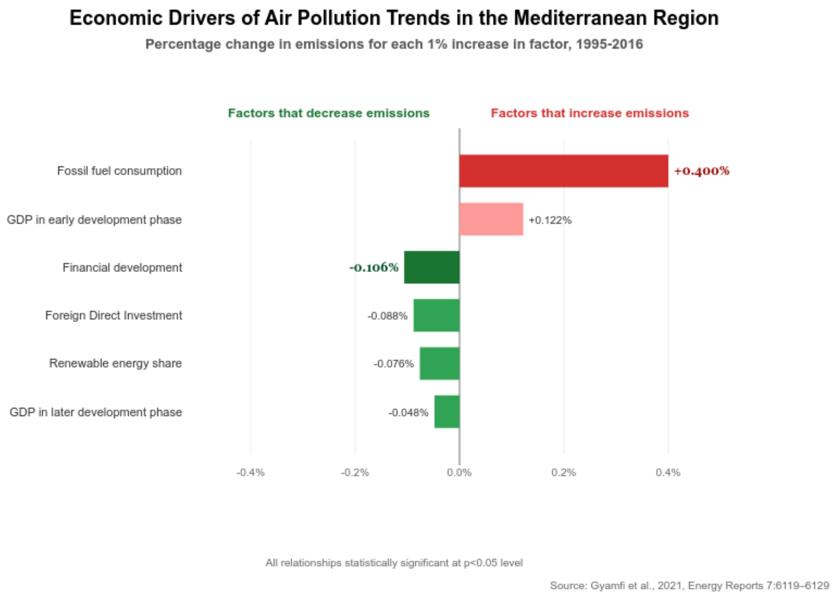
China, once the world's largest emitter of many air pollutants, has recently passed "peak air pollution" following aggressive policies implemented over the past decade. The Air Pollution Prevention and Control Action Plan of 2013 and subsequent measures have produced remarkable improvements in Chinese air quality, particularly in major urban areas. India appears to be approaching its own turning point, with recent policy interventions like the National Clean Air Programme of 2019.

Notably, these clean-air transitions are occurring much faster in developing economies than they did in early industrializers. China and India are transitioning from industrialization to improved air quality approximately four times faster than Western nations did in the 20th century. This acceleration reflects both the availability of cleaner technologies and greater public awareness of pollution's health impacts.

Economic Factors Driving Air Quality Improvements

Beyond direct environmental regulations, broader economic factors also influence air pollution trajectories. Econometric studies have identified several key variables associated with air quality improvements.

In the Mediterranean region (1995–2016), research published in Energy Reports [2] found that Foreign Direct Investment (FDI) exhibits a statistically significant negative relationship with CO_2 emissions, suggesting that modern investment often brings cleaner technologies. The study also found that financial development (measured by bank credit to GDP ratio) and increasing renewable energy share correlate with emissions reductions. By contrast, fossil fuel consumption drives emissions upward.



This econometric analysis confirms the Environmental Kuznets Curve hypothesis, showing that a 1% increase in GDP raises emissions by approximately 0.122% in early development phases, but leads to a 0.048% decrease in emissions at higher development levels. This creates the characteristic inverted U-shape relationship between economic development and environmental degradation.

Similar patterns appear in other regions. A panel study of six SAARC members [3] (Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka) from 1998–2020 found long-run cointegration between $PM_{2.5}$ levels and several economic and environmental factors. Per-capita GDP and consumption expenditure showed positive relationships with $PM_{2.5}$ concentrations, while forest area exhibited a negative relationship. Climatic factors also played a role, with annual temperature positively associated with $PM_{2.5}$ and total rainfall negatively associated.

These studies highlight the complex interplay of factors that influence air quality trajectories. While economic growth initially contributes to worsening air pollution, financial development, foreign investment, and the transition to cleaner energy sources eventually help reverse this trend. This understanding can inform policy approaches that aim to accelerate the clean-air transition in developing economies.

