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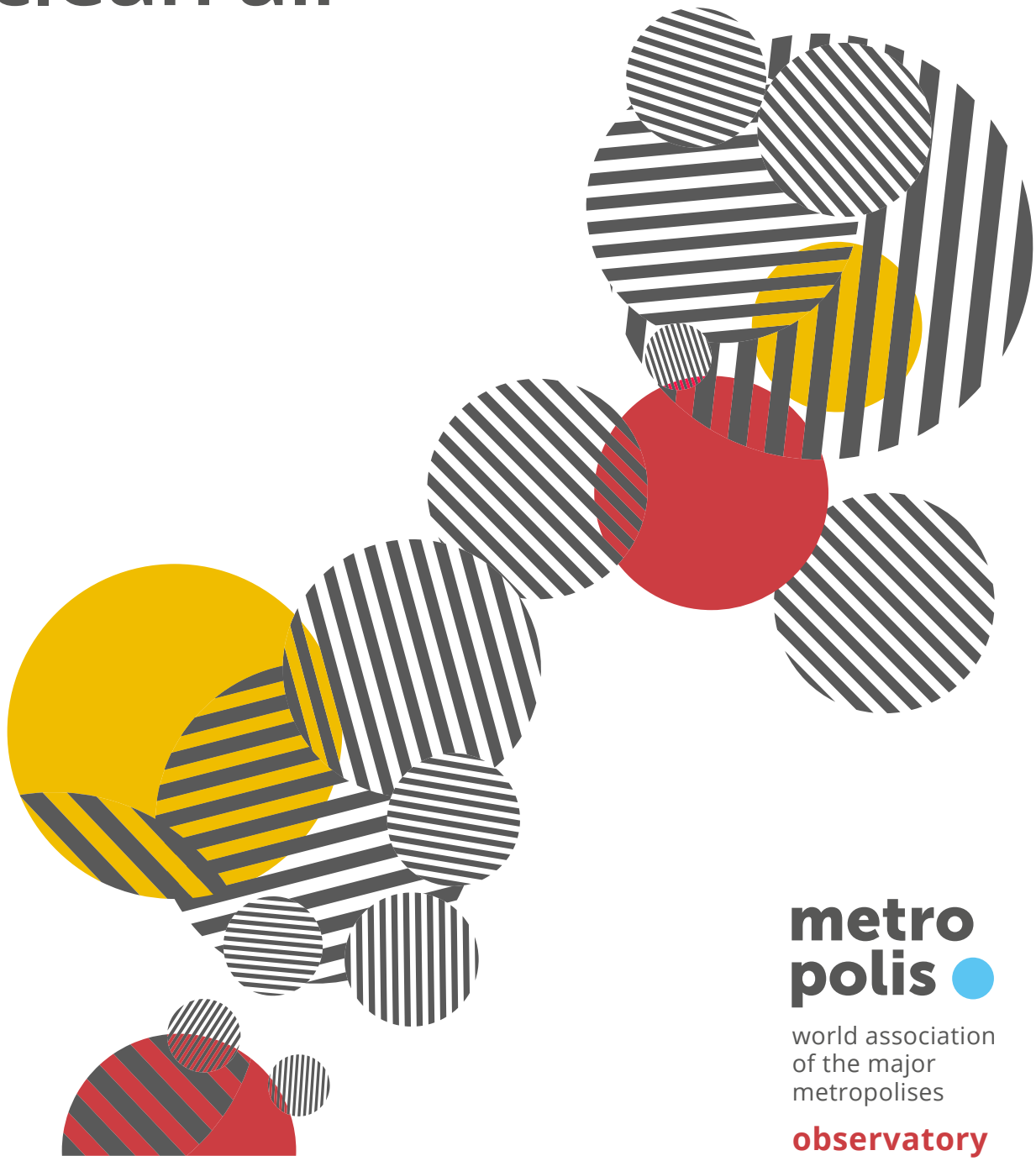
Jessica Seddon, Beatriz Cardenas & Michael Doust

The air we share: metropolitan strategies for clean air



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Introduction

Air pollution is a leading global threat to human and ecosystem health – which also makes it an opportunity for metropolises around the world to achieve a wide range of development goals through relatively specific, feasible action.

Indoor and outdoor pollution together account for more than seven million premature deaths annually, with some estimates finding much higher impacts. Air pollution contributes to countless days of illness and associated loss of school and work days. It affects every organ in the body – with impacts on everything from cognitive function to fertility. It increases vulnerability to communicable and non-communicable diseases. Under the updated 2021 World Health Organization standards for safe levels of particulate matter (PM), 99% of the world's population lives with unhealthy air. It is, in short, a public health emergency.

Air pollution also affects climate change, food security (by reducing agricultural productivity), and solar energy production. It is fundamentally altering ecosystems, directly through its impact on plant, tree, and animal health as well as indirectly through its contribution to acid rain.

Metropolitan cities are at the center of both the impacts of and remedies for air pollution. As densely populated centers of economic activity – filled with buildings being heated and cooled, people moving around in cars, buses, and mopeds, solid waste and wastewater being generated and disposed of, manufacturing and industry; and powered by electricity often being generated nearby – they are emission hotspots. They are also exposure hotspots. Urban residents breathe not only local emissions as they disperse, but also the background air pollution that blows in from surrounding sources. Air mixes and moves across boundaries.

