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Air pollution and BAQ 2023 health

**Dr Akeem Ali, Head of Office, WHO Asia-Pacific Centre for
Environment and Health**

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Health effects of air pollution

Key pollutants: PM, CO, O₃, NO₂, SO₂

Exposure pathway: respiratory tract

Particulate matter impact: can penetrate deep into lungs and bloodstream

Short-term health effects of air pollution exposure

- Ear, nose, and throat irritation – coughing, difficulty in breathing, water in eyes
- Respiratory infections
- Reduced lung function
- Aggravation of allergies, asthma



Long-term health effects of air pollution exposure

- Increased risk of stroke
- Chronic heart disease
- Chronic obstructive pulmonary disease
- Lung cancer

Air quality and health in the Western Pacific Region

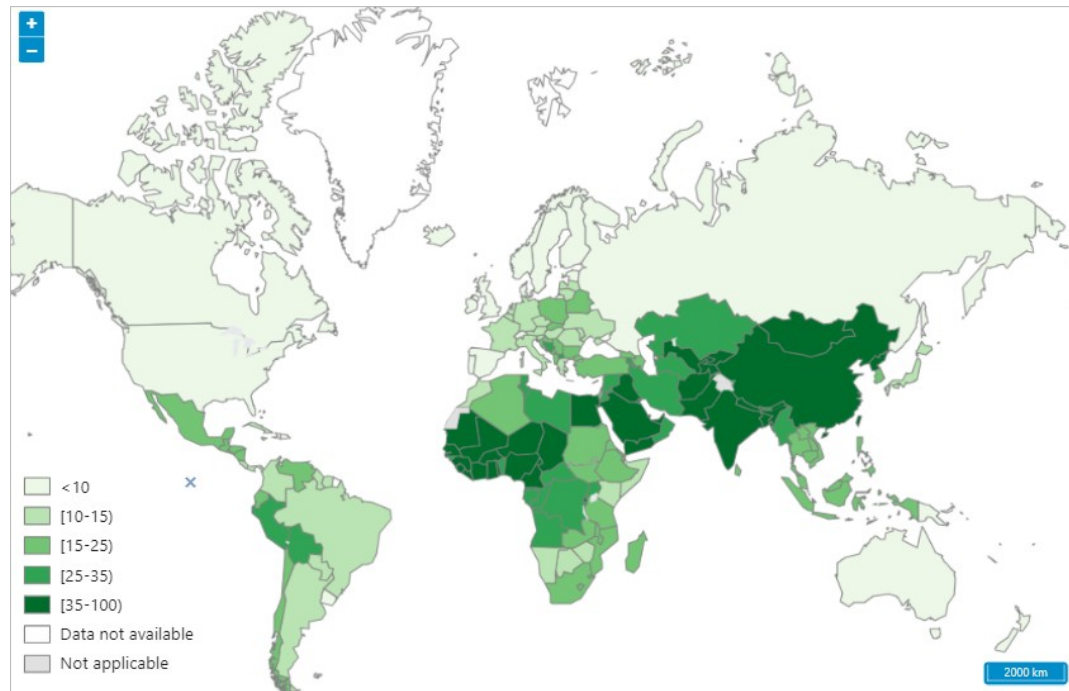
- Clean air is a basic human right and fundamental for human health, well-being and sustainable development
- Unequal burden and biggest impacts in lower- and middle-income countries
- The Western Pacific Region shares great mortality and morbidity burden
- Non-communicable diseases attributable to ambient PM pollution per 100 000 population :
 - **78.65** in the Region
 - 47.5 global

[Ambient air pollution attributable deaths \(who.int\)](https://www.who.int)

