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From Policy to Practice: The World Bank's Global Approach to Air Quality Management

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Accelerating access to clean air is imperative in WBG's mission to end extreme poverty and boost prosperity on a livable planet

In 2020, ambient air pollution accounted for

>5.7M

deaths globally each year

With corresponding economic damages estimated at

4.7-6.5%

of global GDP

Globally, more than 3.3 billion people or

>45%

of global population are exposed to PM2.5 levels >25 µg/m³ (WHO interim target 2)

Already a crucial development challenge today, curbing air pollution is necessary for future growth and prosperity **on a livable planet**

WBG's Approach to Tackling Air Pollution

WBG's approach is multi-sectoral and long-term, with several key principles

- Holistic – environmental health, environment quality, climate
- Airshed-based to consider transboundary issues
- Cooperative and based on systematic dialogue
- Targeting pollutants with highest health impacts
- Based on pollution abatement potential and cost effectiveness

Knowledge

- Invest in collecting, assessing, and leveraging air-quality data
- Support evidence-based decision making
- Engage citizens in clean air action
- Provide technical assistance, new evidence generation, development of new tools

Partnerships

- Strengthen institutions for AQM Governance
- Place clean air at the center of the government's agenda
- Empower an airshed approach, promote knowledge exchange across airsheds.
- Enable cooperation between institutions and stakeholders

Financing

- Financing with catalytic impact
- Establish attractive environments for private sector financing.
- Removing environmentally harmful subsidies and policies.
- Innovative instruments, applied lending, policy support and de-risking private investments.

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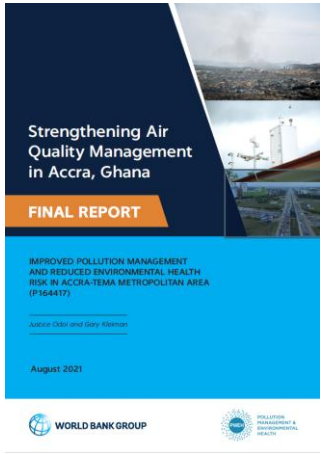
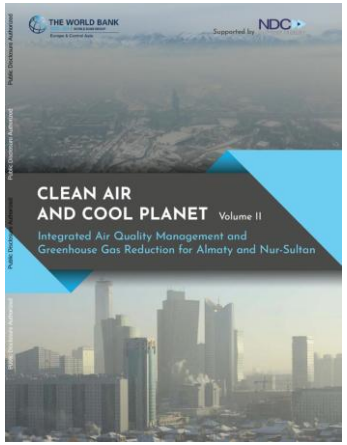
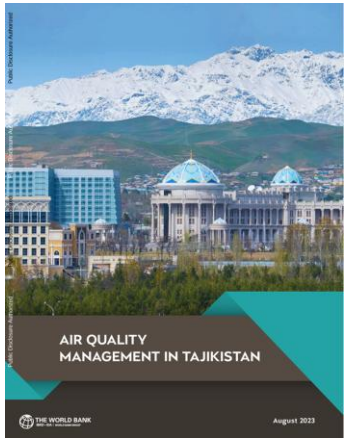
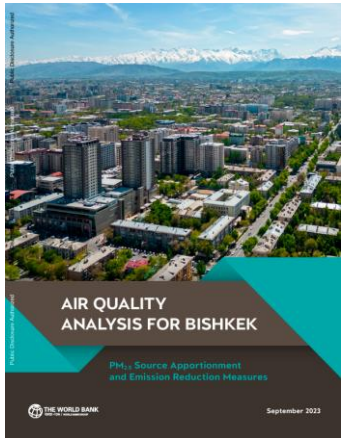
Development of Planning Tools for AQM and Airshed Management

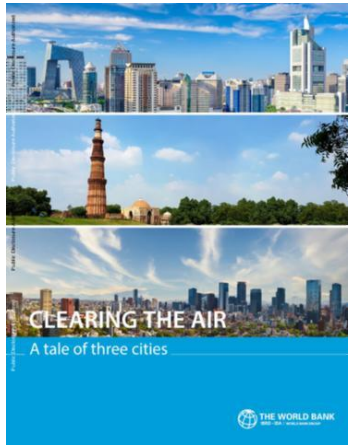
- Increasingly more sophisticated technical assistance including for cost of environmental degradation, detailed source apportionment, air pollution modeling, cost-effectiveness analysis (abatement curves), and health impact assessments
- Support countries in identifying most cost-effective pollution abatement measures – with climate co-benefits
- Support countries in airshed-level decision making and management











