Introduction to the Toolkit

- Day 1 Session 1
- Charlotte Day - Ricardo

Development of the Toolkit

- **Extensive consultation**:
  - Collaboration with MDBs and BDs – those who will use the Toolkit
  - Aimed to ensure the Toolkit is fit for purpose, and widely adopted
- **Identified two key gaps for the Toolkit to fill**:
  - Absence of a centralised, accessible repository of air quality-related guidance for non-AQ experts (Part 1)
  - A lack of structured guidance on how to tailor projects to achieve air quality improvements, maximise co-benefits, and track these outcomes (Part 2)

Stakeholder consultation

- Targeted interviews:
  - Interviews held with 15 stakeholders from MDBs & BDs
  - Establishing their current approach to air quality in sectoral projects, or otherwise
- Expert review webinars:
  - 3 webinars held across different time zones to accommodate 20+ stakeholders
  - Presented overview of Toolkit content
- Review of Draft Toolkit content and survey:
  - Stakeholders reviewed a Consultation Draft of the Toolkit
  - Provided detailed feedback via a survey

Stakeholder feedback

Examples of the feedback received via the stakeholder consultation stages, and how it was incorporated into the Toolkit:

Feedback	Inclusion in Toolkit
Highlight links between air quality and climate change	Included sub-section on integrating air quality and climate policy, highlighting the benefits of doing this
Discuss AQ co-benefits in the context of other sectors	Figure in Part 2 demonstrates how different types of sectoral projects are likely to already include AQ co-benefits
Focus on actionable outcomes and clear metrics	Added practical checklists and implementation roadmaps, plus appendices identifying actions and monitoring metrics
Tailor examples to the Global South	Highlighted case studies and best practices from similar contexts
Include guidance on low-resource settings	Added specific recommendations and examples for low-cost, practical AQ solutions

Who is the Toolkit for?

- Project officers in **Development Finance Institutions** (DFIs), including: **Multilateral Development Banks** (MDBs) and **Bilateral Donors** (BDs)
- **Non-AQ specialists**: planners, sectoral experts, and managers working on projects in transport, energy, urban development, and more

What is the Toolkit?

- A **practical resource** to help incorporate air quality co-benefits into **project design, implementation, and monitoring**
- Links AQ actions to broader development goals, such as **health, climate**, and **sustainable economic growth**
- A '**one-stop shop**' for:
  - Understanding AQ impacts and policies
  - Applying AQ improvements as a primary objective or co-benefit in sectoral projects
  - Provides practical tools, metrics, case studies, etc.
  - Clear steps for designing projects that **deliver AQ outcomes** while addressing thematic investment priorities

Theory of Change

Impact
Long-term goals

- Reduced number of deaths / illnesses from ambient ai pollution
- Impactful progress made towards meeting WHO Air Quality Guidelines
- Quantification of AQ co-benefits of climate mitigation projects and vice versa
- Reduction in inequitable impacts of air pollution
- Air quality is seen as an asset benefiting society and the economy

Short- & Long-term Outcomes
Measurable benefits

- Requirement for recipients and donors to consider AQ during project identification and preparation of sectoral projects
- Annual AQ investments increases with the goal to equal climate investments
- Corporate air quality indicators are adopted by donors, initially in sectoral projects
- Grants or loans to sovereign governments for sectoral projects, where relevant, mandate air quality as a key consideration
- AQ funding for countries disproportionately affected by air pollution increases
- Total impact of development funding for sectoral projects, on emissions and/or air pollution, can be quantified

Output
The change we want to see

- Positive and negative impacts of sectoral projects on air quality are tracked
- Air quality actions, especially those requiring minimal, incremental cost, are added to sectoral projects
- Increased inclusion of air pollution quantification activities in project implementation
- Air quality and climate action are integrated, to mutual benefit
- Increased inclusion of air quality related indicators in M&E frameworks