As awareness of air pollution impacts grows, however, cities are also emerging as potential leaders in reducing air pollution. Their residents are increasingly motivated, and their leaders are taking note. Forty-eight mayors have signed the C40 Clean Air Pledge, out of which 20 are Metropolis members.[1] Seventy-nine cities and regions from around the world have joined the BreathLife network, sharing their current and planned clean air actions with the global community.

The governments of cities, metropolitan areas and regions do not hold all of the powers to eliminate pollution, but they are the sites of growing political will and increasing innovation in clean air action. They are working within their boundaries to reduce many of the impacts and inequities associated with pollution, and with their neighbors to build shared clean air plans.

The fight to clean up our one shared atmosphere is just getting going and there is a long road ahead. This publication, written by the World Resources Institute Integrated Climate Strategy and Air Quality leadership, recognizes some of the early successes and challenges metropolitan leaders to do more.

Jordi Vaquer
Metropolis Secretary General

[1]Metropolis members on the list are: Abidjan, Accra, Addis Ababa, Amman, Barcelona, Berlin, Bogotá, Buenos Aires, Dakar, Durban (eThekwini), Guadalajara, Jakarta, Johannesburg, Lisbon, Mexico City, Madrid, Medellín, Quito, Rio de Janeiro and Seoul.

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The problem of air pollution

Air pollution's burden falls heavily on the poor. More than 90% of the air pollution-related deaths occur in low- and middle-income countries, mainly in Asia and Africa.

"Air pollution" comprises a variety of health, ecosystem, and climate damaging compounds. The health impacts of particulate matter (typically referred to as PM1, PM2.5 and PM10 based on the particle size in microns) have been increasingly recognized in the popular press, but this is just one of several commonly regulated pollutants. Ozone, oxides of nitrogen (NOx), sulfur dioxide (SOx), carbon monoxide, and a variety of "air toxics" (chemicals associated with cancer and other health risks) are also a part of the mix. The World Health Organization, recognizing the "overwhelming body of evidence [that] has accumulated over the past two decades, demonstrating that health effects of air pollution are serious and can affect nearly all organ systems of the human body," sets global safety standards for PM, NO2, SOx, CO, and ground level ozone.[2] Regulatory standards and enforcement, however, vary across and occasionally within countries.[3]

These compounds come from a variety of sources, many of which are intertwined with our daily lives, infrastructure choices, and economic activities. Burning anything, from fuel in a combustion engine to wood for a pizza oven to trash in and around an open landfill, creates air pollution. Building systems for heating and cooling contribute to local emission "hotspot" - areas with particularly bad levels of pollution. Emissions from fossil fuel electricity tend to distribute over longer distances. Wastewater and decomposing solid waste also give off emissions that feed air pollution. Dust, blown in from outside, kicked up by cars on the road, or shed from brake and tire wear, creates polluting particles. Cooking at home, in restaurants, and food factories creates pollution. Cleaning products, paints, and solvents feed into the mix as well. Industries in and around cities, from small smelting and battery recycling shops to large chemical or cement industries, are also sources of pollutants. "Urban canyons" created by buildings and street trees modulate the flow and dispersal of pollutants, at times trapping and concentrating pollution right where more people breath it in.

Air pollution's burden falls heavily on the poor. More than 90% of the air pollution-related deaths occur in low-and middle-income countries, mainly in Asia and Africa. In 2019, the most recent data available, population-weighted PM2.5 concentrations were highest in South-east Asia and the Eastern Mediterranean

[2]See www.who.int/news

[3]Quote from Hoffman, et al (2021), drawing on Thurston et al (2017).