Forging and nurturing platforms
Convening stakeholders to close gaps

Air pollution moves across borders and sectors, facilitation of multisectoral and cross-border collaboration is key for effectiveness management

Central Asia: First high-level policy dialogue on AQM in CA

- More than 80 senior government officials
- Sharing challenges and actions to improve AQ in CA
- Experiences for AQM from other regions
- Commitment to deepening regional cooperation on AQ

South Asia: Indo-Gangetic Plains and Himalayan Foothills

- Platform for multi-country and multi-jurisdictional engagement- IGP-HF "Science Policy Dialogues"
- Evidence-basis for regional dimensions of air pollution
- Promotion of cross-country learning and advisory support

ASEAN: ASEAN Member States consultation on regional AQM

- ASEAN Secretariat leadership
- Consensus on value of ASEAN support in strengthening AQM in the region
- Identification of priority actions for a regional AQM Framework

Facilitating and catalyzing investments

- Decades of collaboration with country partners to invest in clean air
- Over US$3.5 billion from Latin America to Africa, across Europe and Asia, in the last 10 years

Nepal Ukraine Brazil China Indonesia Europe and Central Asia India Cote d'Ivoire Mali Peru Congo, Democratic Republic of Mozambique Morocco Colombia Kyrgyz Republic Burundi Viet Nam Pacific Islands Eastern and Southern Africa Armenia Liberia Pakistan Sri Lanka Rwanda Lao People's Democratic Republic Bangladesh Serbia Croatia Mexico Kazakhstan Bosnia and Herzegovina Bhutan Uzbekistan Kenya Afghanistan Egypt, Arab Republic of Iraq Lebanon Argentina Ecuador Chile St Maarten Honduras Poland Albania Türkiye Romania Philippines Ghana Burkina Faso Senegal Benin Madagascar Seychelles

Selected Air Quality Management project examples

KYRGYZ REPUBLIC

Air quality improvement project to (i) Strengthen AQM capacity of the Kyrgyz Republic, and (ii) Promote clean residential heating and urban greening measures in Bishkek to reduce PM2.5 emission

US$50M

POLAND

Clean Air Through Greening Residential Heating Program to reduce energy use and air pollution emissions from heating sources in single family buildings

US$291.3 M

MONGOLIA

Ulaanbaatar Clean Air project to enable consumers to access less-emitting heating appliances and services to further develop selected medium-term particulate matter abatement measures in Ulaanbaatar

US$27M

GLOBAL

Energy Sector Management Assistance Program (ESMAP) across the globe Clean Cooking Fund to provide access to 100 million people by 2025

US$440M

BOSNIA AND HERZEGOVINA

Strengthening AQM and reduce emissions from the residential heating and transport sectors

US$50M

TÜRKIYE

Industrial Emissions Reduction Project to unlock long-term financing through the Development and Investment Bank of Türkiye for Turkish manufacturers to adopt emission reduction technologies

US$416M

CHINA

Hebei Air Pollution Prevention and Control Program to reduce emissions of specific air pollutants in key sectors

US$500M

NEPAL

Under preparation to reduce PM2.5 emissions from priority sources and strengthen AQM

US$68M

MEXICO

Environmental Sustainability and Urban Resilience DPF for (i) strengthening environmental sustainability and resilience, and (ii) expanding access to resilient urban infrastructure and social housing.

US$750M

EGYPT

Greater Cairo Air Pollution Management and Climate Change Project. IBRD and GEF grant to reduce emissions from critical sectors and increase resilience to air pollution

US$200M

PAKISTAN

Punjab Clean Air program to strengthen AQM and reduce PM2.5 exposure in Lahore

US$300M

BANGLADESH

Environmental Sustainability and Transformation (BEST) to strengthen AQM and reduce emissions from transport

US$250M

COLOMBIA

Sustainable development and green growth development policy loans to support policies and institutional measures for green growth in transport, energy, environmental health and natural resources and, improving environmental quality by reducing PM2.5

US$1.2 Bn

RWANDA AND KENYA

Promotion and distribution of bioethanol-based cookstoves and bioethanol cooking fuel to households, through small and medium-sized enterprises along with the associated generation and monetization of carbon credits. (MIGA)

US$126M

INDIA

Clean Air Project to strengthen air quality management and reduce emissions from Priority Sectors in Haryana

US$305M

Selected engagements and dialogue in Southeast Asia

China and the JingJinJi Airshed

The Bank's long-term engagement included:

