

POLICY PAPER

Let's Clear the Air: Why Air Quality Matters

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Introduction

While we take the air we breathe for granted, we may not be aware that poor air quality is a major contributor to mortality in the Philippines. This is why measuring air quality in our urban areas will become increasingly more important in the future.

This is exactly what a new project known as Breathe Metro Manila has started. Breathe Metro Manila is run by a consortium composed of Manila Observatory, Ateneo BUILD (Business Insights Laboratory for Development), Ateneo School of Public of Medicine and Public Health, and Clarity Movement. The project measures air quality in Metro Manila, starting with low-cost, lightweight sensors installed in 7 cities of the 17 local governments which make up the National Capital Region. The goal is to install more sensors throughout Metro Manila and to measure air quality in other cities across the country.

Each member plays a key role. Manila Observatory tracks the air flow through its air dynamics laboratory while Ateneo School of Medicine and Public Health studies its impact on health. Ateneo BUILD develops mobile applications to give people access to data while Clarity provides the sensors and the platform which enables data collection and analysis.

Why is it important? Aside from the obvious implications on public health, the data may inform urban planning, transport, and energy policy at both national and local level.

The Problem: What's in the Air We Breathe

The Philippines has a serious air quality problem, and most Filipinos do not know it yet. Every single resident is breathing air that exceeds the World Health Organization's (WHO) annual safety threshold for fine particulate matter, known as PM2.5.¹ Measured at an average of 16.84 $\mu\text{g}/\text{m}^3$ by the Department of Environment and Natural Resources (DENR) and 22 $\mu\text{g}/\text{m}^3$ by the WHO, the country's air is between three and four times more polluted than what is considered safe. In some communities the situation is far worse: roughly 25% of Filipinos are breathing in levels four times above the WHO standard.²

PM2.5 refers to fine particles 2.5 micrometers or smaller in diameter, small enough to pass through the lungs and into the bloodstream. These particles are the most dangerous component of air pollution and the primary metric used by health and environmental agencies worldwide.

This matters because the air we breathe kills. Air pollution is now the leading environmental cause of premature death globally. In the Philippines in 2019, 86,962 people died from pollution-related illnesses, generating an economic burden estimated at PHP 1.4

trillion.³ The diseases linked to long-term PM2.5 exposure, including asthma, chronic obstructive pulmonary disease (COPD), heart disease, stroke, and lung cancer, are also among the most expensive to treat and the hardest to reverse.

The freshest global data reinforces the urgency. IQAir's *2025 World Air Quality Report*, released in March 2026, found that only 14% of cities worldwide now meet the WHO PM2.5 guideline, down from 17% the year before. Climate change-exacerbated events such as wildfires are reversing hard-won gains. For the Philippines, which already struggles with urban congestion and industrial emissions, this global regression is a warning sign.⁴

Where the Pollution Comes From

Traffic is the dominant driver. Research by Dr. James Simpás of the Manila Observatory's Air Quality Dynamics Laboratory places vehicle emissions at 57% of the pollution mix in Metro Manila (*Figure 1*). Within this sector, the numbers are stark: jeepney drivers, among the most exposed workers in the city, breathe in 36.4 µg/m³ of PM2.5 daily, which is more than seven times above WHO guidelines.⁵