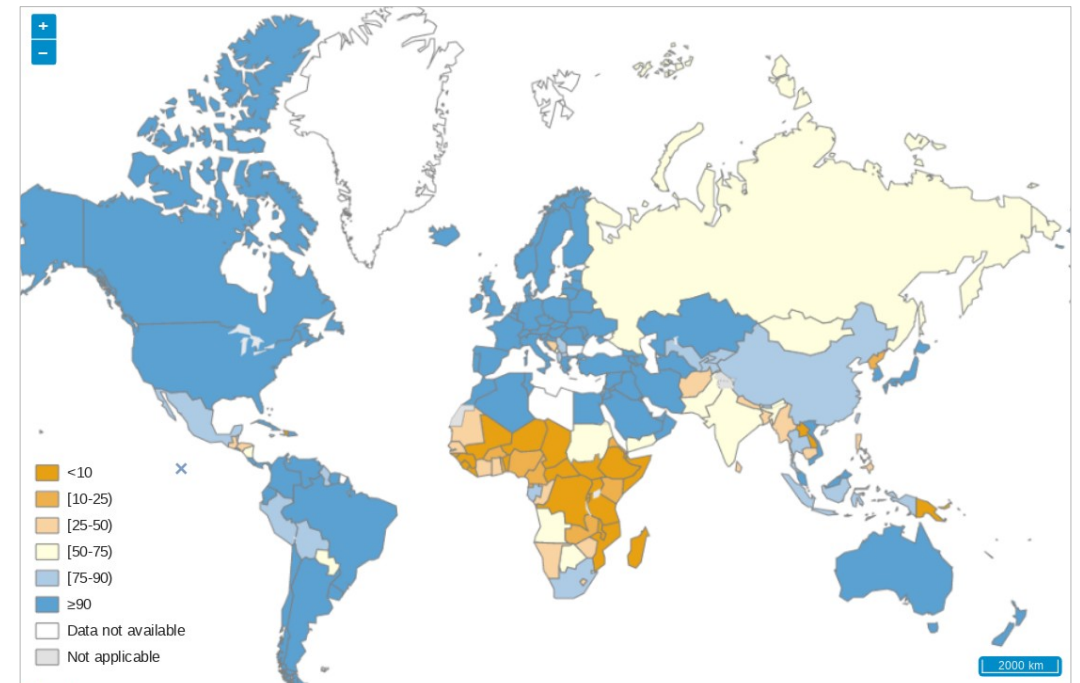


Air quality in the Western Pacific: key indicators

Concentrations of fine particulate matter (PM_{2.5})



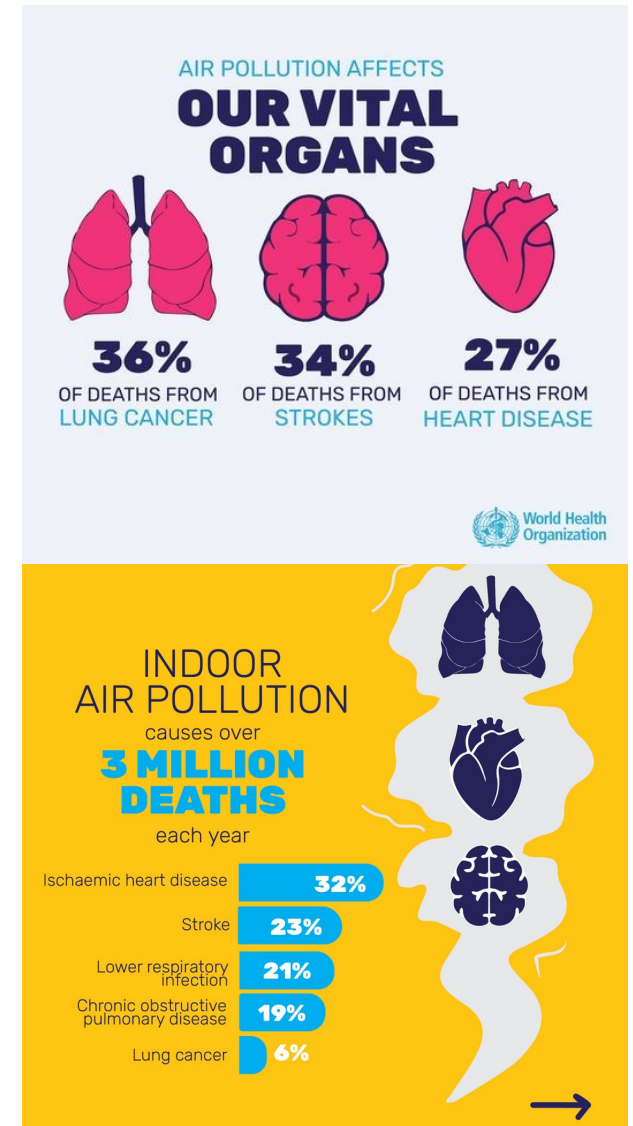
Population with primary reliance on clean fuels and technologies for cooking (%)