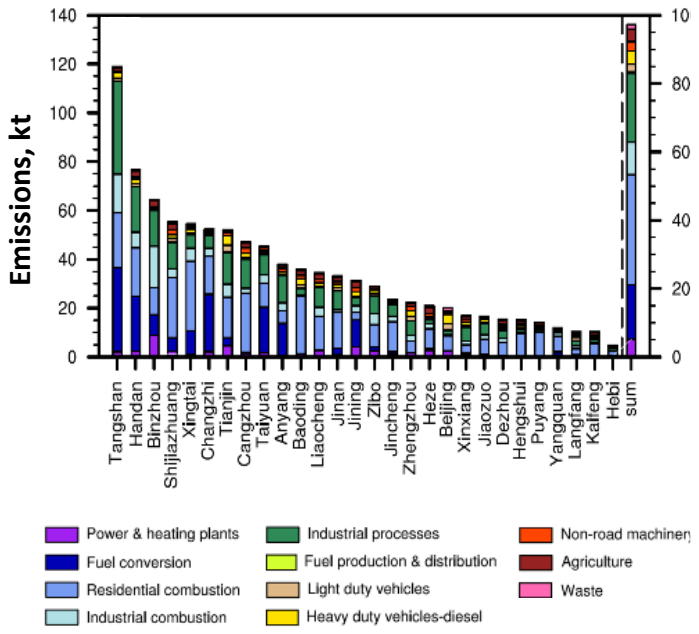
Long-term, increasingly sophisticated technical assistance program

Cost of environmental degradation; detailed source apportionment; air pollution modeling and cost-benefit analysis