Intervention
Resources provided

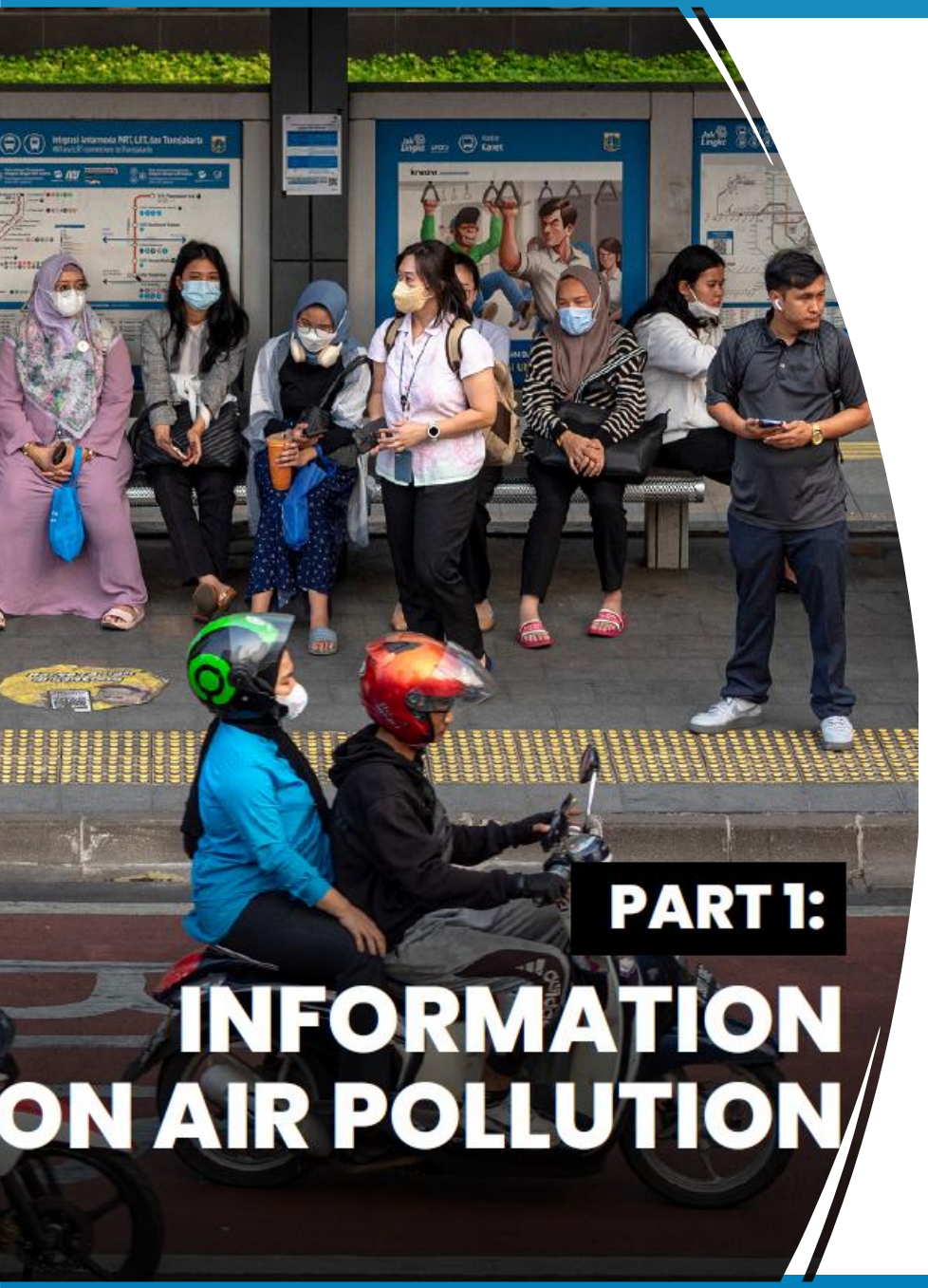
AQ Toolkit supports inclusion of air quality actions and tracking of air quality co-benefits in sectoral grants and loans

Output
The change we want to see

ADB · Urban Resilience Trust Fund · UK International Development · JFJCM Japan Fund for the Joint Crediting Mechanism · From the People of Japan · CLEAN AIR FUND · ASIA CLEAN BLUE SKIES PROGRAM

Toolkit content

- Part 1: Information on Air Pollution
- Part 2: Clean Air Guidance for Project Officers
- Appendices
  - Lists of potential AQ actions
  - Example indicators
- Toolboxes, Checklists, Case Studies



Part 1: Information on Air Pollution

- Sets out critical information on air quality, explaining its importance, how it can be better understood and the actions taken to improve it
- Designed to act as a signpost for relevant resources, including links to supporting information and examples of good practice from around the world

Part 1 is separated into three chapters:

1. Understanding air pollution
2. Air quality agreements, legislation and policy
3. Solutions for improving air quality

Part 2: Clean Air Guide for Project Officers

- Is a practical guide on how air quality can be better integrated into project development
- Discusses how to maximise AQ benefits each stage of a standardised project development process

Part 2 is separated into two chapters:

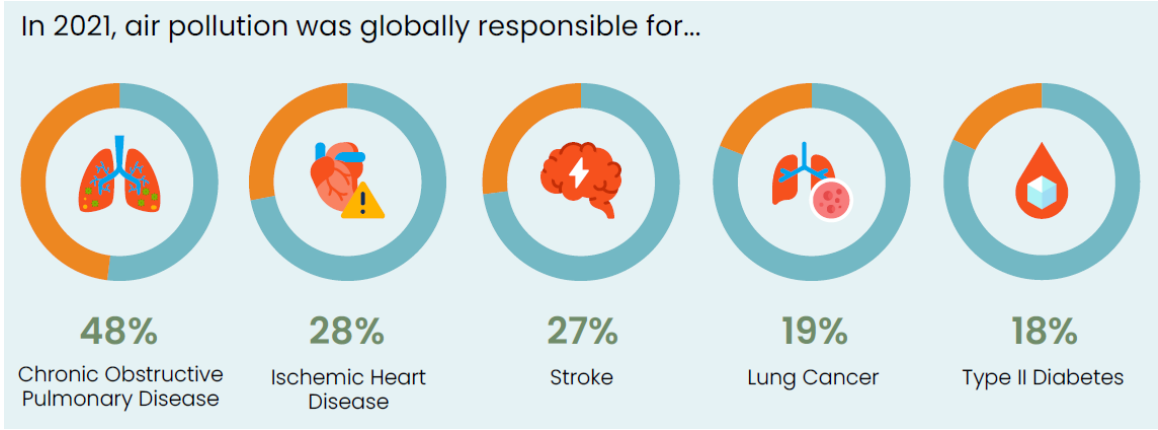
1. Identification
2. Preparation and Appraisal

Introduction to air quality

- Day 1 Session 2
- Charlotte Day - Ricardo

Why is air quality important?