Source: WHO Air Quality Database

Health impacts of air pollution

- **Ambient air pollution – 4.2 million premature deaths globally**
 - 89% in LMIC
 - Greatest number in the WHO South-East Asia & Western Pacific Regions
- **Indoor air pollution – 3.2 million deaths globally**
 - 237,000 deaths of children under 5
- **2.4 billion globally cook using open fires or inefficient stoves which generate harmful household air pollution**
 - leads to noncommunicable diseases
- **The combined effects of ambient & household air pollution are associated with 6.7 million premature deaths annually**
- **If 2021 WHO AQG level for PM_{2.5} is achieved:**
3.1 million deaths can be avoided in the Region -> benefit of **US\$ 4.6 trillion**



Health and cost benefits from reducing pollutant concentrations to AQG levels

How many premature deaths could be avoided?

If achieved 2021 WHO AQG level for PM_{2.5} :

- **3.1 million deaths** avoided in the Region → annual economic benefit of **US\$ 4.6 trillion**
- Gradual achievement of the interim targets bring substantial health benefits, in particular in areas with high PM_{2.5} concentrations

Reducing premature death by achieving AQG level in the Western Pacific Region (scenario analysis for 2016 air pollution levels)

IT 1	IT 2	IT 3	IT 4	AQG level
9%	20%	36%	50%	80%

Sources:

[Health and economic benefits of meeting WHO air quality guidelines, Western Pacific Region - PMC \(nih.gov\)](#)