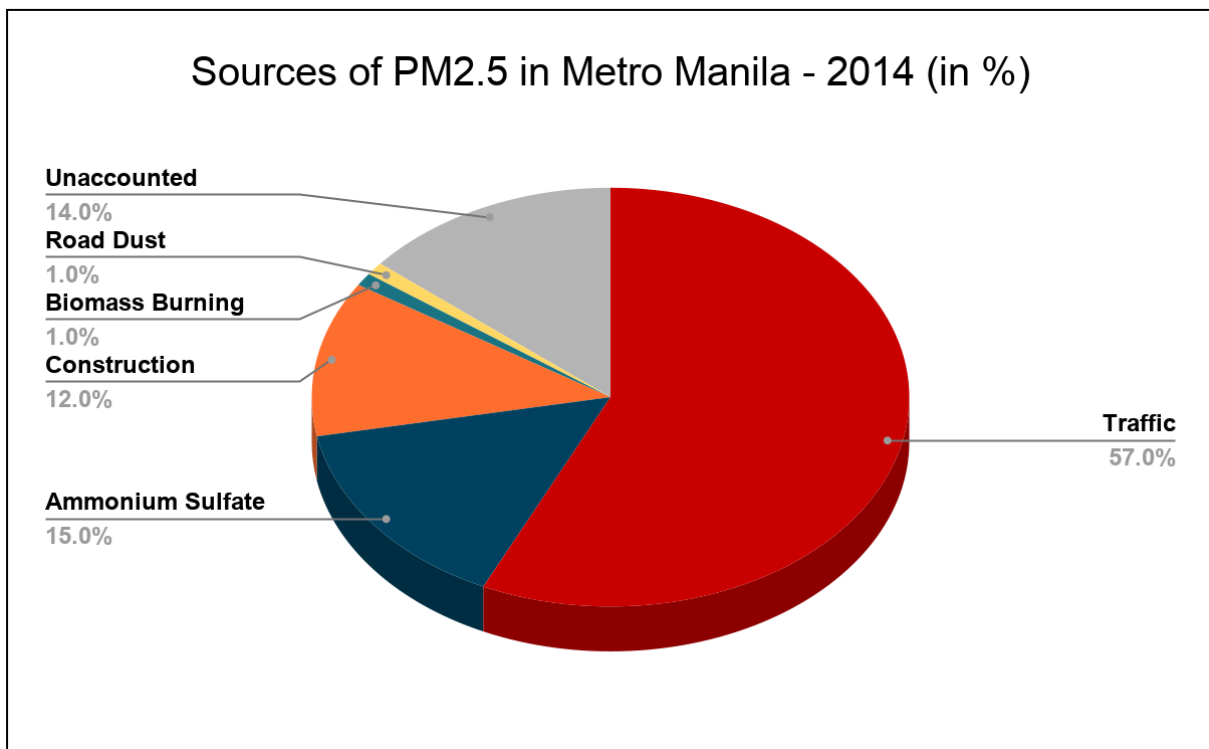


Figure 1: Sources of PM2.5 in Metro Manila (in %) (Simpás et al., 2014)

Industrial activity, household cooking (particularly over open fire), and biomass burning round out the picture. The DENR's 2021 National Air Quality Status Report (NAQSR) categorizes these into three broad source types: mobile sources (public and

private vehicles), stationary sources (industrial plants and factories), and area sources (construction, road dust, and burning) ([Figure 2](#)).

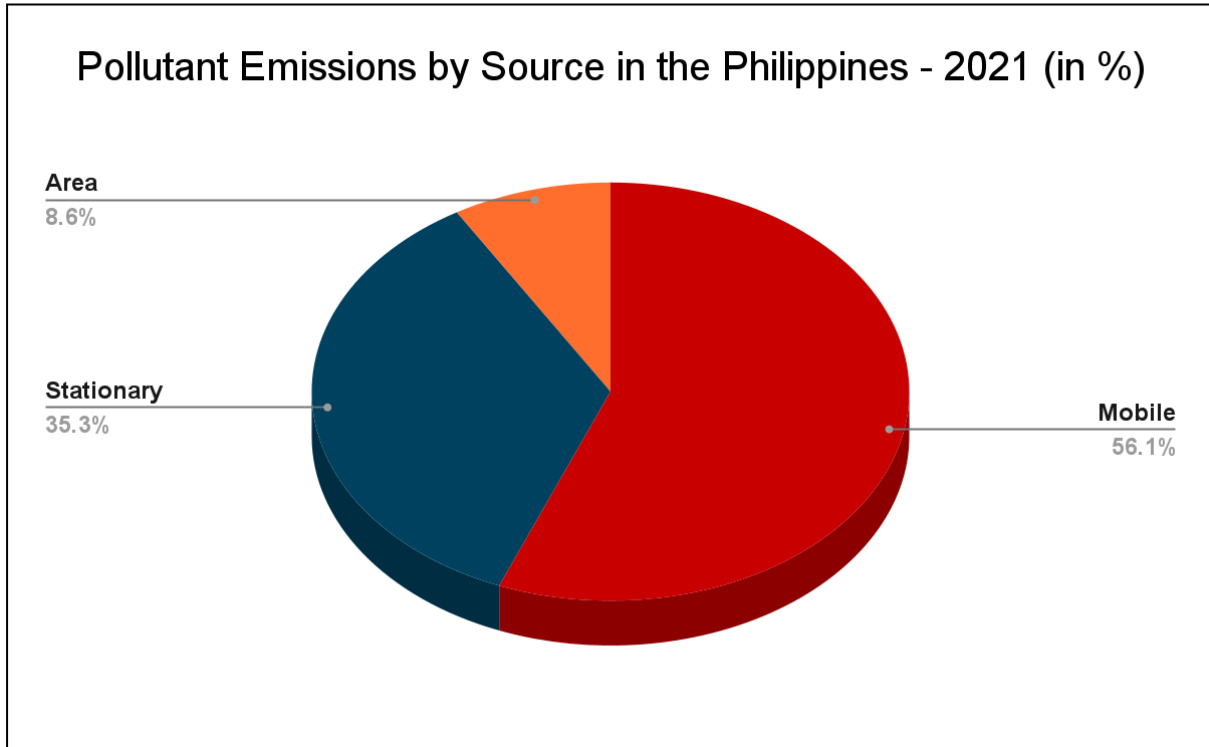


Figure 2: National Emissions Inventory of the Philippines – 2021 (DENR, 2021)