- **Health impacts:** Poor air quality is the **second largest cause of premature death** worldwide
- **Global crisis**: **99% of the population** lives in areas exceeding the WHO Air Quality Guidelines
- **Human rights:** the UN recognizes **the right to a clean, healthy and sustainable environment**, emphasizing that air pollution undermines a fundamental human right
- **Climate change:** air pollution and climate change are closely connected, with **many sources, such as burning fossil fuels, also driving global warming**



Key air pollutants and sources

- What is air pollution?
  - Air pollutants are complex mixtures of gaseous compounds and particles that have different effects on human health and the environment

- Which air pollutants are 'the most important'?
  - Particulate matter (PM_{10} & $PM_{2.5}$) and NO_2 tend to be the main causes of poor air quality in urban and industrial areas
  - $PM_{2.5}$ is often considered the most globally significant air pollutant

Key air pollutants and sources

- Where does air pollution come from?
  - ➢ A range of human activities (e.g., combustion, industry)
  - ➢ Natural sources (e.g., wind-blown dust)

Particulate matter (PM)

Complex mixture of solid and liquid particles. Some emitted directly, some formed in the atmosphere as secondary PM. Grouped by particle size, the composition of PM tends to vary by source.

Sulfur dioxide (SO_2)

A gas produced due to the burning of sulfur containing fuels. Irritant effect on nose, throat and airways. Also contributes to the formation of secondary PM.

Non-methane volatile organic compounds (NMVOCs)

Consists of a large variety of compounds, from both natural and man-made sources such as industrial processes, domestic, and agriculture. React with NO_x in the atmosphere, in the presence of sunlight, to form tropospheric O_3. Also, a key source of indoor air pollution.

Ammonia (NH_3)

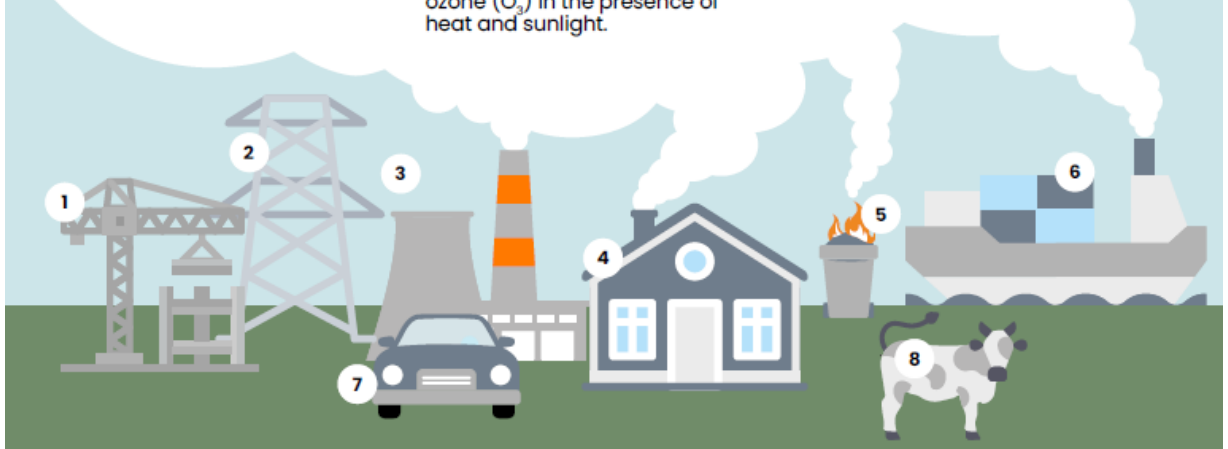
A gas released from natural and man-made sources, such as fertilizer, manure and wastewater. Once in the atmosphere, contributes to habitat damage through acidification and eutrophication. Also contributes to the formation of secondary PM.

Nitrogen oxides (NO_x)

A group of highly reactive gases comprising nitrogen dioxide (NO_2) and nitric oxide (NO). Mainly formed by combustion processes and largely associated with transport and energy sector emissions. A respiratory irritant that causes inflammation of the airways and may cause reduced lung development. Contributes to the formation of ground-level ozone (O_3) in the presence of heat and sunlight.

Carbon monoxide (CO)

