Annex A:
City Toolkit

Strength in Numbers

How cities are innovating through data to unlock ambitious clean air action

Breathe Cities

An initiative delivered by Bloomberg Philanthropies,
Clean Air Fund and C40 Cities.

Using this table to guide city action

This table is designed as a practical reflection tool for city AQM practitioners to assess their current capacities. Cities can use it at several key moments, including when developing or updating air quality management plans (AQMPs), before launching new monitoring sites or communication campaigns, or during periodic review of their institutional and technical capacity. At each of these moments, cities can pause to ask the questions in the table, consider which recommendations are feasible, and explore the featured case studies for inspiration.

The goal is to use these questions as prompts to spark discussion, identify gaps, and plan interim targets and improvements. Embedding this tool into regular planning cycles helps cities make data-informed decisions that progressively strengthen their AQM system and maximise the health, economic, and environmental benefits that can be reaped from better air quality.

This toolkit was presented and validated in May 2026 at a Breathe Cities workshop in Mexico City that brought together city officials from 18 global cities.

Innovation Area 1

Data Collection: Building a comprehensive air quality picture

Reflection questions	What next?	How to innovate to accelerate progress
Do we have sufficient monitoring coverage to understand pollution patterns? • What monitoring systems are in place, how are they resourced, and how frequently are data collected? • Do we have access to hyper-local data (e.g. at neighbourhood and street level)?	Expand monitoring to capture spatial variation and hotspots, enabling clear identification of high-pollution areas for targeted interventions	Deploy locally calibrated LCS to fill gaps, run short-term hotspot studies (e.g. deploying a portable air quality monitor for 2–4 weeks), and complement with satellite or remote sensing data
Are we using external and complementary data sources effectively? • Do we use national, academic, or satellite data? • How are these used in planning and decision-making? • If yes, how do we take into account the strengths and limitations of these data sources?	Integrate multiple data sources into a working evidence base to generate actionable insights more quickly, even with limited in-house capacity	Leverage external datasets and partnerships with local universities and academic institutions; combine sources pragmatically while recognising limitations
Do we understand the sources of pollution and where they are concentrated? • How are emission sources identified and mapped? At what scale?	Use source information to prioritise interventions, enabling targeted action on high-impact sectors	Develop or update emissions inventories and overlay with monitoring and hotspot data

Where to look for more guidance

Opportunities and challenges for filling the air quality data gap in low- and middle-income countries

This article sets out practical steps to expand air quality monitoring through coordinated action among governments, private enterprises, international organisations, academia, and civil society. It emphasises the use of emerging technologies, context-specific approaches, and institutional capacity building to ensure sustainable progress.

United Nations Economic Commission for Europe (UNECE) - An Introduction to Emissions Inventories

This UNECE workshop slide deck offers an overview of emissions inventories, covering their drivers, policy requirements at international and national levels, methods, and outputs.

Urban Emissions.Info – Primer on Source Apportionment

The primer summarises the principles of source apportionment studies and outlines the steps involved in both top-down and bottom-up approaches.

A framework for advancing independent air quality sensor measurements via transparent data generating process classification

This paper presents a proposed framework that distinguishes independent air quality sensor measurements from processed data products to improve clarity, reliability, and appropriate use of sensor-based air quality data.

Innovation Area 2

Data Governance and Collaboration: Unlocking the potential of data through strong institutional foundations