Emerging and Persistent Sources: Agriculture, Wildfires, and Waste Burning

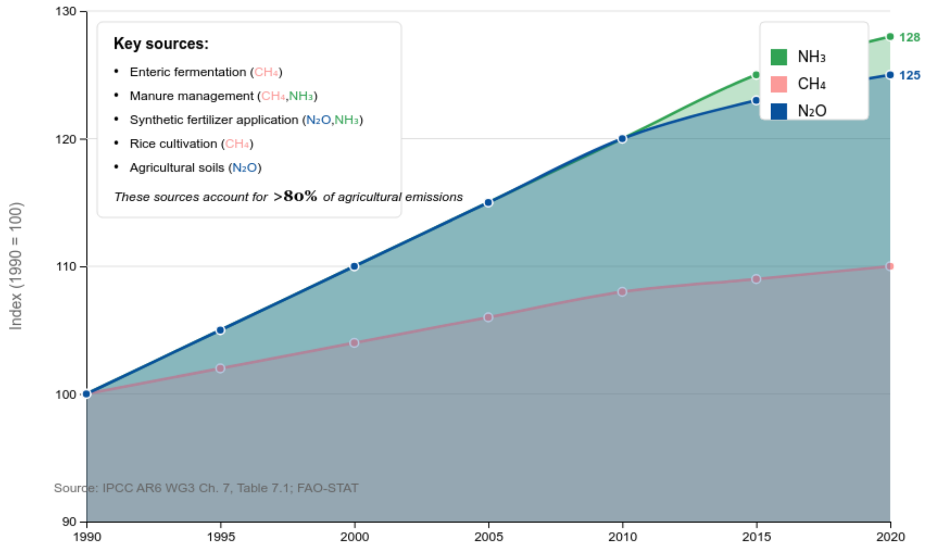
Despite the encouraging overall trends in air pollution, several sectors continue to present significant challenges. While traditional industrial and transportation emissions have declined in many regions, other sources are becoming relatively more important or even growing in absolute terms. This section examines three critical areas: agricultural emissions, wildfire impacts, and waste burning practices.

Agricultural Emissions: The Ammonia Challenge

Agriculture remains the dominant source of non-CO_2 greenhouse gases and ammonia (NH_3) emissions globally. According to the IPCC AR6 Working Group III [4], the agricultural sector produced 157 ± 47 Mt of methane (CH_4) annually during 2010–2019, equivalent to 4.2 Gt CO_2-eq. It also generated 6.6 ± 4.0 Mt of nitrous oxide (N_2O) annually, equivalent to 1.8 Gt CO_2-eq.

Agricultural Emissions Continue to Rise Unlike Other Pollution Sources

Global agricultural emissions indexed to 1990 levels (1990 = 100)



From 1990 to 2019, agricultural methane emissions rose by approximately 10%, while nitrous oxide emissions increased by roughly 25%. These trends are primarily driven by expanding livestock operations and increased fertilizer use in developing nations. Projections suggest these emissions could climb by another 10% by 2030 without significant intervention.

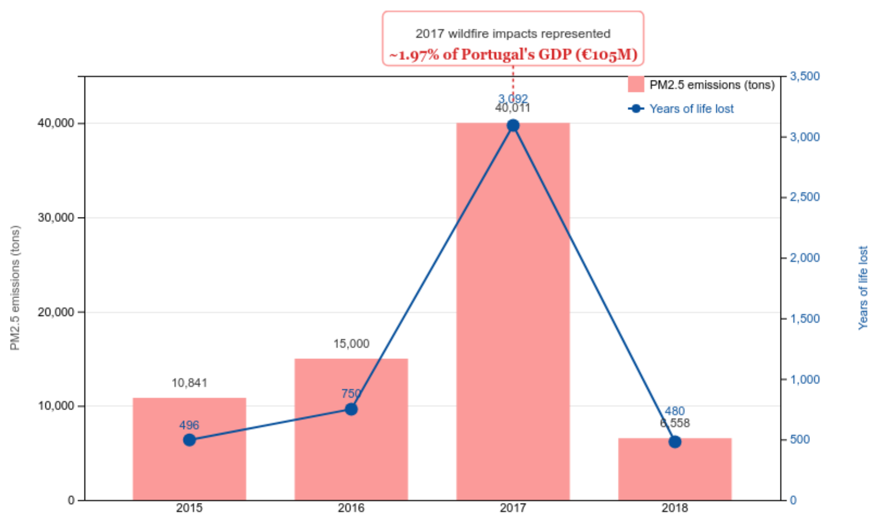
The key sources of these agricultural emissions include enteric fermentation (digestive processes in ruminant animals), manure management, synthetic nitrogen fertilizer application, rice cultivation, and agricultural soils. Together, these sources account for more than 80% of agricultural emissions. Unlike many other pollution sources, agricultural emissions have not shown signs of peaking globally, presenting a significant challenge to continued air quality improvement.

Wildfire Emissions: Increasing Frequency and Intensity

Climate change is increasing the frequency and intensity of wildfires in many regions, contributing to episodic but severe air pollution events. A longitudinal study of Portugal (2015–2018) documented the volatile nature of these emissions and their health impacts.