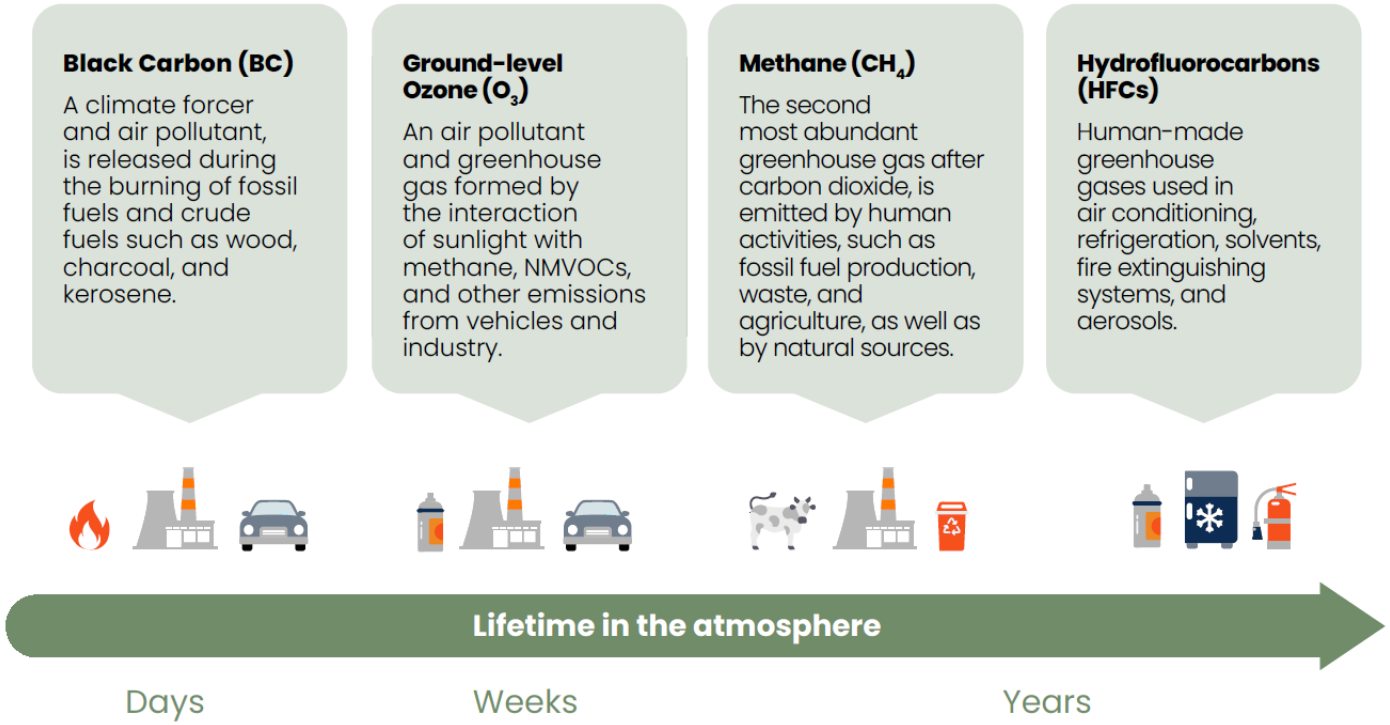
A gas produced through the incomplete burning of fuel e.g., from the domestic and transport sectors. The highest concentrations typically present in the air can be detrimental to health.



1. Manufacturing & construction
2. Energy industries
3. Industrial processes
4. Residential and small-scale commercial combustion
5. Waste
6. Non-road transport
7. Road transport
8. Agriculture