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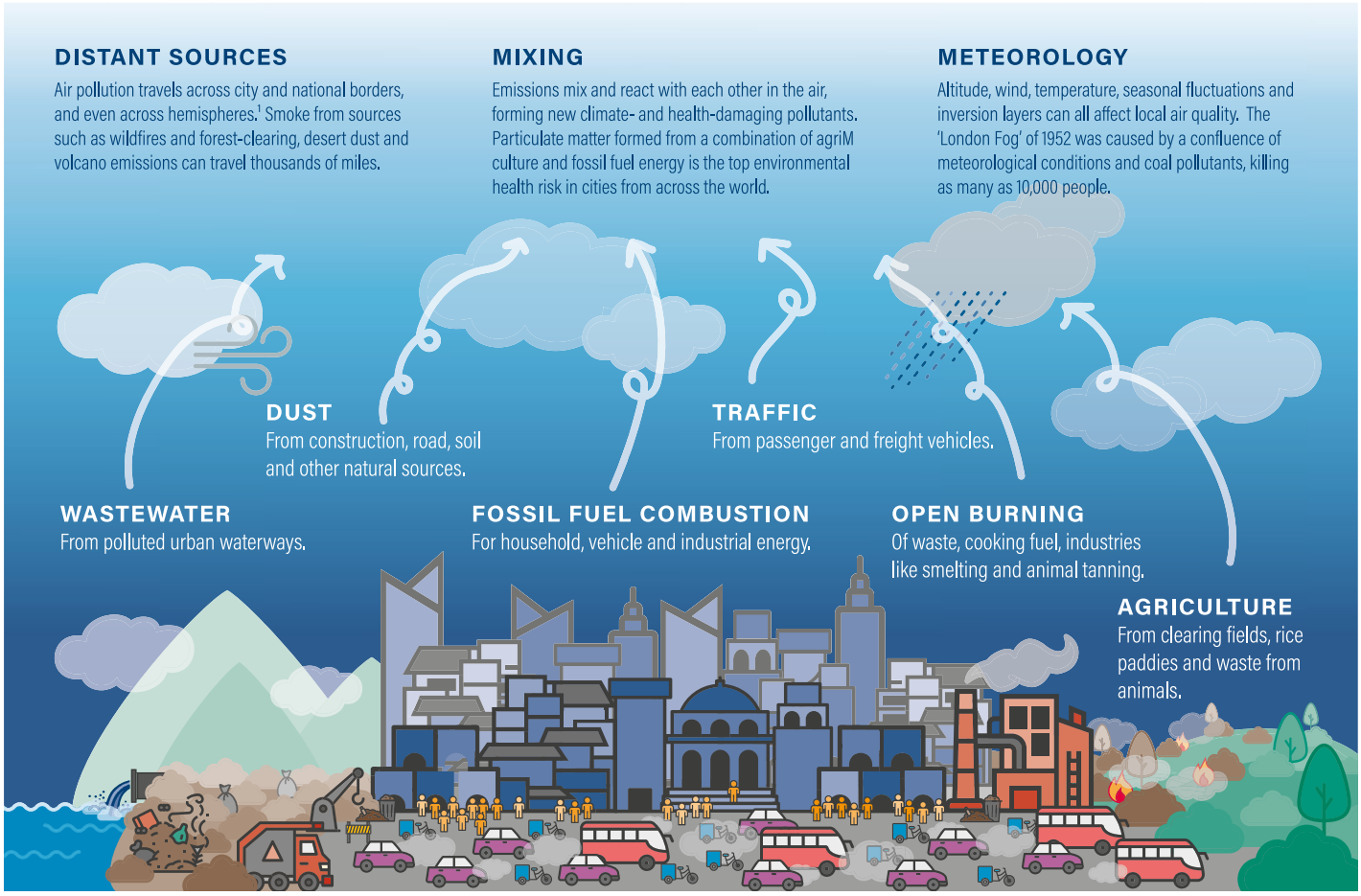

Figure by Clean Air Catalyst

(WHO, 2021). Within countries and cities, air pollution also tends to disproportionately affect lower income and otherwise marginalized groups. These groups are likely to live or work close to major emission sources and busy roads, and/or they also have a high dependency on certain fuel sources for cooking, heating and lighting that exacerbate exposure. Tessum et al (2021) quantifies these differences for the U.S., finding that People of Color (POC) had above-average exposure to PM2.5 while white people had below-average exposure. DeSouza (2022) shows similar disparities in pollution exposure in Nairobi across communities at different income levels. Wu et al's 2020 profile of two childrens' exposures in Delhi offers a human illustration of the way that poverty intersects with air pollution exposure.

Children, women, and older people are especially vulnerable to pollution's health impacts. Childrens' lungs are still developing and even short episodes of air pollution can leave lifelong damage. Air pollution also affects reproductive health and pregnancy outcomes such as fetal development and premature birth: research found that of the 2.7 to 3.4 million global preterm births in 2010, 18% were associated with air pollutants exposure (Malley et al, 2017). While gendered differences in occupational and street-level exposure to pollution vary by place and are often not systematically documented, one common finding is that women and children bear

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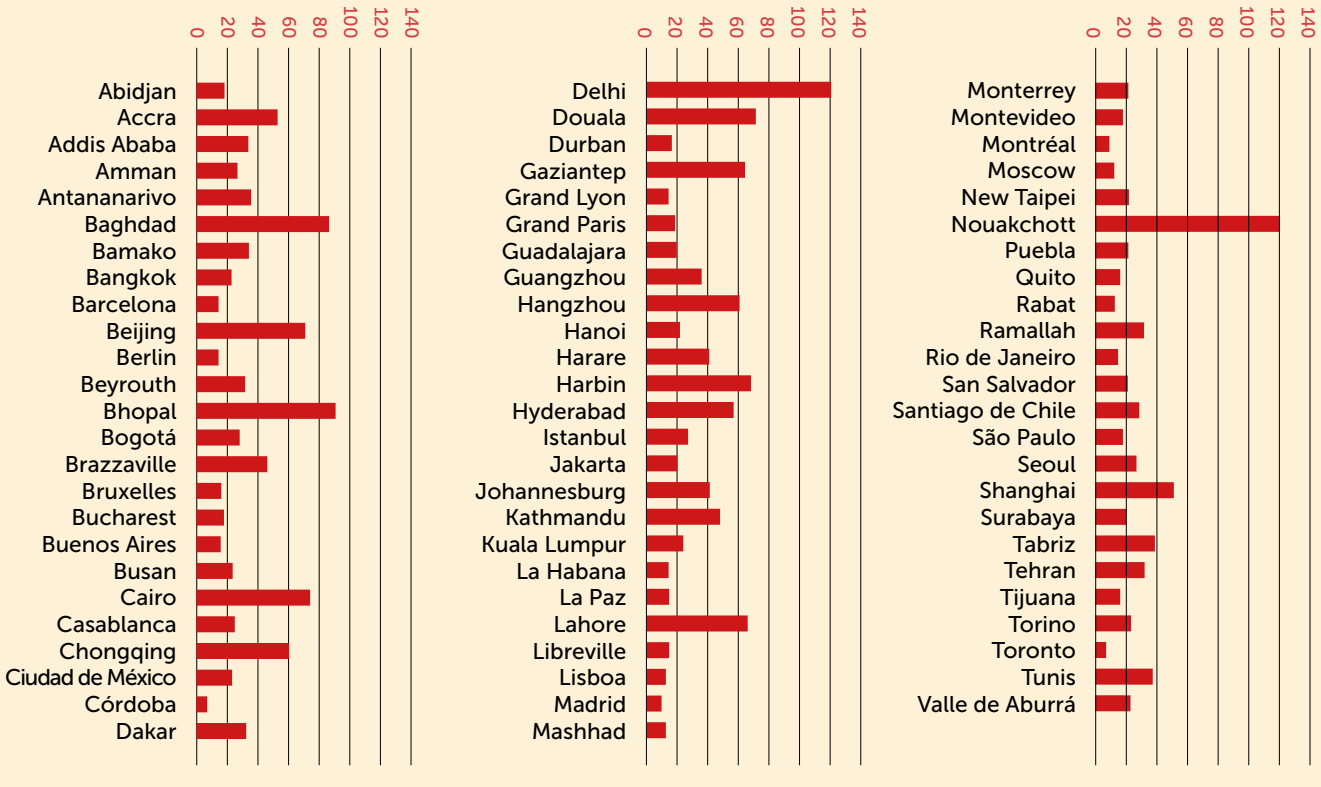
the brunt of indoor air pollution from cooking. The World Health Organization estimates that, globally, 60% of all premature deaths related to household air pollution occurred among women and children. Older adults are also often particularly vulnerable, due to the more frequent presence of pre-existing respiratory and cardio-vascular conditions. Air pollution also affects cognitive function and is associated with earlier onset of dementia. (Peters et al, 2019).