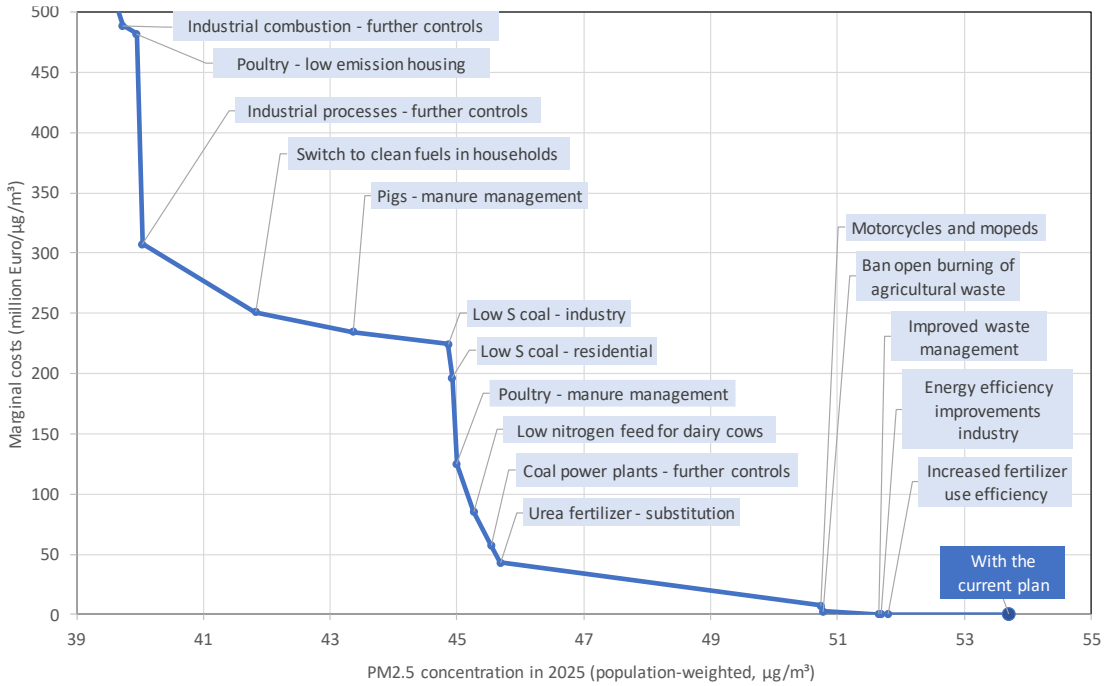
Investment lending

Informed by TA program:
US$500 m Program-For-Results loan

PM2.5 SOURCES BY CITY, 2015



COST-EFFECTIVE MEASURES TO REDUCE PM2.5 EXPOSURE

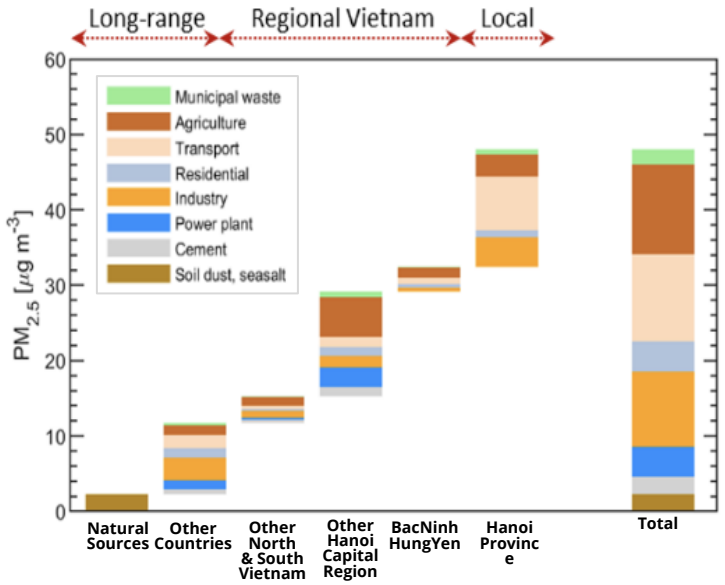


Air Quality improvement in the Greater Hanoi area

In 2015, **40% of Hanoi's population** were exposed to PM2.5 concentrations exceeding 45 µg/m^3, nearly five times higher than WHO recommendation

Hanoi is **determined to improve air quality**, working with development partners including the World Bank

AIR POLLUTION SOURCES IN THE HANOI



World Bank leading technical analyses:

PM MONITORING & APPORTIONMENT

First study to measure pollution sources over a one-year period

SIMULATION

of the costs, health & ecosystem benefit of *user-defined packages of emission control measures*

COST-EFFECTIVENESS ANALYSIS

to identify least-cost package *of measures that achieve user-defined policy targets*

Recommendations to be mainstreamed into a dedicated AQM action plan:

1. **Further strengthen emission limit values** for power plants and industry and measures for craft villages
2. **Enforce the ban on open burning** of crop residues & **introduce measures to suppress road dust**
3. Enforce the emission control standards; Accelerate electrification; establish low emission zones; promote public transport
4. Develop sustainable **waste management strategies**
5. Address sources of **ammonia from agriculture**