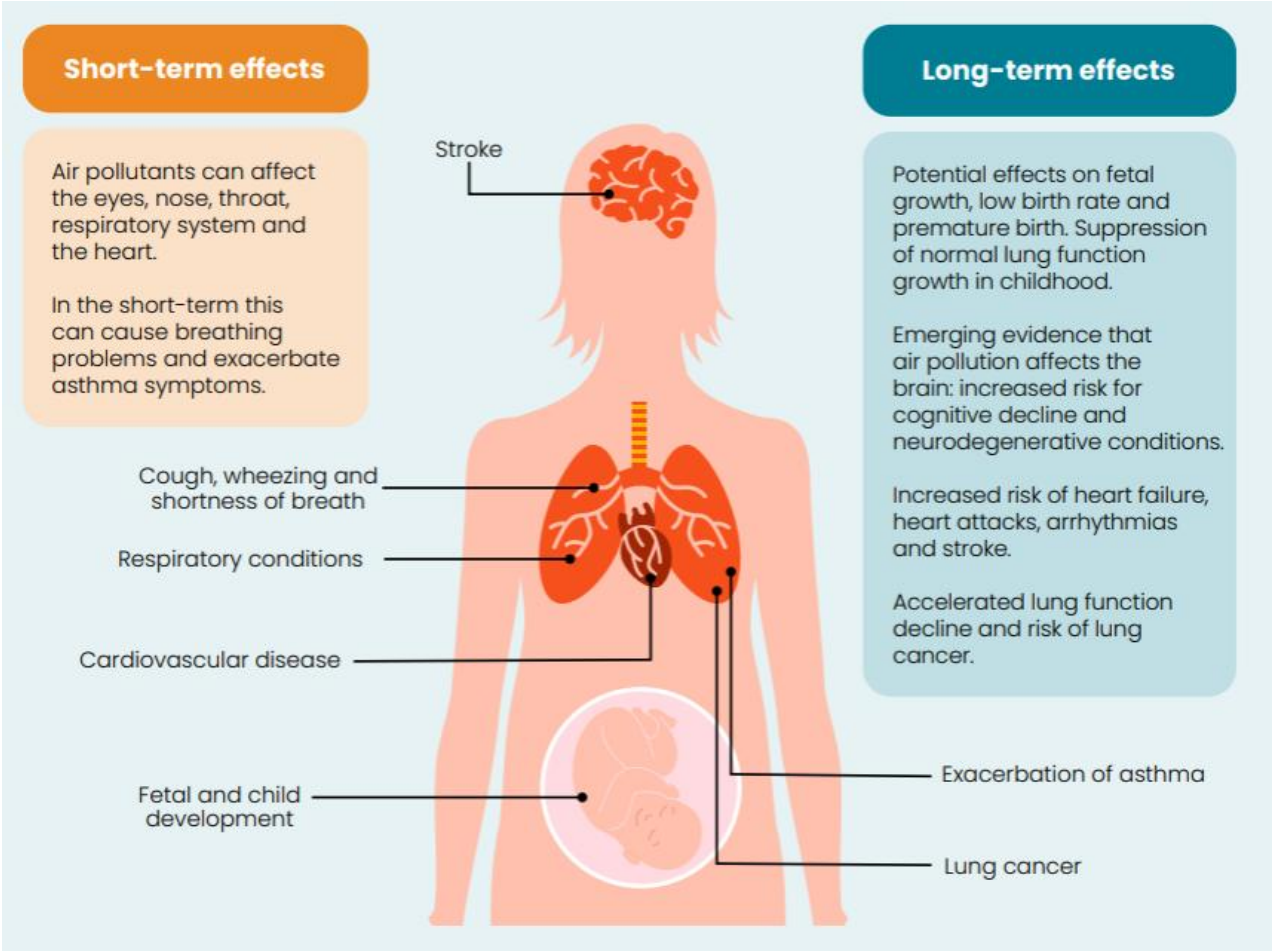
Key air pollutants and sources

- What are short-lived climate pollutants (SLCPs)?
  - A group of greenhouse gases and air pollutants that have both a near-term warming impact on climate and an impact on health



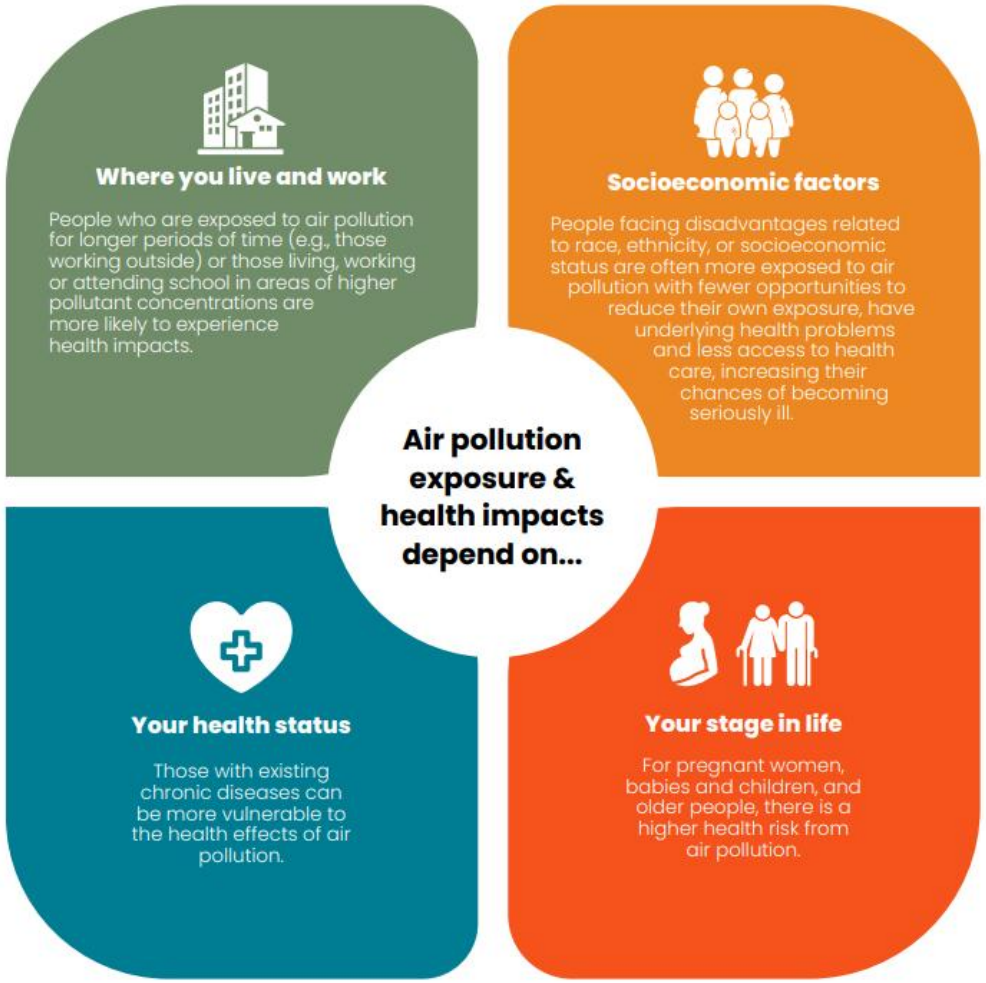
Health impacts of air pollution

- Air pollution negatively affects human health, even at very low concentrations
- The burden of disease at the population level puts major strains on health care systems