Wildfire Emissions Can Cause Dramatic Year-to-Year Air Quality Variations

Portugal's wildfire PM2.5 emissions and health impacts, 2015-2018



Source: Barbosa et al., 2024, Environmental Research

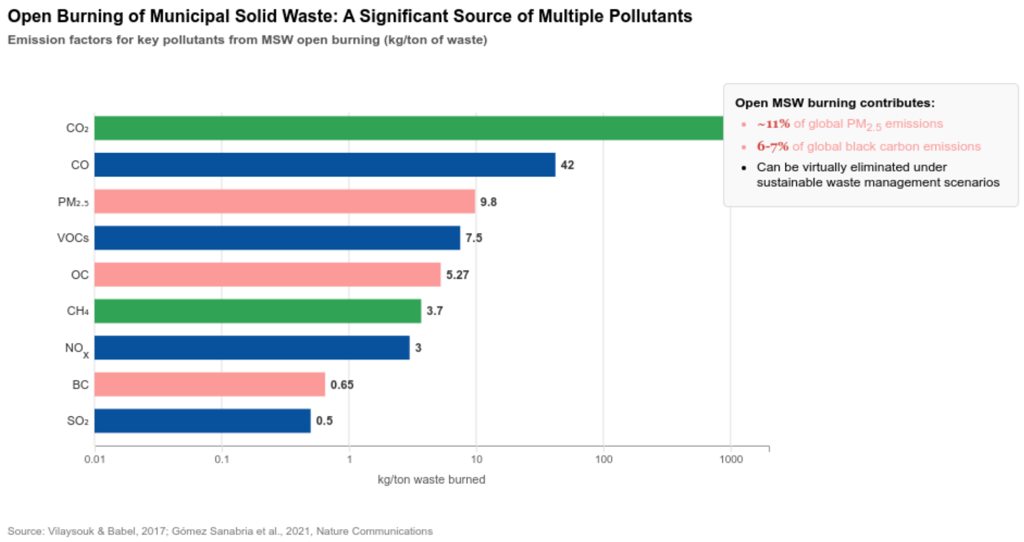
As shown in the visualization, annual mean PM2.5 emissions from wildfires in Portugal varied dramatically, rising from 10,841 tons in 2015 to 40,011 tons in 2017 before plunging to 6,558 tons in 2018. This volatility was driven by variations in burned area, with 2017 representing an extreme outlier year. The health impacts followed a similar pattern, with years of life lost soaring from 496 in 2015 to 3,092 in 2017 before falling to 480 in 2018. The economic costs of these health impacts ranged from €16 million to €105 million, with the 2017 wildfire impacts representing approximately 1.97% of Portugal's GDP.

Similar patterns have been observed in other regions. A Brazil-wide case-crossover study [5] examining over 2 million hospital admissions between 2008 and 2018 found that days classified as "wildfire waves" (when PM2.5 exceeded the 99th percentile) were associated with a 23% increase in respiratory admissions and a 21% increase in circulatory admissions. The Northern region of Brazil experienced the highest risks, with 38% increased respiratory admissions and 27% increased circulatory admissions during wildfire episodes.

These findings highlight how climate change-induced increases in wildfire frequency and intensity can counteract other air quality improvements, particularly in vulnerable regions. As global temperatures continue to rise, wildfire emissions may become an increasingly important contributor to air pollution in many parts of the world.

Open Waste Burning: A Persistent Challenge in Developing Regions

Open burning of municipal solid waste (MSW) represents another significant and often overlooked source of air pollution, particularly in low and middle-income countries. A 2021 Nature Communications study [6] reported that global MSW generation increased from 1.9 Gt/yr in 2015 to a projected 3.5 Gt/yr by 2050, with urban areas accounting for an increasing share of the total (from 70% to 80%).



Open MSW burning contributes approximately 11% of global PM2.5 emissions and 6-7% of global black carbon emissions. The emission factors for various pollutants from MSW open burning are substantial: 1,300 kg CO_2 per ton of waste, 42 kg CO per ton, 3.7 kg CH_4 per ton, 9.8 kg $PM_{2.5}$ per ton, and 0.65 kg black carbon per ton, among others.

The nature and scale of waste management challenges vary significantly across regions. In Luang Prabang, Laos, for example, 68% of collected MSW went to unmanaged landfills in 2010, only 3% was recycled, and 29% remained uncollected with unknown disposal methods. These circumstances create conditions where open burning becomes common due to lack of alternatives.

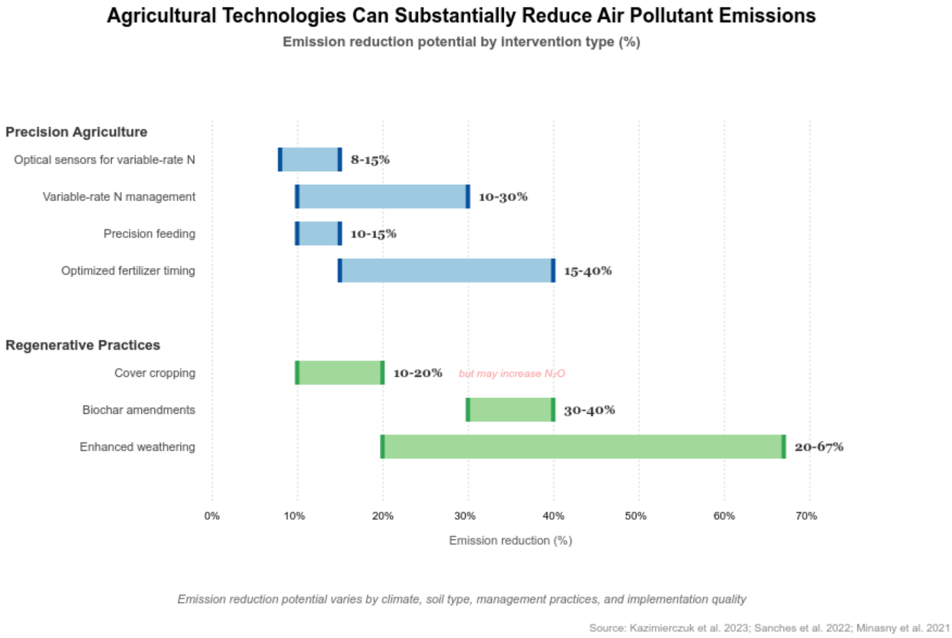
However, sustainable waste management scenarios suggest that open MSW burning can be virtually eliminated before 2050. The SSP1_MFR sustainability scenario projects an 88% reduction in methane emissions from dumpsites through improved waste collection, processing, and disposal methods. Alternative approaches, such as the production of refuse-derived fuel (RDF) from pre-sorted MSW, are being implemented in some regions. In Thailand, RDF3 production represents 45-55% of MSW feedstock and offers a heating value of 4,787 kcal/kg, providing a scalable waste-to-energy alternative that can reduce open-burning emissions.