Beyond immediate health concerns, there are also indirect impacts which may see gendered effects. For example, policies to close schools when air quality reaches dangerous levels create additional caring responsibilities for working parents, as do the health impacts of poor air on children. The responsibility to care for children or other dependents generally falls on mothers who may have to take time off work and suffer a loss of income. This reinforces gender inequalities in caregiving and may result in women continuing to work or taking on extra work when they themselves are suffering from the effects of poor air quality.

Therefore, there is a need to explore how policies on air quality, such as limits on industrial emissions or crop burning regulations, which are rarely integrated

This table is based on the data from Metropolis indicators. Note that PM 2.5 is only one aspect of health-damaging air pollution, and these are just average levels.

Figure 1. **PM2.5 Annual Mean (ug/m3)**
Source: Metropolis



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with other sectors such as labour, can have gendered effects. These may include inequality and exclusion, while the costs imposed on employers may ultimately be borne by their workers. A better understanding of these broader consequences on workers can help us to identify entry points for mitigating the gendered impacts of air pollution for youth, migrants, and other vulnerable workers.

The type of work and the conditions in which workers do it are big determinants of their exposure to air pollution, and sensitivity to its impacts. Those in informal employment, with little income security or access to social protection, health services and social safety nets, who are the most exposed. Women, young people and migrant workers are disproportionately represented in the informal economy and often work in low-skilled or informal jobs where they lack information about their rights, health and safety, including at work.

Children, women, and older people are especially vulnerable to pollution's health impacts. Childrens' lungs are still developing and even short episodes of air pollution can leave lifelong damage. Air pollution also affects reproductive health and pregnancy outcomes such as fetal development and premature birth.

The economic impacts of air pollution, both indoor and outdoor, cannot be neglected either. Myllvirta (2020) estimates that fossil fuel-related ozone, nitrogen dioxide (NO2), and particulate matter was associated with $2.9 trillion in health-related costs worldwide. World Bank (2022) finds that particulate matter from all sources to be associated with $8.1 trillion in health damages, or 6.1% of global GDP in 2019. The same report estimated 93 billion days of work lost to air pollution-related illness. East Asia loses an estimated $63 billion worth of wheat, rice, and maize due to ozone's impact on crop yields (Feng, 2022), while global losses of these staple crops plus soybeans is estimated at more nearly 230Tg of lost yield (Mills et al, 2018). These figures do not consider the costs of the impact of air pollution on other species (which also breath), on forests due to ozone and acid rain, and on water quality as air pollutants deposit into lakes and streams. Air pollution also affects solar energy yields, reducing energy production by 17-25 in polluted regions of Asia and the Middle East (Bergin et al, 2017).

Some parts of air pollution also contribute to climate change. Ground level ozone, methane (a precursor to ozone and powerful greenhouse gas in its own right), and black carbon (darker particulate matter) along with hydrofluorocarbons (HFCs) are collectively referred to as Short Lived Climate Pollutants (SLCPs). These are the responsible for nearly half of today's accumulated warming (UNEP and WMO, 2011). Reducing emissions of these pollutants is essential for maintaining temperatures under 1.5°C above pre-industrial levels, the target of the Paris Agreement, which calls for countries to take concerted climate action to reduce greenhouse gas emissions in order to limit global warming (IPCC Special Report).

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Analysis

Cleaner air offers benefits for many, while reducing emissions imposes costs on a much smaller group.

As a result of the increasing awareness of the impacts of air pollution, there is growing demand for clean air in cities, and their leaders are responding.