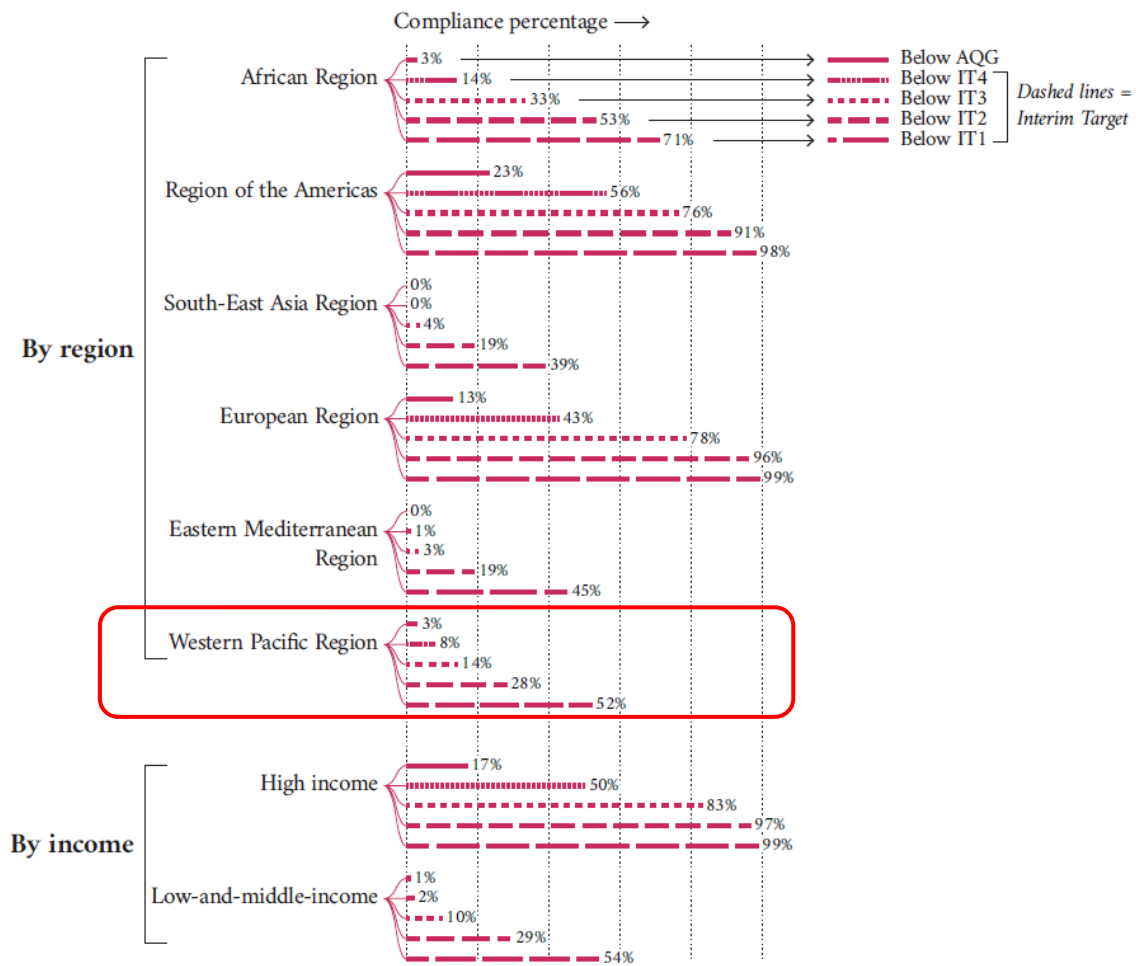
World Bank, 2021

WHO global air quality guidelines, 2021

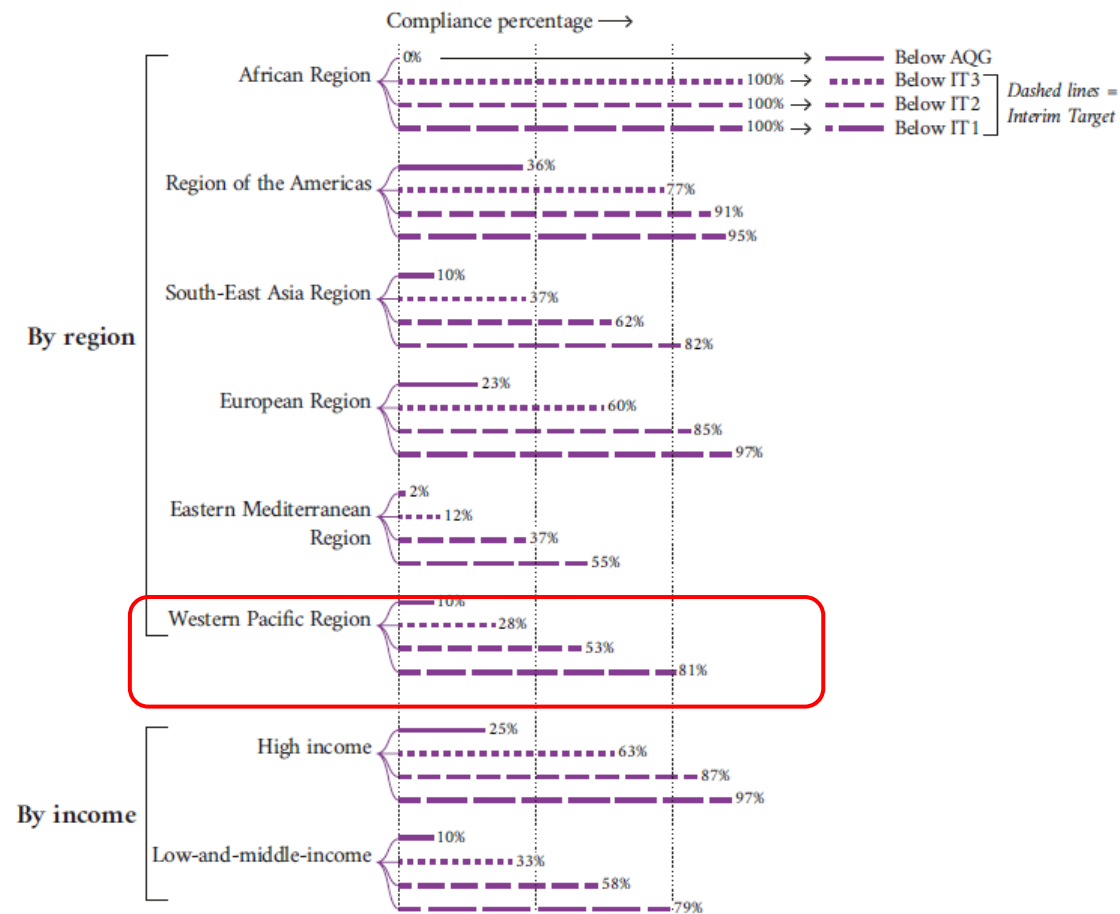


Compliance with WHO Air Quality Guidelines

Particulate matter (annual average)



Nitrogen dioxide (annual average)