Technological and Behavioral Mitigation Interventions

To maintain and accelerate the "post-peak" decline in air pollution, a range of technological and behavioral interventions will be necessary. This section examines promising approaches across different sectors, with a focus on quantifiable impact potential.

Precision and Regenerative Agriculture

Agricultural technologies offer significant potential to reduce emissions of ammonia, methane, and nitrous oxide while maintaining or improving productivity. Precision (digital) agriculture approaches can cut nitrogen-based emissions by 10-67% while increasing farmer profits.



Field studies provide compelling evidence for these technologies' effectiveness:

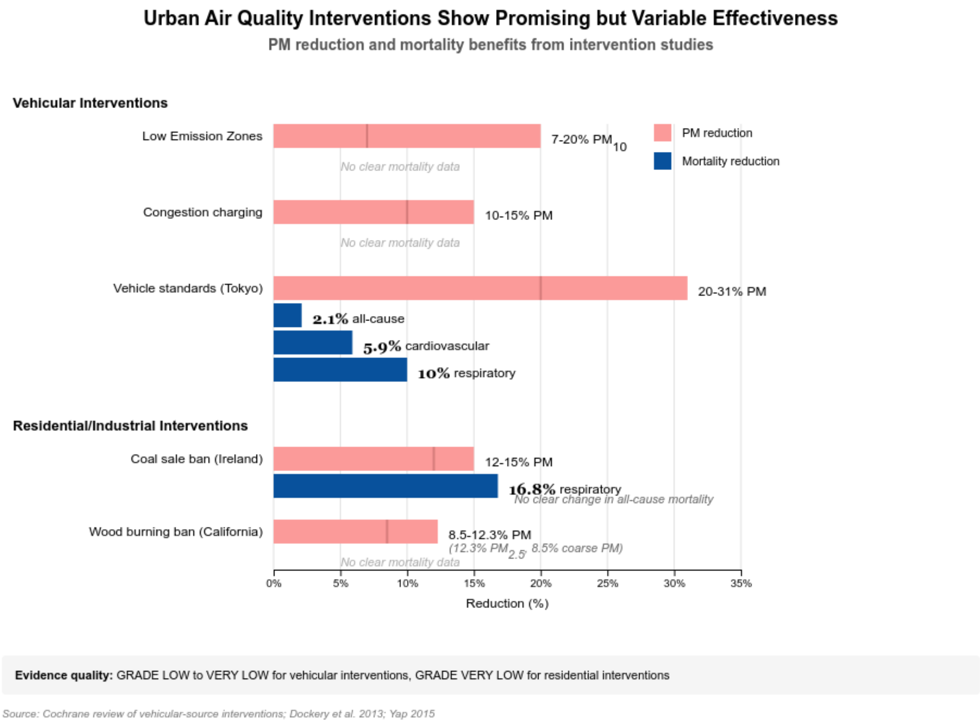
1. Optical sensors in Austrian wheat fields lowered global warming potential by 8.6% compared to conventional fertilization.
2. Variable-rate nitrogen management in Mexican wheat pilots saved 9,548 tons of CO_2-equivalent (CO_2e) since 2012.
3. Precision feeding and manure management in Chinese dairy farms improved CO_2-efficiency by approximately 12%.
4. Optimizing timing and application rates in California paddy rice reduced net N_2O flux from around 5 kg N_2O-N ha^{-1} to 3.5 kg ha^{-1}.

Regenerative agricultural practices also offer substantial emission reduction potential, though with some trade-offs. Cover cropping sequesters 0.32-0.56 Mg C ha^{-1} yr^{-1} (with 50% of soil organic carbon gains occurring in the first 20 years) but may increase lifetime N_2O flux. Biochar amendments can boost soil organic carbon by up to 40% while cutting N_2O emissions by approximately 38%. Enhanced weathering (e.g., applying 50 tons of basalt per hectare per year on 70 million hectares) could sequester about 1 Gt CO_2 yr^{-1}, although this approach faces 10-30% life-cycle emission offsets from grinding and transport requirements.