In Jakarta, for example, a consortium of civil society groups sued – and, in 2022, won – a case against city and national leaders for failing to deliver clean air. The city's governor, in parallel, has proposed ambient air quality standards that are higher than the national benchmarks (Jakarta Gubernatorial Instruction 66/2019). London's air quality efforts since 2016 reduced the number of state primary and secondary schools located in areas exceeding legal pollution limits from 455 in 2016, to just 14 in 2019 and led to a 94% reduction in the number of Londoners living in areas exceeding legal limits for NO2 (Greater London Authority, 2020). The city's pioneering Ultra Low Emission Zone (ULEZ) has recently been expanded.

China's air quality actions, focused on transportation and coal burning in urban areas, have reduced particulate matter pollution by 40% — nearly equalling the 44% drop that the U.S. achieved over the three decades after the Clean Air Act (EPIC report, 2022). Metropolitan scale efforts such as the collaboration between Beijing, Tianjin, and Hebei, (the so-called "Jing-Jin-Ji" region) have been particularly effective for reducing air pollution that mixes across narrower city boundaries. (Cui, 2020)

Moving from popular pressure for cleaner air to actual clean air outcomes, however, is harder than it looks (Seddon, 2020).

First, building awareness of air quality impacts can backfire and lead to growing air inequality. When solutions for shared ambient air seem difficult, those who have the economic ability to opt out – to buy masks, filters, or even move – do so. Translating the growing awareness of the risks that pollution poses to health into politically effective action to reduce specific emissions can be challenging. Cleaner air offers benefits for many, while reducing emissions imposes costs on a much smaller group. The incremental value of lower risks of respiratory illness that come from, say, tightening vehicles emission controls, may not go as far to mobilize political pressure as the specific costs of implementing those controls to the sellers and buyers of cars. Building an effective movement for clean air requires political entrepreneurship to create effective pressure groups.

That said, there is substantial scope for political entrepreneurship. The same actions needed to clean up the air can have many other benefits for equity, gender opportunities, and economic opportunity. By adopting an integrated approach, cities can tackle air pollution alongside other priorities, increasing political buy-in and project viability and leading to more effective outcomes.

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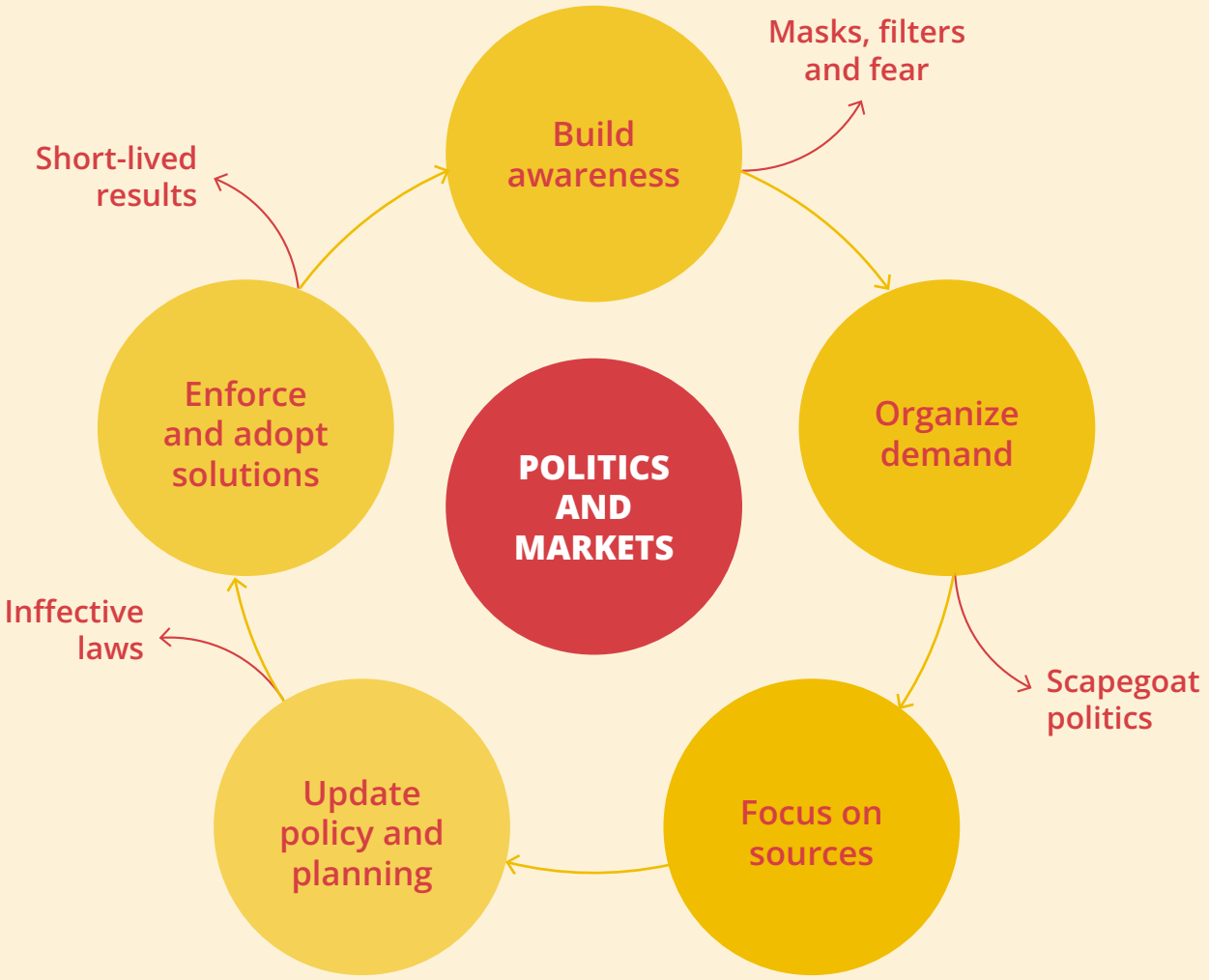
Figure 2. **Pathways for change: A fragile cycle**
Source: World Resources Institute