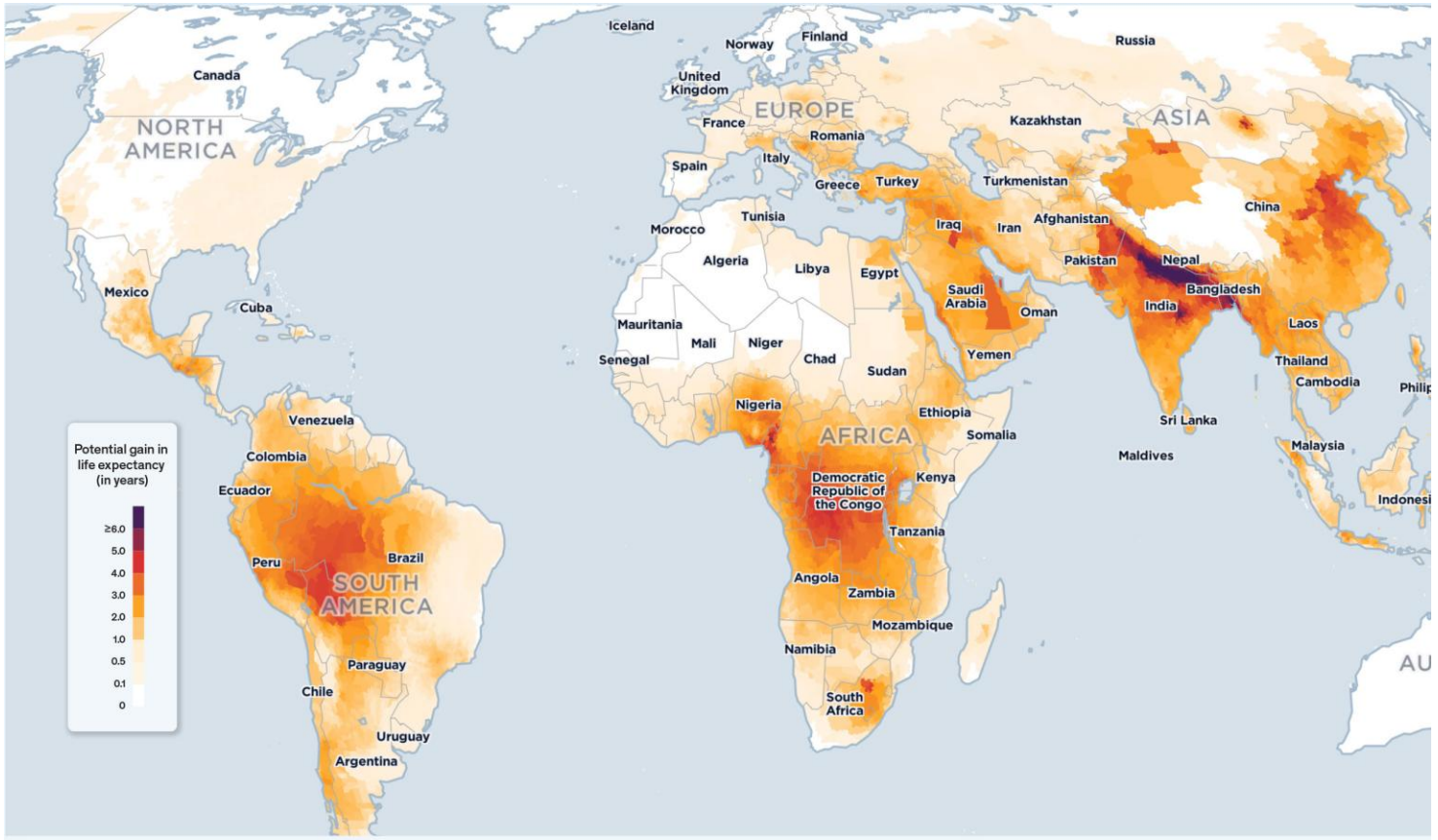
Economic and social impacts of air pollution

- The impact of air quality can be contextualized by applying a monetary value to changes in air quality, and the associated health effects
  - ➢ Clean air is increasingly being reframed as an asset with an inherent value
- The impacts of air pollution are felt disproportionately



Global air pollution trends

- 99% of the world's population live in areas that exceed the WHO Guidelines
- The impacts of air quality are uneven (improving in the Global North but worsening in much of the Global South)
- A holistic, evidence-based approach to implementing improvements is needed to tackle the primary sources of air pollution



The interactive data can be viewed online here

Financing air quality improvement

- The US EPA estimated that every $1 spent on air pollution control returns up to $30 in economic benefits
- Funding for outdoor air quality decreased from 2022-2023
- Funding for projects with an air quality co-benefit increased from 2022-2023 but more can be done

