

# Air pollution and BAQ 2023 health

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# Health effects of air pollution

**Key pollutants:** PM, CO, O<sub>3</sub>, NO<sub>2</sub>, SO<sub>2</sub>

**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

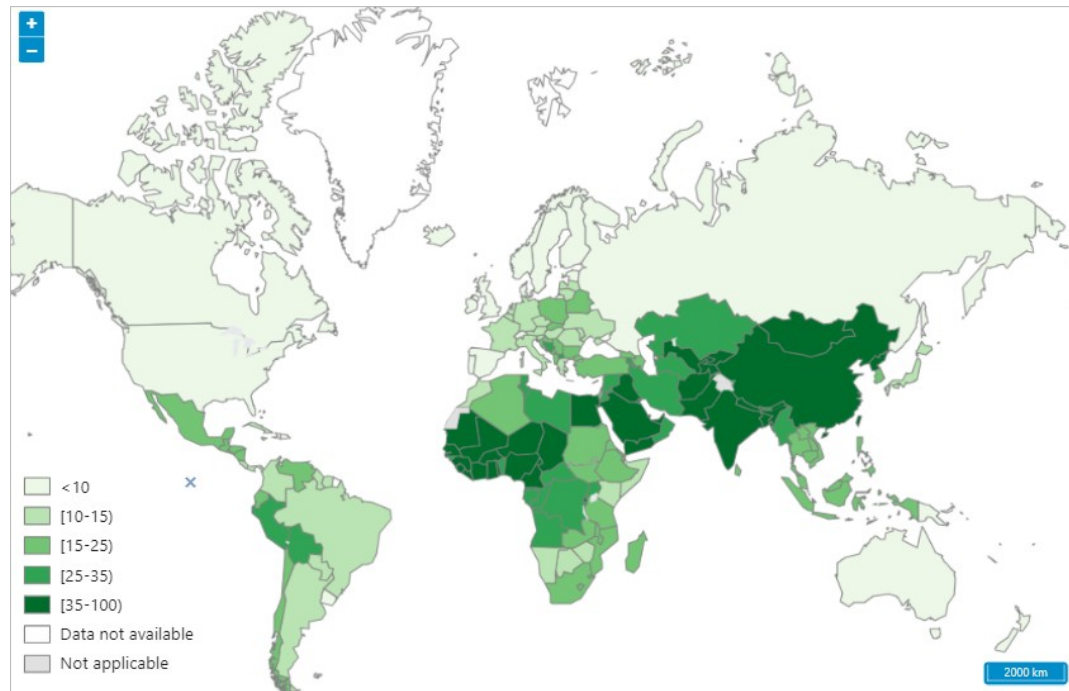
- Clean air is a basic human right and fundamental for human health, well-being and sustainable development
- Unequal burden and biggest impacts in lower- and middle-income countries
- The Western Pacific Region shares great mortality and morbidity burden
- Non-communicable diseases attributable to ambient 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)