Second, translating even effective, organized, demand for cleaner air into pressure to act on the local sources requires analysis and information that many local, metropolitan or regional governments do not have. Asking for clean air is akin to demanding equality without knowing exactly how to get there. Much pollution is invisible, some of it is hard to trace to specific sources — emissions from multiple sources mix and react with each other to form new pollutants — and ambient air quality is determined by weather in addition to policy effort. If politics could be swept aside, there is almost always enough information available to guide reasonable action on air pollution. The specific contributions of emission sources such as transportation, waste management, household and building energy and electricity production may vary by season or city, but these are nearly always contributors to pollution.

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Bogotá's air quality has improved over the last decade as result of national and local efforts in air quality regulation, infrastructure and urban planning interventions. The "Vital Neighborhoods," program, for example, advances integrated solutions of mobility and urban development, with impacts on personal exposure to air pollutants at neighborhood level. The city governemnt has also invested in generating and communicating data to track progress, such as the air quality monitoring network that includes 20 reference stations; open semi real-time and historical data, an integrated air quality model system that generates air quality forecasts, and an emissions inventory as part of a broader environmental observatory. The 25 air quality indicators includes annual and daily concentrations of PM10, PM2.5, SO2, NO2, ozone, respiratory diseases, GHG reduction goals, low emissions vehicles, among other (SDA, 2022). The progress in clean air, along with clear communication about goals, has built momentum for more. While reductions of 41% in PM10 levels have been achieved between 2010 and 2019, reductions in PM2.5 levels are still a challenge. In its most recent Air Quality Action Plan 2030, Bogotá commits to comply with the World Health Organization's interim target 3, by specifying targets in emission reduction. The plan also focuses on addressing pollution in some of the most vulnerable areas of the city and includes an action plan for deepening coordination among different levels of authorities and sectors.

Photo: Alejandro Ortiz on Unsplash

In real life, however, uncertainty about the sources of pollution handicaps action in various ways. First, it can fragment movements for clean air into advocates of diverse actions – a large group becomes smaller groups in favor of stopping waste burning, or diverting traffic to other neighborhoods. Second, it enables finger-pointing: those responsible for one source of pollution blame another as the "real culprit," diverting attention and action. Third, uncertainty about the contributors to pollution also motivates performative clean air solutions (actions that are visible, but not effective in changing air quality) and reduces the scope for building political support to address less-recognized sources. Finally, limited information renders important sources of pollution effectively invisible.

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Making the Invisible Visible. Municipal solid waste (MSW) burning, biomass burning by industries and commercial eateries, and fuel adulteration are common sources of pollution in many LMIC countries, yet are often overlooked in official emission inventories and source apportionments that drive policy. The sources may be hidden (because they are illegal), or too dispersed to count and estimate with traditional methods. These limitations sometimes mislead the policy formulation and evaluation. For example, biomass burning is often associated with household cooking by source apportionment studies in India, while other biomass users such as eateries, and industries, are overlooked. Similarly, MSW burning and associated emissions are, most of the time, based on rules of thumb or assumptions-based methods. There are, however, techniques through which cities can address these gaps. Nagpure et al (2015) use transect walks to observe incidents in selected areas of the in order to estimate overall frequency. Using this approach in Surat and Indore, India, Nagpure, et al 2021 highlight new features for both cities: less MSW burning than had been assumed, but much more solid fuel use by small restaurants than had been estimated in earlier inventories. (Ganguly, et al 2020)

Photo: Sustainable Sanitation Alliance on Wikimedia Commons

Global donor funding for air quality rose by 17% between 2019 and 2020, but at $44.7 million for that year it was 15 times smaller than funding for education and just 0.1% of total philanthropic grantmaking.

These informational gaps are significant. Despite the importance of air pollution as a major policy question whose implications to society and economies warrant urgent attention and action, actions to address it varies considerably between nations and local authorities. In most low- and middle-income countries (LMIC) air pollution has historically been a lower priority in public policy domains, and therefore several early opportunities to address the challenge were missed. However, in the recent past these countries have experienced higher levels of air pollution, exacerbated by higher temperatures, and the matter is slowly gaining traction in the public policy and research spheres, even though the level of attention is not yet commensurate to air pollution's importance to society.

Third, one of the major challenges facing the sector is limited funding, especially in Low- and Middle-Income Countries (LMIC). Spending on projects with explicit air quality goals is less than 1% (0.7%) of official development funding. This figure is likely to underestimate the investment in infrastructure, service, and other projects that do in fact contribute to cleaner air, but it is telling that such a small proportion of funding is explicitly aiming to address one of the leading public health and development challenges of our time. Global donor funding for air quality rose by 17% between 2019 and 2020, but at $44.7 million for that year it was 15 times smaller than funding for education and just 0.1% of total philanthropic grantmaking. Total funding between 2015 and 2020 was estimated at US $185 million (Clean Air Fund 2021).