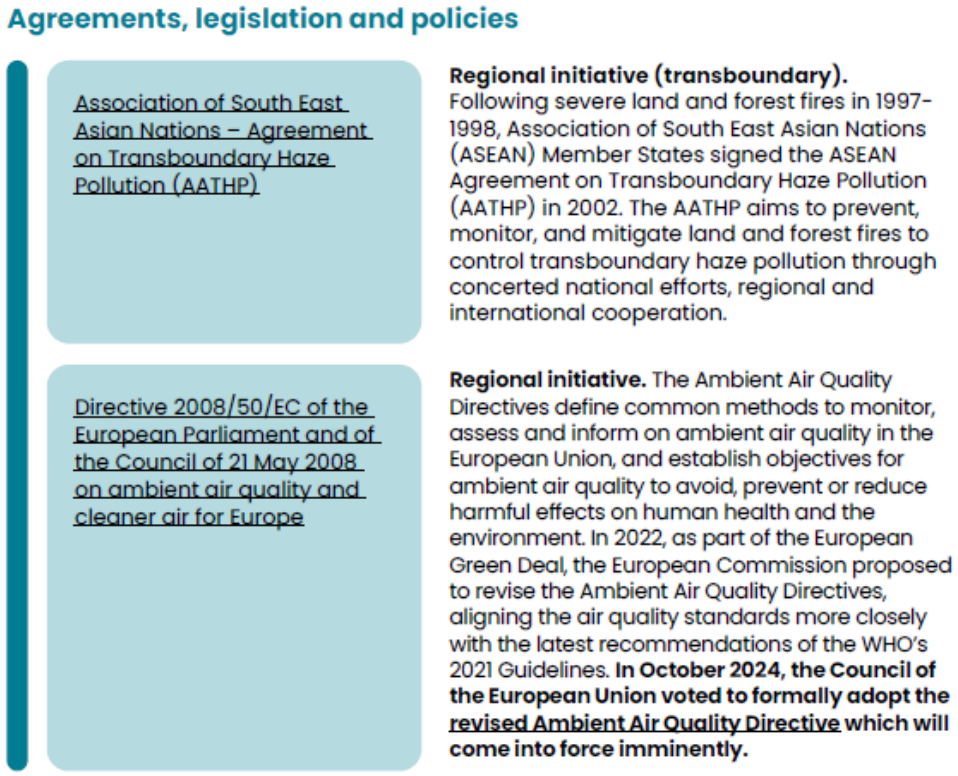
TABLE 1: AIR QUALITY FUNDING BY INSTRUMENT, 2018-2022[19]

Funding	Funding provided as loans	Loan total (US$ bn)	Funding provided as grants	Grant total (US$ bn)	Concessional funding	Concessional funding total (US$ bn)	2018-2022 total (US$ bn)
Overall air quality funding	92%	103.5	6%	6.3	36%	40.4	112.0
Outdoor air quality funding	91%	14.7	8%	1.3	70%	11.2	15.8
Funding with air quality co-benefits	92%	88.8	5%	5.0	30%	29.2	96.2

Note: Funding totals include very small amounts of funding delivered through instruments other than grants and loans, such as risk management instruments and project-level equity. This means that together, grant funding and loan funding will make up slightly less than 100% of the total.

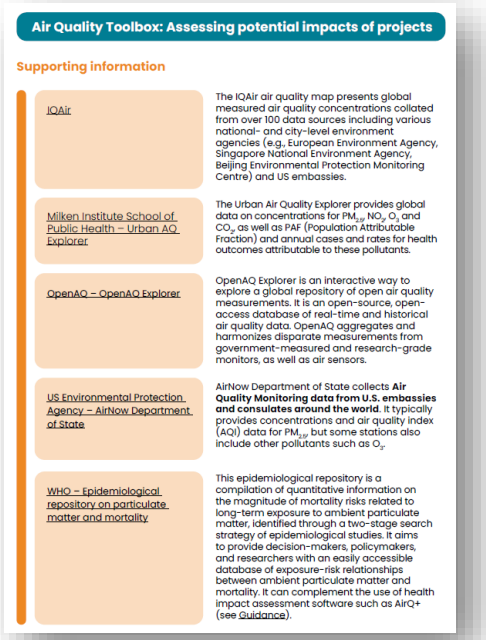
Air quality agreements, legislation & policy

- Air pollution impacts have led to the introduction of various forms of **agreements, legislative controls and policies**
- These policies are put into place **from the local to the international** scale
- They aim to **reduce the release and concentrations of pollutants**, and improve the ways in which air quality data is collected, interpreted, and used to inform decision-making
- The Toolkit gives an overview of different types of legislation, including **regional and transboundary initiatives**, and provides links to read more



Air Quality Toolboxes

- Throughout the toolkit, toolboxes are provided at the end of each section, providing **links to further reading or specific guidance documents** on the topic
- These are intended to guide the user to further resources in a clear and accessible manner
- The documents linked may be **guidance**, **supporting information** or further **tools** for the user to explore if they require more detail



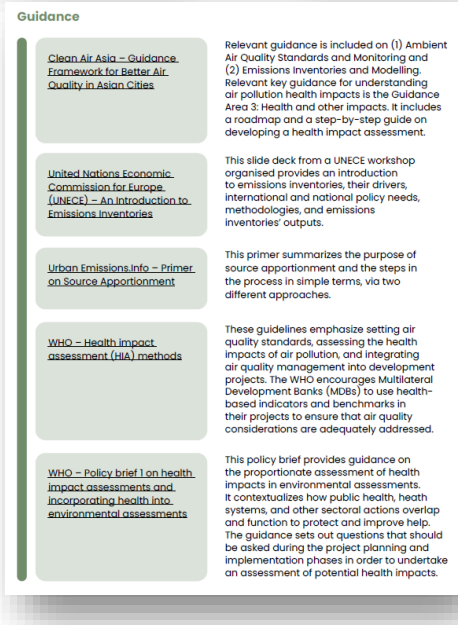
Air Quality Toolbox: Assessing potential impacts of projects