Reflection questions	What next?	How to innovate to accelerate progress
Do we have clear roles and responsibilities for managing and using data? • Within the city administration, which departments or offices are responsible for data collection, sharing, coordination, and use? • Are roles clearly defined?	Establish clear institutional arrangements for data management to enable consistent use of data in planning and decision-making	Define clear roles, designating a lead agency, and embedding coordination structures (e.g. working groups) to support whole-of-government action
Do we have the institutional systems and capacity to manage and use data consistently? • Are there systems, plans and resources guiding how data are managed, integrated, and maintained? • Do they address quality, standards, and access? • What resources are dedicated to staff capacity building?	Strengthen data systems and in-house capacity to ensure data are reliable, accessible, and used routinely in decision-making	Develop simple tools, standardise processes, and invest in targeted training to embed data use in routine planning
Are data shared effectively across departments and sectors? • What mechanisms and/or agreements exist for sharing air quality datasets internally? • How are non-air quality datasets (e.g. socio-economic data, spatial maps of communities, health data) integrated? • Are there barriers to accessing or using air quality and non-air quality data across teams?	Enable cross-department data sharing and integration to support coordinated, cross-sector policy design	Set up data-sharing systems (like dashboards), arrangements, common standards, and workflows that enable collaboration across sectors such as health, transport, urban planning, welfare, and finance
Are we coordinating effectively with national and external stakeholders? • What mechanisms exist to share data with national or regional authorities? • How aligned are city and national efforts?	Align data and actions with national and external partners to enable more coordinated and scalable clean air policies	Establish formal coordination channels, align with national systems, and leverage external expertise and infrastructure

Where to look for more guidance

Urban Health Capacities Assessment and Response Resource Kit

This kit equips multi-sectoral teams to evaluate whether an initiative can achieve its goals in complex urban settings. The kit provides a structured framework in the evaluation of key capacities across four domains (i.e. informed decision-making, monitoring, and evaluation; policies, programmes, innovation, and change; resource management; and partnerships, participation, and knowledge sharing) at individual, organisational, and systemic levels, with real-world city examples.

Mapping opportunities for training in air pollution and health for the health workforce

This report maps training programmes on air pollution and health for health workers, analysing their strengths and gaps against nine criteria, such as accessibility, accreditation, and teaching methods. Through expert interviews, an online survey of over 400 health organisations, and extensive research, 18 training programmes were identified.

Clean Air, Healthy Planet: A framework for integrating air quality management and climate action planning

This guide outlines nine steps for cities to align AQM with climate action. It emphasises setting visions and strategies that address the climate crisis, air pollution, and public health simultaneously, with recommendations to encourage synergies, avoid trade-offs, and set emission reduction targets for PM2.5 and CO2e.

Toward a healthier world: Connecting the dots between climate, air quality, and health

Based on research with 25 cities, this report demonstrates how cities can leverage evidence to link climate, air quality, and health, thereby strengthening the case for action. It introduces a toolkit and methodology that enable cities to quantify the multiple benefits of climate initiatives.

Innovation Area 3

Analysis, Modelling, and Impact Assessment: Evaluating how actions impact people

Reflection questions	What next?	How to innovate to accelerate progress
Are we integrating different types of data to prioritise, target, and design policy interventions? • What health, social, demographic, and economic data[i] are used in understanding who is most exposed to and affected by air pollution? • How do air quality, health, and socioeconomic data inform which sectors or actions are prioritised and how interventions are designed?	Identify high-risk areas and populations to design targeted, people-centred interventions	Combine air quality and wider datasets (e.g. population, health, spatial data) to guide policy choices, working across departments
Are we making a strong case for action and assessing whether policies deliver results? • How does our department evaluate policy effectiveness over time? • How are impacts assessed across health, economic, and social outcomes (e.g., job creation, livelihoods, accessibility)?	Quantify multiple benefits (e.g. air quality, health, job creation, livelihoods, cost burden, and accessibility) and track outcomes to strengthen the case for action	Use available tools and indicators to estimate impacts, and embed evaluation into policy design (e.g., before-after analysis)
Do we have the capacity to sustain data-driven decision-making? • What technical skills and resources exist to model and evaluate the impacts of policy over time?	Build and maintain analytical capacity to support continuous, data-driven decision-making	Invest in training, tools, and partnerships while strengthening in-house capability over time

i This could include resident age, sex and gender, income, migration status, county of origin, racial or ethnic identity, religious affiliation, primary language spoken, education level, employment status, and occupation. They might also include area-level variables like poverty rates or joblessness rates.

Where to look for more guidance

WHO – Health impact assessment (HIA) methods

This web article explains the stages, methods, and benefits of applying HIAs to policies, projects, and programmes, ensuring health considerations are integrated into decision-making.