These agricultural interventions demonstrate that substantial emission reductions are possible while maintaining or enhancing productivity—a critical consideration for global food security.

Vehicular and Residential Emission Controls

Vehicle emissions have been a major focus of air pollution regulation in many countries, and there is growing evidence of the effectiveness of various interventions.



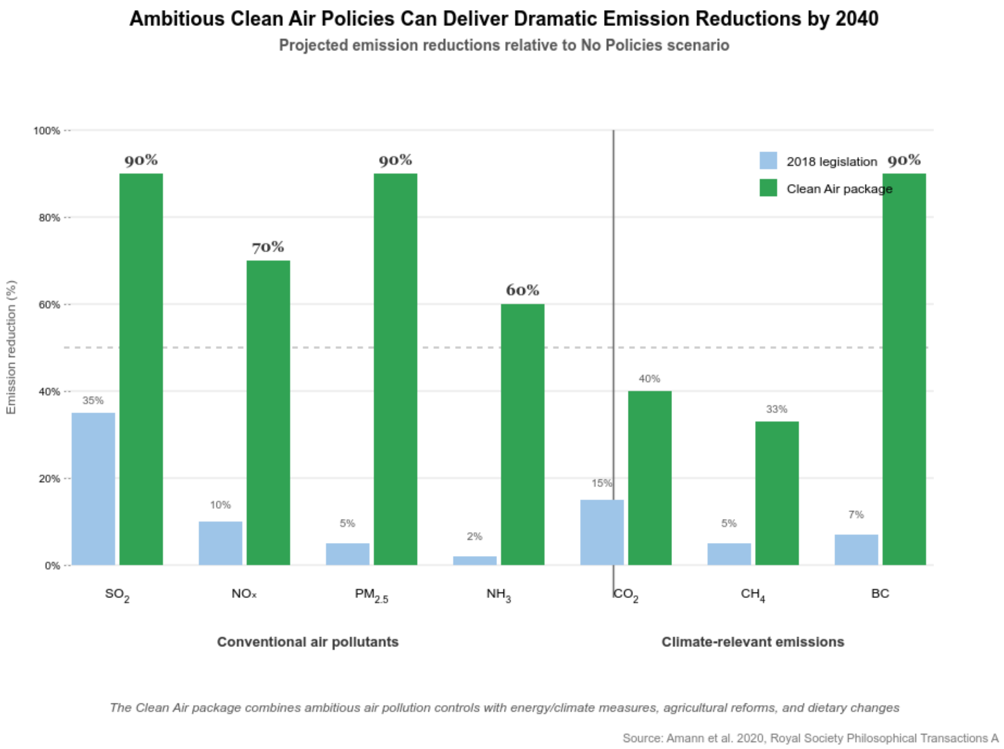
A Cochrane review of vehicular-source interventions, including Low Emission Zones, congestion charging, and odd-even plate bans, reported PM_{10} reductions of 7.4% to 31% in four studies, with mixed or no clear change in six others. The health impacts of these interventions were most clearly demonstrated in a study of vehicle-standard mandates in Tokyo (2011-2016), which found pooled mortality reductions of 2.1% (all-cause), 5.9% (cardiovascular), and 10% (respiratory).

Residential and industrial interventions have also shown promise. Ireland's 1990s coal-sale ban yielded a 16.8% respiratory mortality reduction in one controlled interrupted time series study, although no clear change in all-cause or cardiovascular mortality was observed across four cities. In California, a 2015 wood-burning ban reduced $PM_{2.5}$ by 12.3% and coarse particulate matter by 8.5%.

It's worth noting that the quality of evidence for these interventions is generally rated as LOW to VERY LOW according to the GRADE framework, suggesting that more robust evaluation studies are needed. Nevertheless, these findings point to the potential health benefits of well-designed vehicular and residential emission control policies.

Comprehensive Policy Packages: The GAINS Model Approach

To understand the full potential of integrated air pollution control strategies, researchers have developed sophisticated modeling frameworks like the Greenhouse Gas-Air Pollution Interactions and Synergies (GAINS) model. Amann et al. (2020) [7] used the GAINS model to project air quality outcomes from 2015 to 2040 under three scenarios: No Air Pollution Policies, 2018 legislation, and an ambitious "Clean Air" package.



The results are striking. Full implementation of 2018 controls would limit SO_2 emissions by 35%, NO_x by 10%, and stabilize $PM_{2.5}$, but would have minimal impact on NH_3 emissions (2% reduction). By contrast, the "Clean Air" package—combining ambitious air pollution controls with energy/climate measures, agricultural reforms, and dietary changes—could cut anthropogenic $PM_{2.5}$ by about 90%, SO_2 by 90%, NO_x by 70%, and NH_3 by 60% by 2040.