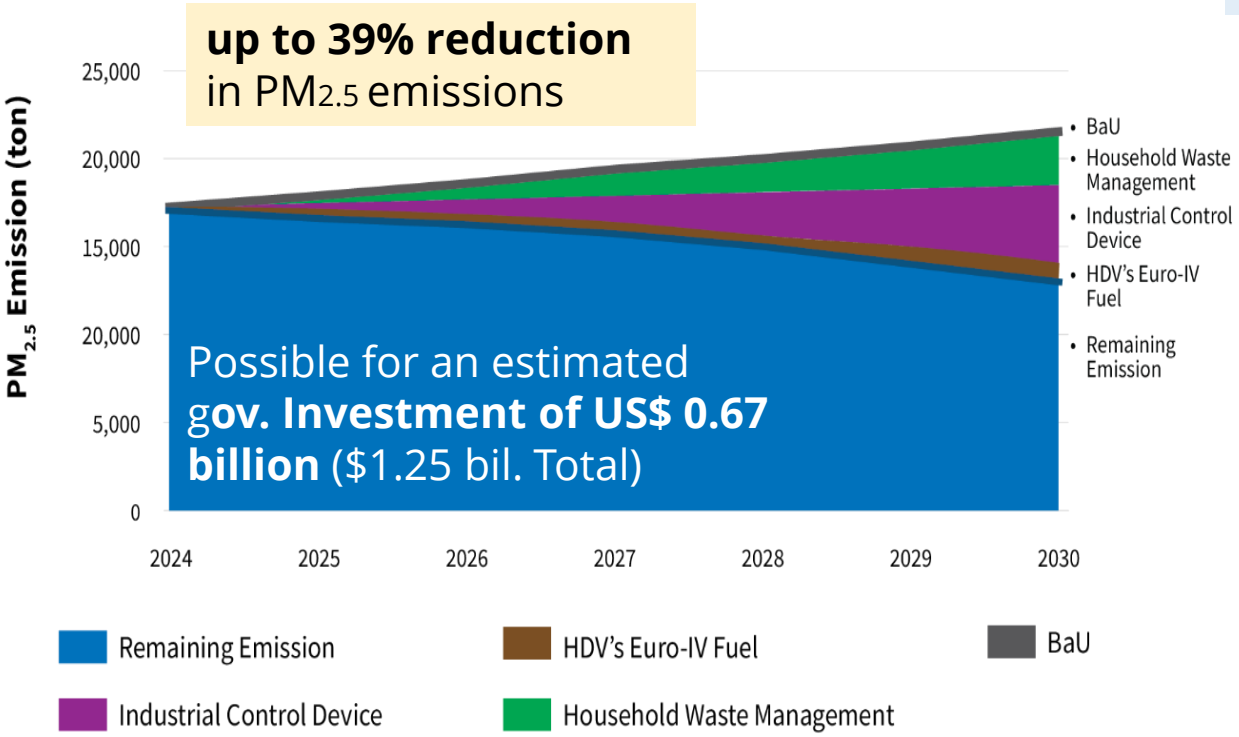
Clearing the Air in Greater Jakarta

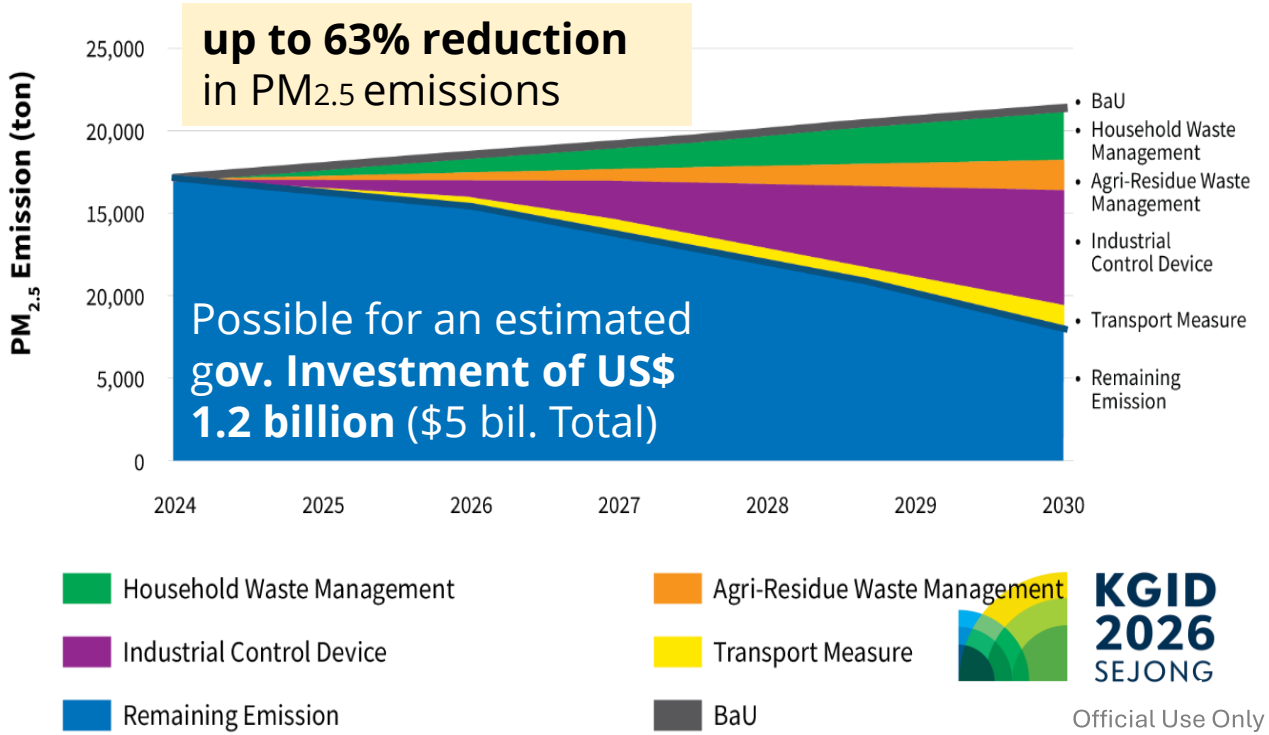
A new WBG report presents a cost-effectiveness analysis (CEA) of AQM measures in Greater Jakarta. Results are being used for prioritization and action plan development.

Scenario analysis shows what is possible from different packages of interventions:

Key Findings :

1. **Severe and costly problem:** PM2.5 increasing, causing ~7,000 premature deaths annually and economic losses of ~US$3bn in Jakarta alone.
2. **Industry & power:** Coal-based facilities drive roughly half of PM2.5; upgrading pollution control devices and shifting from coal to gas are high-impact measures.
3. **Transport:** Heavy-duty trucks dominate emissions — Increasing availability of Euro IV+ fuels is key a priority.
4. **Governance:** Greater Jakarta spans 3 provinces, but coordination and monitoring remain limited — requiring a Greater Jakarta airshed authority and shared and upgraded data systems.





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Thank you!

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