There is real progress to acknowledge. PM_{2.5} levels in the National Capital Region dropped by 20% from 27 $\mu\text{g}/\text{m}^3$ in 2016 to 16.84 $\mu\text{g}/\text{m}^3$ in 2024, driven in part by DENR's expanded monitoring network and fuel quality programs. This shows that policy action works. But the Philippines' national PM_{2.5} standard of 25 $\mu\text{g}/\text{m}^3$ is still five times more permissive than the WHO threshold of 5 $\mu\text{g}/\text{m}^3$. Even areas considered legally compliant may still be causing harm.

The Health Case for Urgent Action

Air pollution does not discriminate. Its harms fall hardest on those least equipped to protect themselves. Children, the elderly, and people with existing respiratory or cardiovascular conditions face the greatest risk, but no one is immune.

Dr. Anelle "Ari" Chua, Head of the Innovation Flagship Program at the Ateneo School of Medicine and Public Health Center for Research and Innovation (ASMPH-ACRI), frames it clearly: air pollution is now the world's leading cause of premature death. The diseases it causes, including respiratory illness, cardiovascular disease, stroke, and cancer, are chronic, progressive, and almost entirely preventable with cleaner air.

The economic dimension is equally sobering. When workers fall ill, businesses absorb the loss. When children miss school due to respiratory flare-ups, families bear the cost. When hospitals treat preventable conditions, the health system bears the strain. The PHP 1.4 trillion estimate covers only a portion of these cascading effects; the real societal cost is likely higher.

One recent development deserves specific attention. The US State Department terminated its global embassy air quality monitoring program in March 2025. The Centre for Research on Energy and Clean Air (CREA) reported that monitoring coverage in 44 countries was weakened as a result. This reinforces why the Philippines must build its own robust, locally owned monitoring infrastructure. External data sources cannot be taken for granted.⁶

What Cities Are Doing, and What Works

The gap between the scale of the problem and the state of our monitoring infrastructure is significant. In Metro Manila alone, only 7 out of 17 cities currently have an operational network of air quality sensors. Beyond the NCR, data is even thinner. This creates a blind spot: without reliable, hyperlocal data, local governments cannot identify pollution hotspots, design targeted interventions, or assess whether programs are working. The good news: the technology exists, it is getting cheaper, and Filipino cities are already using it effectively.

Private Sector Solutions: Making Monitoring Accessible

Engr. Ethel Garcia, Regional Account Manager for Southeast Asia and Oceania of Clarity Movement, demonstrated how modular, low-cost air quality sensors can be networked across cities to produce real-time, granular data. Unlike traditional monitoring stations, which are large, expensive, and few in number, these sensor networks are scalable and can be deployed in strategic locations: along major roads, near industrial sites, in dense residential barangays, and around schools.

Ateneo's Business Insights Laboratory for Development (BUILD), led by Director Joseph Benjamin Ilagan, is taking this data a step further by developing a mobile application that gives Filipinos real-time access to local air quality readings. When citizens can see what is in the air they breathe and act on it, monitoring becomes more than a technical exercise. It becomes a tool for civic accountability.

Public Sector Leadership: Two Cities, One Model

Mandaluyong City and Quezon City demonstrate what it looks like when local government takes air quality seriously.

In Mandaluyong, the city government built an AI-enabled sensor network managed through its Disaster Risk Reduction and Management Department. The data this system generates has directly informed a suite of clean air ordinances covering vehicle emission standards, anti-smoke belching enforcement, anti-smoking rules, and more. Evidence-based policymaking at the city level is exactly what DENR's national monitoring program aspires to enable.

Quezon City is scaling its network to 60 sensor devices through its Air Quality Management Plan, using the collected data to inform decisions as varied as class suspensions during high-pollution days, urban greening investments, and electric and active mobility programs. Critically, the city has also built a community layer: over 500 Clean Air Advocates and Reporters have been trained to gather data, report violations, and engage neighbors. This human network sustains and extends what technology alone cannot do.

The cases of Mandaluyong and Quezon City show that clean air governance is not a resource question. It is a will and design question. Both cities combined technology, evidence, and community participation to produce results. Other cities can do the same.

Recommendations: Where We Go From Here

The Liveable Cities Co+Lab on air quality established a clear consensus: the problem is urgent, the solutions are available, and what's missing is scale, coordination, and political will. The following three priorities reflect the collective direction of the forum's participants.