These aggressive reductions would translate to approximately 75% lower population-weighted $PM_{2.5}$ exposure compared to 2015 levels. The package would also deliver significant climate co-benefits, reducing CO_2 by 40%, CH_4 by 33%, and black carbon by 90%. According to the model, these improvements would avert millions of premature deaths globally.

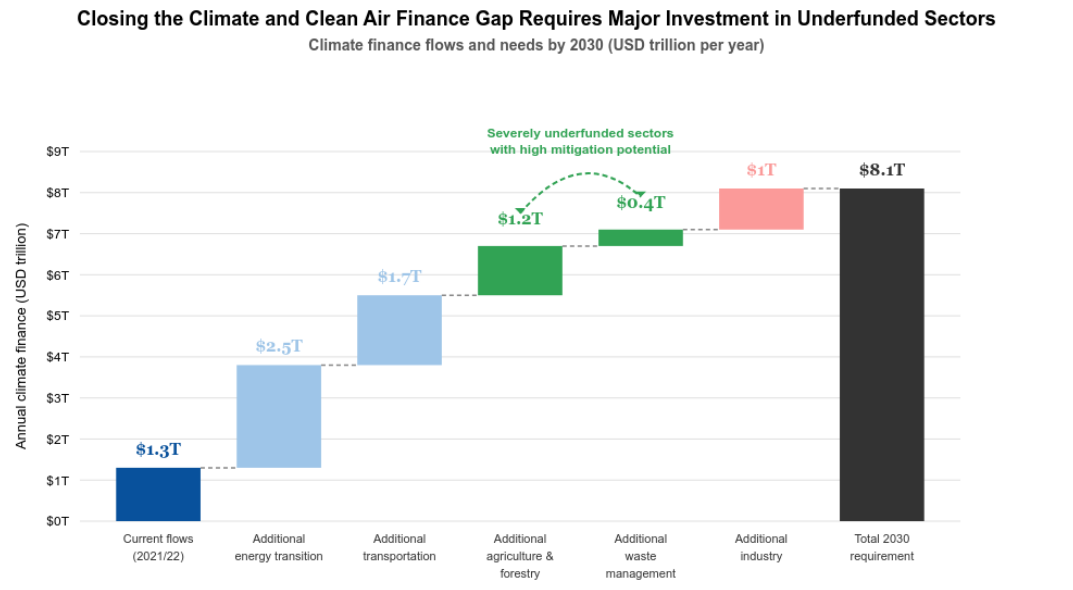
The GAINS model projections demonstrate that comprehensive, multi-sector policy approaches can deliver substantially greater benefits than incremental improvements in existing regulations. This integrated perspective is essential for addressing the complex challenges of agricultural emissions, climate change-related wildfires, and other emerging sources of air pollution.

Financing and Policy Pathways for Sustained Air-Quality Gains

While technological solutions and policy frameworks for addressing air pollution are well understood, implementing them at scale requires substantial financial resources and coordinated policy action. This section examines the financing needs, policy mechanisms, and international cooperation required to sustain and accelerate air quality improvements globally.

Scaling Climate and Clean Air Finance

The scale of investment needed to address both climate change and air pollution is enormous. TheClimate Policy Initiative [8] forecasts that annual global climate finance needs will rise from USD 8.1 trillion in 2030 to over USD 10 trillion annually from 2031-2050, representing a five- to six-fold increase over current flows to stay on a 1.5°C pathway.



Note: Agriculture and waste management sectors are currently severely underfunded despite high mitigation potential and significant air quality co-benefits.

Source: Climate Policy Initiative 2023; Independent High-Level Expert Group 2024

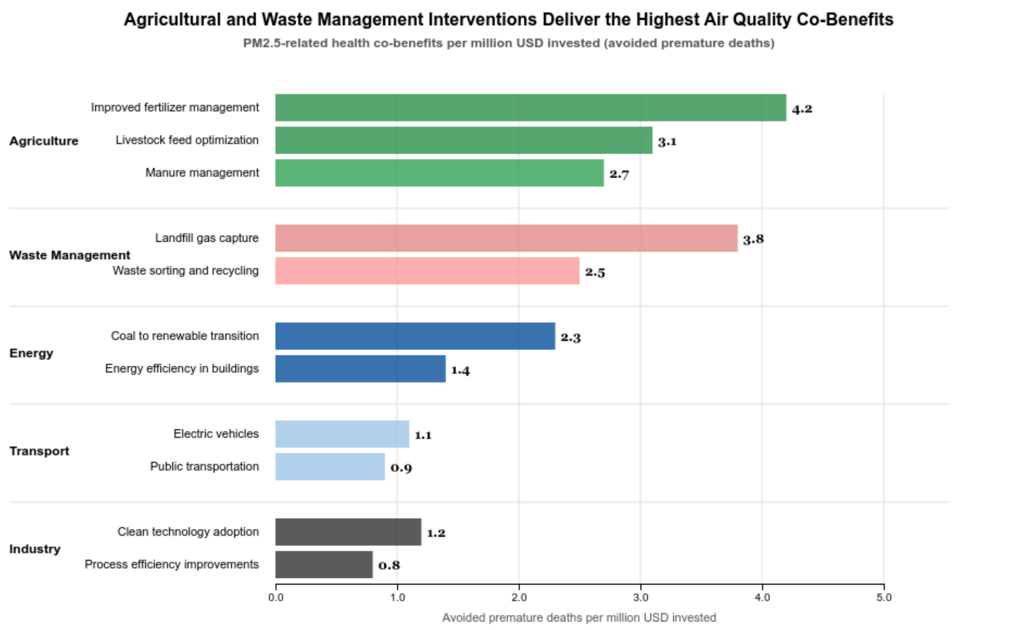
Despite global climate finance doubling from USD 653 billion (2019/20) to USD 1.3 trillion (2021/22), current flows remain far below what is needed. Moreover, the distribution of this finance is highly skewed. Energy (44% of USD 1.15 trillion) and transport (29%) receive the lion's share, while agriculture and industry receive less than 4% combined, despite having a combined mitigation potential of 20 gigatons of CO_2 by 2030.