Key challenges in addressing air pollution

Diverse sources of pollution	<ul style="list-style-type: none">• Each source requires different strategies and policies for effective management• Biomass burning, municipal solid waste, transport, energy residential and industrial, etc.
Technological and economic challenges	<ul style="list-style-type: none">• Developing and implementing advanced pollution control technologies can be costly and technologically challenging, particularly in developing countries.• Key challenge to balance economic growth and environmental protection
Policy and regulatory challenges	<ul style="list-style-type: none">• Effective policy implementation to control air pollution requires coordination across different levels of government and sectors.• Administrative and governance issues are complex and interwoven with major socioeconomic issues
International cooperation	<ul style="list-style-type: none">• Transboundary issue of air pollution.
Monitoring and data collection	<ul style="list-style-type: none">• Technically and financially challenging
Health impact assessment	<ul style="list-style-type: none">• Ongoing challenges in researching and quantifying health effects of air pollution• Necessary for informing policy decisions
Urban planning and infrastructure	<ul style="list-style-type: none">• Effective urban planning and development of green infrastructure can mitigate pollution but require long-term planning and investment

Examples of interventions in the region

Policies

China

- Setting time-bound targets for major air pollutants in its five-year plans

Japan:

- Zero Emissions Strategy for net-zero CO2 emissions by 2050

Mongolia

- National Program for Air Pollution Reduction with 50 measures
- Master Plan for decreasing air pollution in Ulaanbaatar city was approved in 2018

Korea

- Launched the 4th Fine Dust Seasonal Management program

Interventions

China

- Bluetech Clean Air Alliance for advanced clean air technologies

Japan

- Hydrogen-powered buses in cities

Mongolia

- Banned raw coal use in Ulaanbaatar city

Korea

- Ban grade 5 vehicles in the cities (Seoul, Busan, and Daegu) and increase use of zero-emission vehicles
- Sector-specific dust reduction measures

Examples of interventions in the region

Financial incentives

China

- Pollution Protection Tax Law to incentivize companies to reduce emissions

Mongolia

- Providing discounted bank loans for environmentally friendly products (electric heaters and cars)

Korea

- Providing 5% reduction in automobile tax, and other discounts through the Commute Trip Reduction programme

Summary of interventions

Substantial efforts and progress being made in countries/cities:

- Policy improvements
- Enforcement by effective interventions such as transport, energy sectors
- Adequate financing mechanisms
- Role and impact of cities in advancing national, regional and global agenda (Seoul, Tokyo, Ulaanbaatar)

Realizing the co-benefits of action on climate and the environment

WHO Asia-Pacific Centre for Environment and Health has launched a new series of briefs for Parliamentarians on the co-benefits of action on climate change and the environment.

Briefs are available on topics such as:

- Air pollution
- Chemical safety
- Climate change
- Climate-resilient and environmentally Sustainable Primary Health care facilities
- Water, sanitation and hygiene in healthcare facilities



Realizing the co-benefits of action on climate and the environment

Key reasons for immediate action:

- 2 million deaths in the Western Pacific in 2019 from ambient and household air pollution
- 99% of the global population breathe air exceeding WHO limits
- Many air pollutants contribute to climate change

Actions for parliamentarians to consider

Lawmaking:

- Be informed about legal frameworks for AQ
- Advocate for legislation aligning with WHO guidelines and interventions supporting clean energy transition

Representation and Leadership:

- Understand and communicate the health risks of air pollution to constituents
- Promote govt leadership in energy efficiency
- Engage in regional and global dialogues on AQ

Budgeting:

- Prioritize activities with potential health co-benefits
- Redirect funds from polluting subsidies to clean energy incentives

Oversight and accountability:

- Ensure governance mechanisms to mitigate industry manipulation (e.g. creation of anti-corruption agencies)
- Mandate responsible entities to provide updates to parliament

Key considerations

- Setting and enforcing health-based air quality standards and policies aligned with WHO AQG are key drivers for reducing pollution and its adverse effects
- Strengthen air quality management and accountability mechanisms at all levels and promote proactive multisectoral actions
- Develop/maintain vigilant monitoring, surveillance and reporting systems
- Policies and investments supporting cleaner transport, energy efficient homes, power generation, industry and better municipal waste management would reduce key sources of outdoor air pollution.
- Integrate health impact assessments in environmental policy decisions
- Prioritize green urban planning and sustainable city development
- Community involvement, engagement and empowerment critical to success