Supporting information

IQAir	The IQAir air quality map presents global measured air quality concentrations collated from over 100 data sources including various national- and city-level environment agencies (e.g., European Environment Agency, Singapore National Environment Agency, Beijing Environmental Protection Monitoring Centre) and US embassies.
Milken Institute School of Public Health – Urban AQ Explorer	The Urban Air Quality Explorer provides global data on concentrations for PM_{10}, NO_2, O_3 and CO_2, as well as PAF (Population Attributable Fraction) and annual cases and rates for health outcomes attributable to these pollutants.
OpenAQ – OpenAQ Explorer	OpenAQ Explorer is an interactive way to explore a global repository of open air quality measurements. It is an open-source, open-access database of real-time and historical air quality data. OpenAQ aggregates and harmonizes disparate measurements from government-measured and research-grade monitors, as well as air sensors.
US Environmental Protection Agency – AirNow Department of State	AirNow Department of State collects **Air Quality Monitoring data from U.S. embassies and consulates around the world**. It typically provides concentrations and air quality index (AQI) data for $PM_{2.5}$, but some stations also include other pollutants such as O_3.
WHO – Epidemiological repository on particulate matter and mortality	This epidemiological repository is a compilation of quantitative information on the magnitude of mortality risks related to long-term exposure to ambient particulate matter, identified through a two-stage search strategy of epidemiological studies. It aims to provide decision-makers, policymakers, and researchers with an easily accessible database of exposure–risk relationships between ambient particulate matter and mortality. It can complement the use of health impact assessment software such as AirQ+ (see Guidance).

Tools

Centre for Diet and Activity Research (CEDAR) University of Cambridge – Integrated Transport and Health Impact Modelling Tool (ITHIM)	The Integrated Transport and Health Impact Modelling Tool (ITHIM) is a collection of related tools and models that perform integrated assessment of the health effects of transport scenarios and policies at the urban and national level. The health effects of transport policies are modelled through the changes in physical activity, road traffic injury risk, and exposure to $PM_{2.5}$ air pollution. Some versions of ITHIM also predict changes in CO_2 emissions.
Clean Air Asia – iBAQ City Solutions Toolkit: Health and other impacts	An updated guidance on (a) Inter-agency collaboration for Health Impact Assessment, (b) Health Impact Assessment Tools for Cities, and (c) Stages and Types of Health Impact Assessment for Cities.
C40 – Air Quality through Urban Actions (AQUA) Tool	An Excel spreadsheet model that city staff are able to use with minimal guidance. The model utilizes population, exposure, health and economic cost data, along with epidemiologic evidence, to help users calculate how emission changes can benefit local air quality and health. Two options for analysis are available: rapid, and advanced analysis.
Stockholm Environment Institute – Long-range Energy Alternatives Planning Integrated Benefits Calculator (LEAP-IBC)	The Long-range Energy Alternatives Planning Integrated Benefits Calculator (LEAP-IBC) is an integrated planning tool to help governments jointly assess GHGs, SLCPs, and other air pollutant emissions; build mitigation scenarios; and understand how emission reductions benefit climate and health. It combines emissions scenarios with a global atmospheric chemistry transport model and exposure-response.
US Environmental Protection Agency – Solid Waste Emissions Estimation Tool (SWEET)	The Solid Waste Emissions Estimation Tool (SWEET) is an Excel-based tool that quantifies emissions of methane, black carbon, and other pollutants from sources in the municipal solid waste sector. The tool provides emissions and emissions reduction estimates at the project-, source-, and municipality-level. Cities can use this information to establish a baseline scenario, compare scenarios, analyze projects for potential emissions reductions, estimate the contribution of activities in the waste sector to overall city emissions, and track progress over time.



Guidance

Clean Air Asia – Guidance Framework for Better Air Quality in Asian Cities	Relevant guidance is included on (1) Ambient Air Quality Standards and Monitoring and (2) Emissions Inventories and Modelling. Relevant key guidance for understanding air pollution health impacts is the Guidance Area 3: Health and other impacts. It includes a roadmap and a step-by-step guide on developing a health impact assessment.
United Nations Economic Commission for Europe (UNECE) – An Introduction to Emissions Inventories	This slide deck from a UNECE workshop organised provides an introduction to emissions inventories, their drivers, international and national policy needs, methodologies, and emissions inventories' outputs.
Urban Emissions Info – Primer on Source Apportionment	This primer summarizes the purpose of source apportionment and the steps in the process in simple terms, via two different approaches.
WHO – Health impact assessment (HIA) methods	These guidelines emphasize setting air quality standards, assessing the health impacts of air pollution, and integrating air quality management into development projects. The WHO encourages Multilateral Development Banks (MDBs) to use health-based indicators and benchmarks in their projects to ensure that air quality considerations are adequately addressed.
WHO – Policy brief 1 on health impact assessments and incorporating health into environmental assessments	This policy brief provides guidance on the proportionate assessment of health impacts in environmental assessments. It contextualizes how public health, heath systems, and other sectoral actions overlap and function to protect and improve help. The guidance sets out questions that should be asked during the project planning and implementation phases in order to undertake an assessment of potential health impacts.

Summary

- The Toolkit provides key background information on air quality; you can make use of:
  - Figures 2 & 3 for info on air pollutants and SLCPs
  - Figures 4 & 5 for info on health, social and economic impacts
  - Toolboxes at the end of each chapter
- It is useful to have information on the air quality agreements, legislation and policy in your project's location
- DFIs are uniquely placed to be able to have a significant impact on global air quality