Emerging markets and developing countries (excluding China) face incremental climate investment needs of USD 2.3-2.5 trillion per year by 2030, rising to USD 3.1-3.5 trillion by 2035. Of this, approximately USD 1 trillion by 2030 and USD 1.3 trillion by 2035 must be mobilized from cross-border public and private finance—implying a more than six-fold increase in external flows compared to current levels to achieve the approximately 42% greenhouse gas reductions needed by 2030 and 57% by 2035, according to the Independent High-Level Expert Group [9]

Climate finance also remains geographically concentrated, with East Asia & Pacific, US & Canada, and Western Europe mobilizing 84% of flows in 2021/22. Least Developed Countries received just USD 30 billion, less than 3% of global finance. Closing these gaps will require scaling up concessional instruments (e.g., Multilateral Development Bank capital expansion, Global Solidarity Levies) and developing novel mechanisms (e.g., Article 6.4 carbon credit standards) to unlock and diversify financing for climate-vulnerable nations.

Redirecting Finance to Underfunded High-Impact Sectors

To maximize air quality co-benefits, climate finance must be directed toward currently underfunded sectors with high mitigation potential.



Co-benefits calculated based on reduced PM2.5 exposure leading to avoided premature deaths, normalized by intervention cost

Source: Analysis based on GAINS model projections; Amann et al. 2020

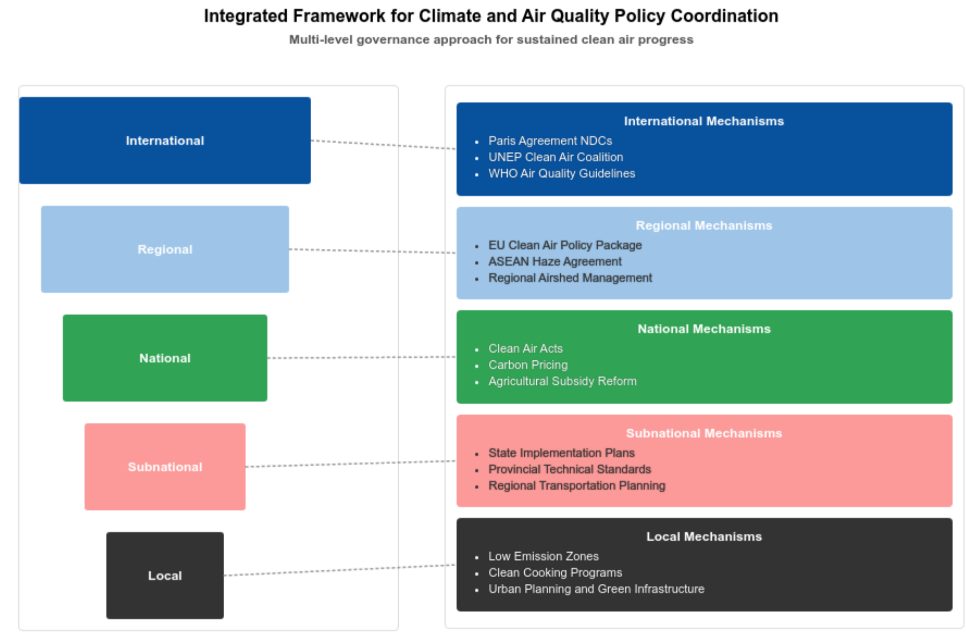
The visualization illustrates that agricultural and waste management interventions generally deliver the highest air quality co-benefits per dollar invested, as measured by PM2.5-related health improvements. Improved fertilizer management, livestock feed optimization, and manure management in the agricultural sector, along with landfill gas capture and waste sorting/recycling in the waste management sector, offer particularly high returns in terms of avoided premature deaths per million USD invested.