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Fourth, cleaning up the air requires concerted, collaborative action across sectors and boundaries. For example, emissions from sources as diverse as energy and agriculture mix to form urban pollution that affects cities kilometers away. Reducing emissions from transport requires action from both national and metropolitan governments: both fuel standards and public transport policies that draw people out of their cars are both important policy levers. In other cases, the bulk of the power to affect emissions lies outside of metropolitan jurisdictions. National electricity regulatory and tariff frameworks as well as investments in transmission and policies around renewable energy, for example, affect the pace of transition to low-emission electricity. Multi-level action is therefore needed to ensure an evidence-based and coordinated response across national to local levels of government.

Photo: Alexis Tostado on Unsplash

Megalopolis environmental commission. Mexico City's air pollution crisis was recognized in 1992, when the city labeled as the most polluted city in the world. Since then, policies, plans and actions have taken place including changes in the governance model for air quality. In 1992, a metropolitan environmental commission was formed including environmental authorities from the federal and state authorities. An environmental trust fund was created with contributions from federal and state governments as well as fuel taxes and supplemental resources from multilateral banks and international cooperation. Over the years, air quality improvements recorded in Mexico City were not replicated in nearby municipalities and states. Scientific evidence on the dynamics of air pollution in the metro region generated during more than a decade led to the recognition of the need of managing pollution in the air shed shared by six states. In 2013 a federal mandate to enforce air quality management through institutional coordination created the Megapolis Environmental Commission (CAMe). Harmonization of data, tools and programs was one of the main tasks for CAMe, which included air quality monitoring and vehicular inspection programs. Funding comes mainly from contributions of the six states through vehicular inspection taxes. CAMe acts as spokesperson when high pollution levels are reached within the metropolitan area and air pollution contingency is declared and coordinates the actions that the federal state and municipal authorities' levels need to implement, reducing political impacts on the decision and implementation

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Way forward

Harnessing the growing momentum for clean air to drive the policies, investments, and behavior changes needed to reduce air pollution requires building the infrastructure for deepening and amplifying metropolitan efforts. Within cities, we need to better integrate climate and clean air action. Across cities, we need to build regional collaboration as well as multi-city communities of practice. And beyond cities, we need to create ways for city voices to shape national and international action.

With Cities: Integrate climate and clean air

Integration between climate and air quality goals is key. Climate change and air pollution share many of the same sources, and closer integration of greenhouse gas (GHG) reduction and clean air goals offers a route to accelerated action. Such an approach can help enhance co-benefits and synergies, reduce conflicts, and manage trade-offs. Tibrewal and Venkataraman (2021), for example, found that Indian programs that focused on locally popular clean air and affordable energy goals also delivered substantial climate benefits. Integrated action has the potential to advance mitigation efforts by recognizing the additional climate benefits of air quality policies, and vice versa. For most cities, such integration begins with the development of integrated inventories of emissions of air pollutants and GHG (and related action plans), as well as stakeholder engagement to build awareness of the various ways in which city choices affect the atmosphere that in turn shapes health, climate and ecosystem outcomes.

Across Cities: Build Communities of Practice, Communities of Voice

Creating new venues for cities to share experiences, technical solutions, and experience on monitoring will help cities strengthen their own efforts to improve air quality and build a more forceful voice in national and international fora. Peer learning can be a powerful force for change, particularly when the solutions are intertwined with urban planning, finance, and technology choices that are part of everyday city management. Navigating the many small changes, from procurement processes to regulatory design, can be challenging and learning from others who have successfully enacted policies can accelerate success.

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Guadalajara's combined climate-air quality emission inventory. Guadalajara Metro is one of the few metropolitan regions with an integrated inventory of emissions of criteria pollutants and greenhouse gases and compounds. With a 2018 year base and the participation of nine municipalities that make up the metropolitan area, the integrated and participatory inventory was the result of collaboration between the air quality area of the World Resources Institute Mexico (WRI Mexico) and the Metropolitan Planning Institute of the Guadalajara Metropolitan Area (IMEPLAN). This inventory followed national methodologies and was validated by national authorities (SEMARNAT and INECC). The process to collect primary data involved municipal local authorities, who also participated in a year-long capacity building program. With this integrated emission inventory, impacts of integrated climate and air quality actions can be estimated. An interactive platform to consult emissions inventory data facilitates easy access to the data, while visualization options allow different users to interact with the data and get a better idea of the contribution of each of the municipalities and types of sources to the area's pollution.

Photo: Daryl parada on Unsplash

WRI/UNEP Community of Practice

Air quality staff in cities are usually enthusiast and committed people. With the day to day work and urgent issues, capacity building although frequently recognized as very important and needed, not always gets prioritized. The Air Quality Communities of Practice (AQCoP) in Latin America and Africa is a space for AQ city practitioners to learn from experts as well as their south cities' peers. Through a series of monthly Technical calls (Tech talks) tailored selected to attend cities's needs on topics including quality monitoring (reference and Low cost sensor), air quality forecast models, participatory science, AQ impact indicators design, remote sensing products for sources identification and estimation of air pollutants. AQCoP's participants are medium and high level staff from environmental authorities from cities and states including: Latin America (Bogota, Guadalajara Metro, Monterrey, Leon City, Nuevo León, Jalisco, Guanajuato, Queretaro, Mexico City, State of Mexico and Mexico City), and Africa (Kigali, Nairobi, Accra and Kampala). A follow up platform was created and shared to function as a tool to enable dialogue and exchange of experiences between the participants and seeking to bring them closer to experts, tools, methodologies, platforms, data, and experiences on different topics and to truly create an intercontinental community and support network to improve air quality. In order to expand these learning tools to a broader community of AQ practitioners and interested learners, all recorded sessions can be seen at The CityFix Learn Platform WRI's Ross Center.