AQMx - Air Quality Management Guidance

The Air Quality Management Exchange Platform (AQMx) provides curated guidance for air quality managers across 8 areas, including health impact assessment and environmental impacts assessment.

Air Quality through Urban Actions (AQUA) Tool

The AQUA tool is a user-friendly Excel model that helps cities and policymakers assess the health and economic benefits of emissions reduction. Pre-loaded with national-level data from reputable sources, like the World Bank and Global Burden of Disease, AQUA is especially valuable for cities with limited local data. The AQUA Transport Module is an extension to the AQUA tool. It can be used to rapidly calculate emissions from the transport sector and analyse changes in emissions from a range of transport policies.

Clean Air Zones Toolbox

The toolbox, structured in three parts, provides a comprehensive guide to transformative change for thriving, inclusive, and healthy cities. Part 1 offers a technical guide for introducing Clean Air Zones, including recommendations on data cities should gather to demonstrate why a Clean Air Zone is needed and measure its effectiveness.

Innovation Area 4

Communication and Engagement: Empowering communities through data

Reflection questions	What next?	How to innovate to accelerate progress
Are we communicating air quality data in ways people understand and can act on? • How are real-time air quality alerts and health advisories communicated to residents? • Are messages clear, timely, and actionable during high pollution episodes?	Communicate air quality data in clear and relatable ways to enable residents to understand risks and take protective action	Use simple indices, real-time alerts, and locally relevant messaging across multiple channels
Are we tailoring communication to build trust and relevance across different groups? • How does the city adapt communication based on perception data and lived experience? • How do different groups perceive and respond to air pollution information?	Tailor communication using audience insights to build trust and ensure messages resonate with different groups	Use perception surveys and engagement activities to understand audiences and refine messaging based on local context
Are we engaging communities as active partners in generating and using data? • In what ways are communities involved in data collection (e.g. citizen science, community monitoring)? • Are communities engaged in designing monitoring networks or research activities?	Engage communities as partners in data generation and use in order to shape inclusive solutions and strengthen public buy-in and support	Support citizen science, community-led monitoring, and participatory approaches (e.g. sensors in community spaces, grassroots involvement)
Are we enabling communities to use data to support and influence clean air action? • How are communities supported to use data to track progress and hold institutions accountable? • How is data used to train and engage residents, especially disproportionately affected groups[ii], to raise awareness and build support for policies and behaviour change?	Enable communities to access and use data to build support for policies and strengthen accountability	Provide accessible platforms, tools, and guidance that allow communities to interpret data and engage in decision-making processes

ii This could include resident age, sex and gender, income, migration status, county of origin, racial or ethnic identity, religious affiliation, primary language spoken, education level, employment status, and occupation. They might also include area-level variables like poverty rates or joblessness rates.

Where to look for more guidance

Air Quality Communications Toolkit

This Toolkit serves as a comprehensive resource to help cities communicate their initiatives and progress in tackling air quality challenges. This document equips cities with practical tools to engage stakeholders, raise awareness, and foster meaningful action towards cleaner and healthier environments.

The Breathe London Blueprint

This guide, based on the Breathe London initiative, provides a framework for using hyperlocal air quality data to support city air quality communication. It demonstrates how high-resolution data from low-cost sensors can be used to make air pollution 'visible' to the public through interactive maps, empowering residents to reduce their personal exposure.

Clean air action: applications of citizen science to identify and address air pollution emission sources

This paper highlights how citizen science initiatives explore air pollution sources, drawing on reflections from a purposive literature review of 33 case studies. It offers insights into the ways citizen science methodologies address pollution sources; outlines source-specific outcomes in policy, practice, and behavioural change; and proposes future approaches to strengthen participatory science focusing on pollution sources.

Inclusive Planning: Executive Guide

This executive guide underscores the significance of inclusive climate action in urban planning. It outlines principles and policy recommendations to ensure that fairness and socioeconomic context are central to climate decisions and showcases tools and case studies that cities can draw upon. It is accompanied by a suite of tools and resources, including the following data related modules:

- Conducting a city needs assessment
- Identifying indicators for monitoring and evaluation