Recommendation 1: Expand Monitoring Everywhere

- Only 7 of 17 Metro Manila cities have functional air quality sensor networks. Beyond the NCR, monitoring is even thinner. National and local governments should jointly fund the rollout of hyperlocal sensor networks in all cities, prioritizing high-traffic corridors, industrial zones, and densely populated barangays.
- Data from these networks should be standardized, interoperable, and publicly accessible, enabling researchers, civil society, and the media to scrutinize and act on what they find.
- Inter-local government data sharing agreements should be formalized, recognizing that air pollution does not follow administrative boundaries.
- The Philippines should also reduce its dependence on external monitoring programs. The shutdown of the US Embassy's air quality monitoring initiative in 2025 is a timely reminder that locally owned infrastructure is a matter of sovereignty as much as public health.

Recommendation 2: Attack Pollution at the Source

- With mobile sources accounting for 57% of Metro Manila's PM2.5 pollution, the biggest lever for change is transportation policy. Raising fuel quality standards to Euro 4 or better for all public utility vehicles, and enforcing them, should be a first-order priority.
- Cities should accelerate the transition to electric and active mobility: expanding EV charging infrastructure, supporting e-jEEPney and e-tricycle programs, and investing in pedestrian and cycling networks that reduce car dependency.
- Strengthening anti-smoke belching enforcement with sensor-backed evidence, as Mandaluyong City has shown, makes enforcement more defensible and harder to contest.
- Industrial permitting and inspection systems should be modernized, with real-time emissions monitoring required for high-volume emitters.

Recommendation 3: Update the Policy Framework

- The Philippine Clean Air Act of 1999 is 27 years old. Its PM2.5 national standard of 25 $\mu\text{g}/\text{m}^3$ is five times more permissive than the current WHO guideline of 5 $\mu\text{g}/\text{m}^3$. Advocates including 350 Pilipinas have been calling for its amendment since at least 2024. This is unfinished legislative business.
- The immediate priority should be aligning DENR's ambient air quality standards progressively toward WHO levels, with clear interim targets and compliance timelines for local government units.
- Community engagement is as important as legislative reform. Programs like Quezon City's Clean Air Advocates model, which trains citizens to gather data, report violations, and hold institutions accountable, should be replicated nationally and supported through LGU budgets.
- Liveable Cities Philippines, through the Co+Lab program, is positioned to support this agenda: convening cities, connecting them to technology providers and technical expertise, and advocating for policy environments that allow clean air solutions to scale.

Breathe Metro Manila is a good example of what can happen when we combine Science, Public Health, Business, Technology, and Local Governments to address urban challenges and problems. This multi-disciplinary approach provides Mayors with data and insights and makes invisible air visible. It's a model we should be considering to address more urban issues.

About Liveable Cities Philippines

Liveable Cities Philippines (LCC) is an urban development initiative working to make Philippine cities competitive, sustainable, and resilient through public-private collaboration.

The LCC Co+Lab program convenes local governments, private technology providers, academe, and civil society to share knowledge, pilot solutions, and forge partnerships that move cities forward. The 'AI and Smart Solutions for Cities' track focuses on practical, evidence-based tools, including air quality monitoring, that help local governments govern better and serve their communities more effectively.

Sources and Notes

¹ PM2.5 levels: DENR (16.84 $\mu\text{g}/\text{m}^3$, 2024 NCR data) and WHO (22 $\mu\text{g}/\text{m}^3$, 2025 country profile). WHO annual guideline: 5 $\mu\text{g}/\text{m}^3$.

² Bosano, R. (2025). *Air pollution among leading contributors to premature mortality*. ABS-CBN News; Clores, K. (2025). *DENR: PH air quality improved in 2024*. Philippine Daily Inquirer; WHO (2025). *Health and Environment Scorecard: Philippines*.

³ Fang, T., et al. (2025). *Effects of climate change on PM2.5 formation chemistry and human health impacts in Southeast Asia*. *Environment International*, 205 (109835); Brauer, M., et al. (2021). *Global Burden of Disease Study 2021*. The Lancet.

⁴ IQAir (2026). *2025 World Air Quality Report*. Released March 24, 2026.

⁵ Collado, J. et al. (2023). *Spatiotemporal assessment of PM2.5 exposure of a high-risk occupational group in a Southeast Asian megacity*. *Aerosol and Air Quality Research*, 23 (220134); Simpas et al. (2014). *Monitoring particulate matter levels in Metro Manila*.

⁶ IQAir (2026). *The end of the US State Department's global embassy air quality monitoring program (March 2025) weakened monitoring in 44 countries, per the Centre for Research on Energy and Clean Air (CREA)*.

⁷ 350 Pilipinas (2025). *Update the Clean Air Act campaign documentation; DENR Administrative Order 2020-14 (PM2.5 AQI Breakpoints and Guideline Values)*.