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Beyond Cities: A Call for Allies

National and regional initiatives focused on climate and air quality goals should be implemented with the involvement of the governments of cities and metropolitan areas to help promote the transitions we need in energy, agriculture, and waste. This can leverage the full force of cities' influence as consumers, and sensitize political representatives to important parts of the economy and voter base.

C40 AQ declaration (common voice)

There are 37 cities around the world are signatories to the C40 Clean Air Cities Declaration (first signed in 2019) and committed to working towards meeting World Health Organization air quality guidelines by 2030 by using all the powers at their disposal to tackle air pollution, and call on others responsible for the sources of pollution to match this commitment. Signatory cities pledge to: establish baseline levels and ambitious targets for air pollutants to achieve WHO guideless for criteria pollutants; implementing new substantive policies and programs to address the top causes of pollution and, publicly report annually on progress in reducing pollution levels relative to targes and achieving commitments in this declaration. Examples of actions cities have committed to implement include:

1) implementation of new policies, enforcement of stronger regulation, and build capacity and skills.;

2) integrate top pollution-reducing actions (under the city´s control) into Climate action plans,

3) support active mobility,

4) implementing vehicle restrictions or financial incentives,

5) establish, maintain and increase to city-wide air quality monitoring;

6) develop emission inventories, models and analysis in collaboration with relevant institutions, and 6) work to advocate regional, state, national to take actions on sources outside their boundaries or control.

Join sectoral initiatives – understand root causes and address them

Choices done at the present on air quality, energy and climate issues, from building to transport and resilience, will shape the built environment for years. We need to shift the conversation toward the causes of air pollution or root causes and what can be done about these. Creating a stronger link between recognition of the deeper transition required and the political economy of that transition. Addressing three key transformations could led us to achieve clean air in cities: energy, food systems and sustainable consumption, and waste management.

Building Efficiency Accelerator

The Building Efficiency Accelerator (EDA, 2022), is an effort of the United Nations' Sustainable Energy for All initiative, lead by WRI, is a tool that turns global expertise into action through public-private collaborators with local governments implementing building efficiency policies and programs that includes 54 cities and subnational government. Additionally, funded by the Global Environment Facility and supported by the UN Environment Programme, in 2021 WRI launched the Zero Carbon Building Accelerator (ZBCA). The ZBCA (Rakes, 2022) builds on the lessons, expertise and resources of the BEA to speed the transition to zero carbon by supporting the development of national roadmaps and city action plans for building decarbonization. Currently, cities from Colombia, Turkey, Costa Rica, India and Kenya have committed to decarbonize the built environment. ZBCA help to develop local-level action plans that outline the steps to reach building decarbonization by 2050 while delivering on co-benefits like air quality and green jobs. ZBCA´s action plans align with existing national and local climate goals and tailored for the specific context.

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Recommendations

Clean air is an opportunity as well as a challenge. It is a growing threat to public health, climate, and ecosystems that stems from choices about heating, lighting, mobility and production that are in turn intertwined with business as usual. But it also offers the possibility of a "triple win" for climate, ecosystems, and human well-being. Action to reduce polluting emissions – to change business as usual – have multiple benefits for the environment and society.

To seize this opportunity, civil society, business, and multiple levels of government need to act together to accelerate the clean air cycle by:

1. **Building awareness:** invest in data and outreach about the value of clean air, especially bringing attention to the impact of air pollution on women's health.
2. **Organizing demand:** find, build, and support community groups that can advance the case for clean air in courts, in voting, and in everyday life, starting with the promotion of women's engagement in decision-making.
3. **Focusing on source awareness:** undertake and explain the analysis that links pollution back to its sources, and highlights the locally relevant solutions for pollution.
4. **Updating policy and planning:** build clean air goals into decision-making around infrastructure, services, and regulation.
5. **Enforcing and adopt solutions:** follow through to sharpen the incentives for cleaner choices.

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About the authors

Jessica Seddon is Senior Fellow, Air Quality, World Resources Institute

Beatriz Cardenas is Global Lead, Air Quality, World Resources Institute and Director of Air Quality for WRI Mexico

Michael Doust is Director, Integrated Climate Action, at the WRI Ross Center for Sustainable Cities

Other contributing authors

from the World Resources Institute Integrated Climate Strategy and Air Quality leadership:

Beth Elliott, Communications and Engagement Lead, Air Quality, WRI

Ethan McMahon, Chief of Party, Clean Air Catalyst

George Mwaniki, Head, Air Quality, WRI Africa

Ajay Nagpure, Head, Air Quality, WRI India

M. Shidiq, Head, Air Quality, WRI Indonesia

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Secretariat General
Avinyó, 15. 08002 Barcelona (Spain)
Tel. +34 93 342 94 60
metropolis@metropolis.org
metropolis.org

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