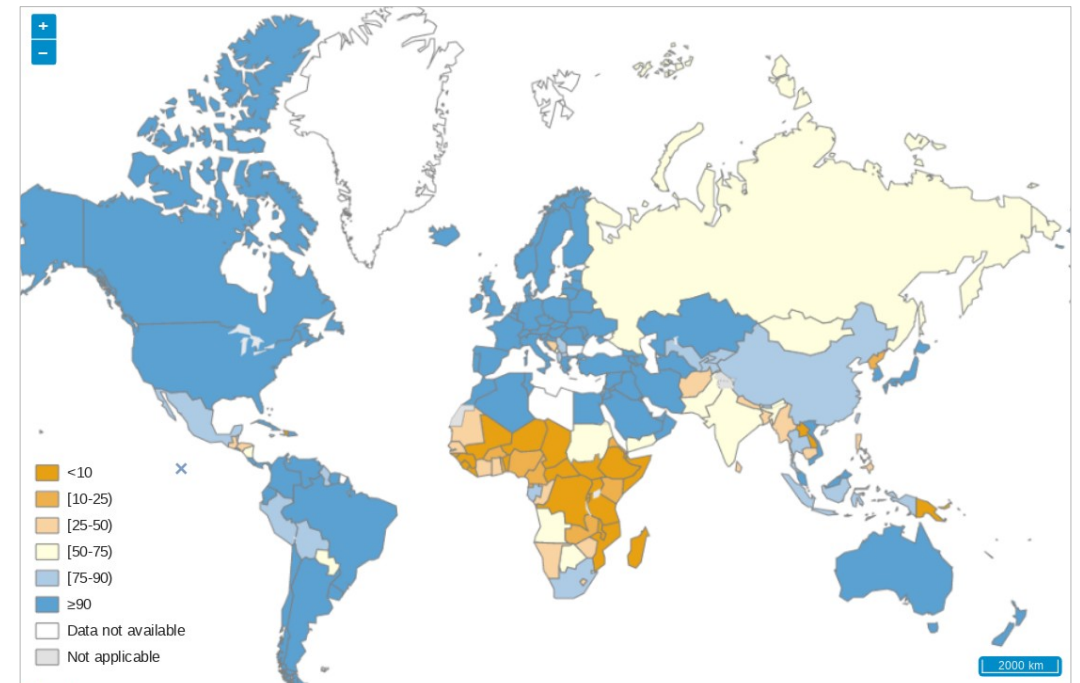


# Air quality in the Western Pacific: key indicators

## Concentrations of fine particulate matter (PM<sub>2.5</sub>)



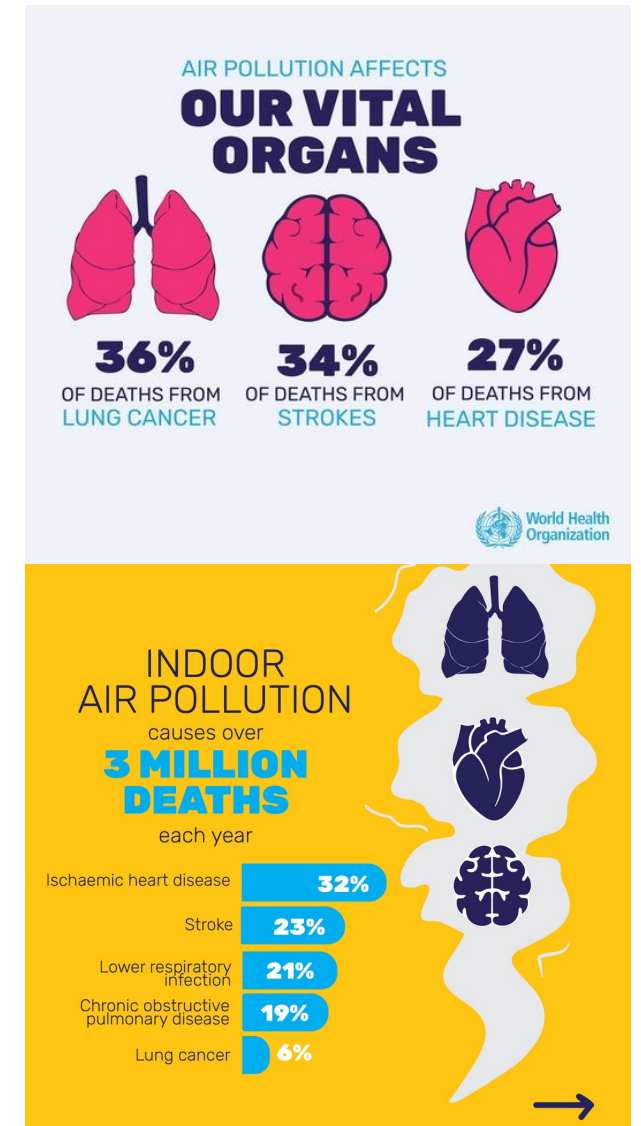
## Population with primary reliance on clean fuels and technologies for cooking (%)



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<sub>2.5</sub> 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<sub>2.5</sub> :

- **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<sub>2.5</sub> 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 \(nih.gov\)](#)