Energy sector interventions, such as transitioning from coal to renewables and improving energy efficiency in buildings, also offer substantial co-benefits, though somewhat lower than the agricultural and waste sectors on a per-dollar basis. Transportation and industrial interventions, while still valuable, generally show lower air quality returns per dollar invested.

These findings underscore the importance of redirecting climate finance to currently underfunded sectors with high air quality co-benefits. Policy frameworks, such as targeted tax incentives and blended finance vehicles, can help channel capital toward these high-impact areas.

International Cooperation and Policy Coordination

Achieving the full potential of clean air interventions requires coordinated international action. The15th UNEP Emissions Gap Report 2024 [10]finds that to stay on a 1.5°C pathway, countries must pledge emissions cuts of 42% by 2030 and 57% by 2035 in their Nationally Determined Contributions (NDCs) or face a 2.6-3.1°C warming trajectory.



Effective clean air strategies require coordination across governance levels, with complementary policies addressing local pollution sources and global climate drivers

Source: UNEP 2024; Climate Policy Initiative 2023

The visualization presents an integrated framework for climate and air quality policy coordination across multiple governance levels. At the international level, mechanisms such as Paris Agreement NDCs, the UNEP Clean Air Coalition, and WHO Air Quality Guidelines provide overarching targets and standards. Regional mechanisms, including the EU Clean Air Policy Package and ASEAN Haze Agreement, address transboundary pollution issues. National policies, such as Clean Air Acts, carbon pricing, and agricultural subsidy reform, create the domestic regulatory foundation. Subnational and local mechanisms target specific emission sources and implementation strategies.

This multi-level approach is essential because air pollution sources and impacts cross jurisdictional boundaries. International cooperation can help mobilize resources for developing countries, share best practices, and coordinate action on transboundary pollution. Regional agreements can address specific airshed management challenges. National policies provide the regulatory framework and economic incentives for clean air investments. Subnational and local actions can target specific pollution hotspots and implement context-appropriate solutions.

Effective policy coordination also requires addressing the geographical concentration of climate finance. As noted earlier, East Asia & Pacific, North America, and Western Europe currently mobilize 84% of climate finance flows, while Least Developed Countries receive less than 3%. Closing these gaps will require scaling up concessional financing, creating innovative funding mechanisms, and building capacity in underserved regions.

Conclusion: Maintaining Momentum Beyond "Peak Air Pollution"

The evidence presented in this report strongly suggests that the world has indeed passed "peak air pollution" for most major pollutants in most regions. This represents a profound environmental achievement and demonstrates that economic development and environmental improvement are not mutually exclusive.

Key findings include:

1. **Global emissions of major air pollutants have peaked and begun to decline**, with the exception of agricultural ammonia (NH_3). Global population-weighted PM2.5 exposure peaked in 2011 at 38.9 μg/m³ and has since declined to 34.7 μg/m³ by 2019. PM2.5-attributable mortality has plateaued at approximately 5.8 million deaths annually since 2015, despite continued population growth and aging.
2. **The Environmental Kuznets Curve is evident in national air pollution trajectories**, with countries like the UK, US, and China showing clear patterns of pollution peaking and then declining as economic development advances and environmental regulations strengthen. Notably, this transition is occurring approximately four times faster in emerging economies compared to historical patterns in early industrialized nations.
3. **Agricultural emissions, wildfire impacts, and open waste burning remain significant challenges**. Unlike industrial and transportation sources, agricultural emissions of NH_3, CH_4, and N_2O continue to rise. Climate change is increasing the frequency and intensity of wildfires, contributing to episodic but severe air pollution events. Open burning of municipal solid waste contributes approximately 11% of global PM2.5 emissions and 6-7% of black carbon emissions.

4. **Technological and behavioral interventions offer substantial mitigation potential** Precision agriculture techniques can reduce nitrogen-based emissions by 10-67%, while regenerative practices offer additional benefits. Vehicular regulations and residential emission controls have demonstrated effectiveness in reducing PM and related mortality. Comprehensive policy packages modeled by the GAINS framework suggest that ambitious clean air policies could cut anthropogenic $PM_{2.5}$ by about 90%, SO_2 by 90%, NO_x by 70%, and NH_3 by 60% by 2040.
5. **Financing and policy coordination are essential for sustained progress** Climate and clean air finance needs to increase five- to six-fold by 2030, with particular attention to underfunded high-impact sectors like agriculture and waste management. International cooperation, from global agreements to local implementation, is necessary to address the complex challenges of air pollution in a changing climate.

Passing "peak air pollution" should be celebrated as a significant milestone, but not as a final destination. Substantial challenges remain, particularly in developing regions and in sectors like agriculture that have received less regulatory and technological attention. Moreover, climate change threatens to undermine air quality gains through increased wildfire activity and other feedback mechanisms.

The path forward requires maintaining regulatory pressure on traditional pollution sources while expanding focus to address emerging challenges. It also demands a more equitable distribution of clean air investments to ensure that all regions can progress beyond peak pollution. With coordinated action across governance levels and sectors, the world can build on this turning point to create cleaner, healthier air for future generations.

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