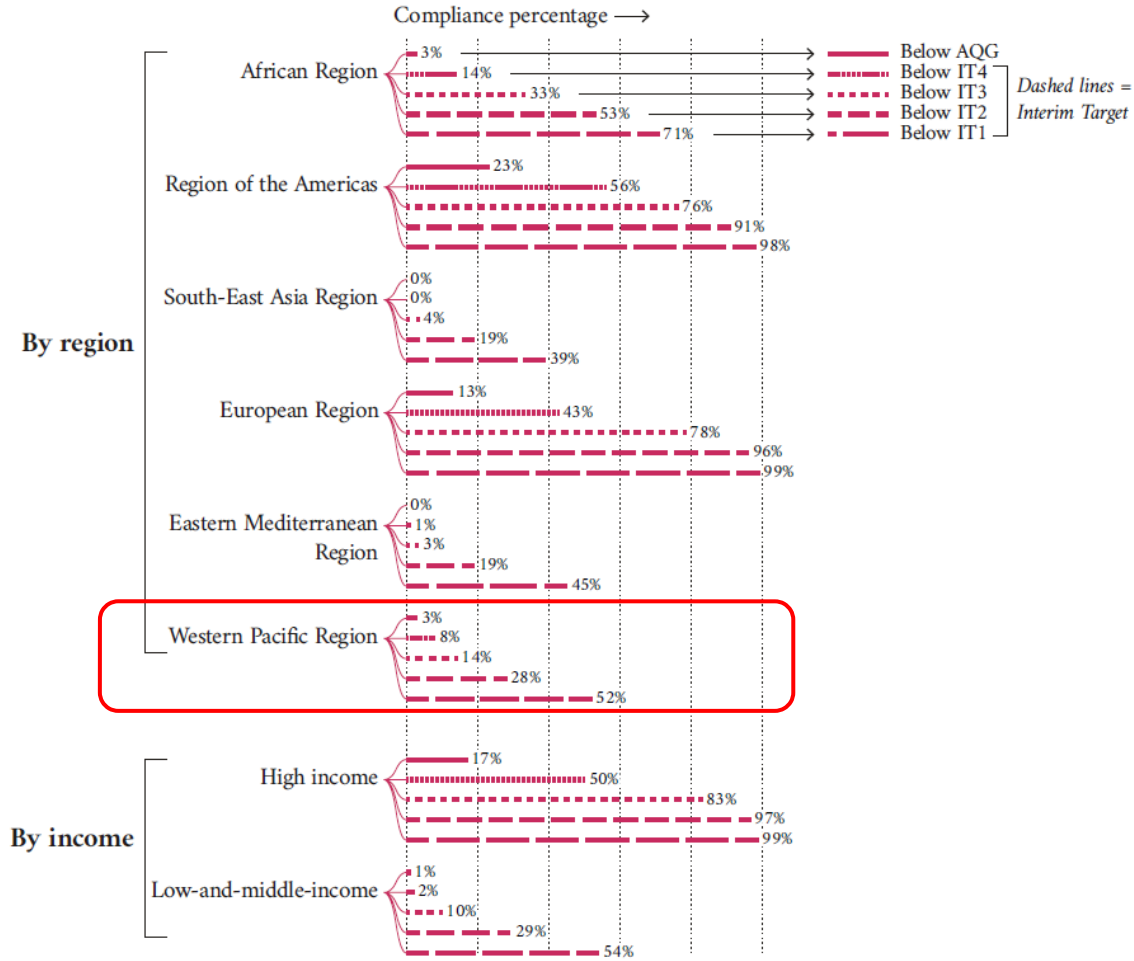
World Bank, 2021

WHO global air quality guidelines, 2021

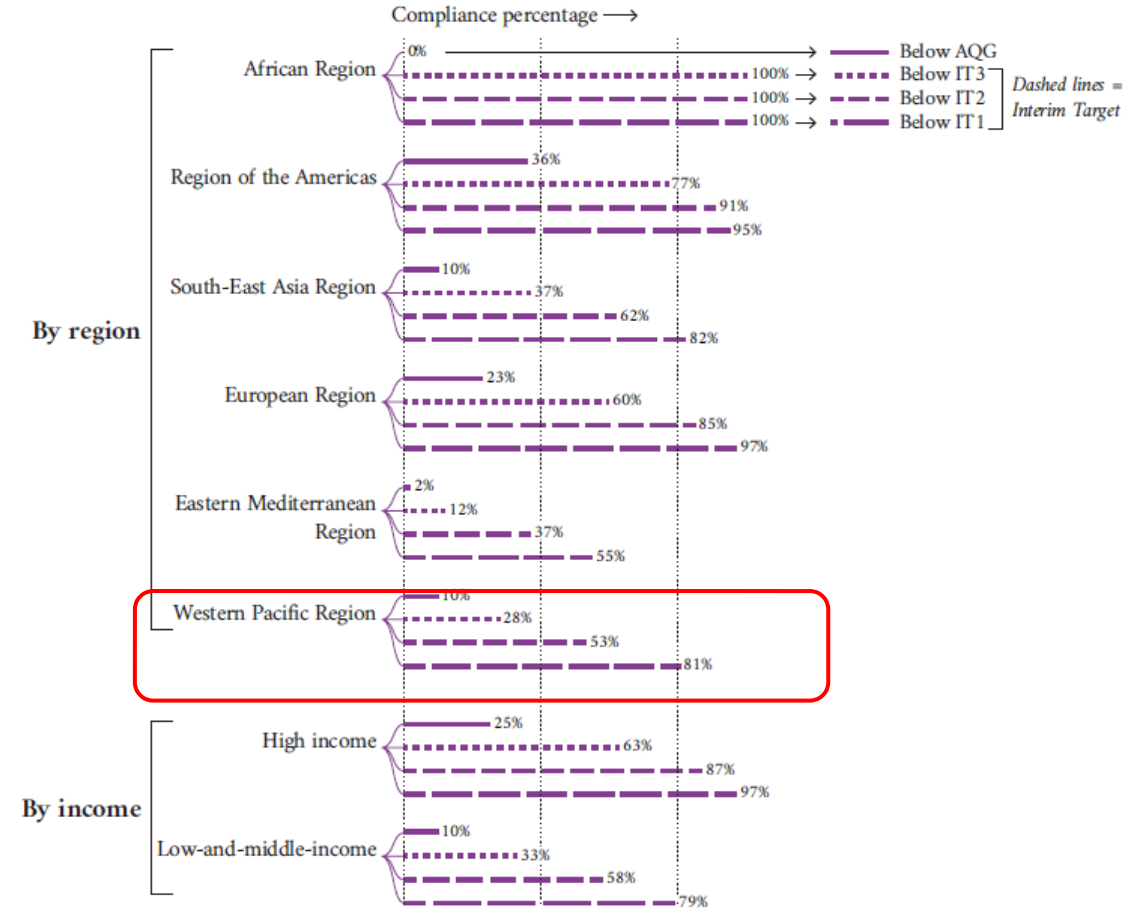


# Compliance with WHO Air Quality Guidelines

## Particulate matter (annual average)



## Nitrogen dioxide (annual average)





# Key challenges in addressing air pollution

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



# 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