World Health Organization

Western Pacific Region

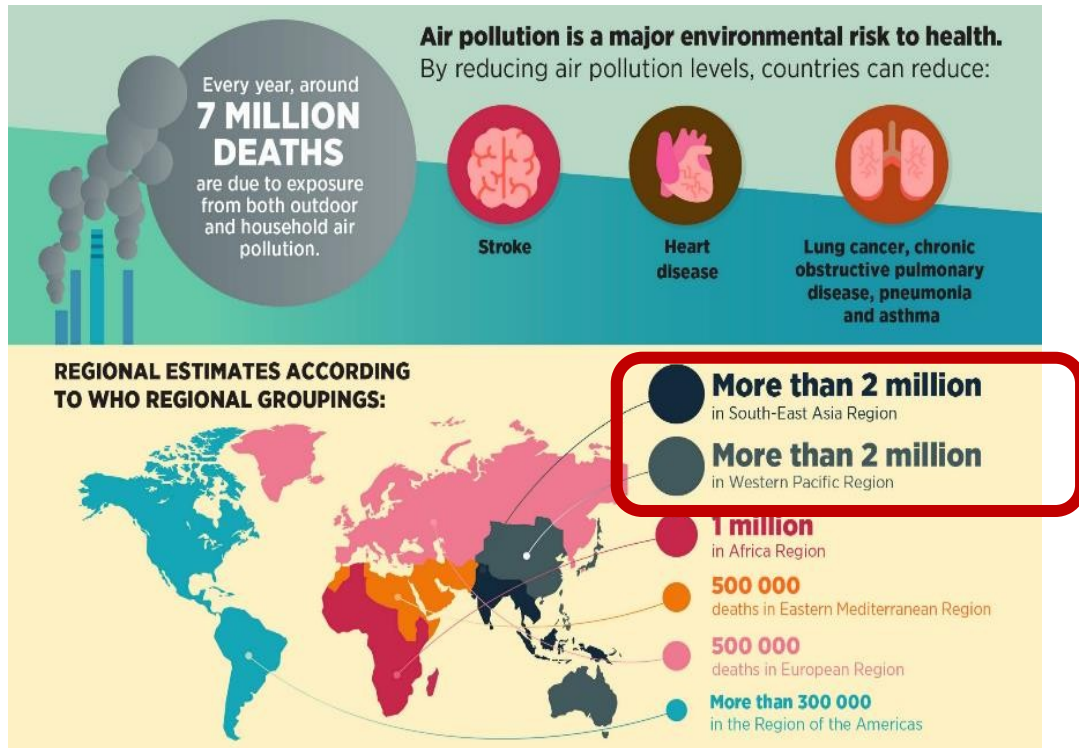# National Air Quality Standards: A Western Pacific Regional Overview

BAQ 2023

Ambition to Action: Clean air for health and the climate

Health

15 November 2023, Manila

Air quality and health in the Western Pacific Region

Air pollution is a major environmental risk to health. By reducing air pollution levels, countries can reduce:

Every year, around **7 MILLION DEATHS** are due to exposure from both outdoor and household air pollution.

Stroke

Heart disease

Lung cancer, chronic obstructive pulmonary disease, pneumonia and asthma

REGIONAL ESTIMATES ACCORDING TO WHO REGIONAL GROUPINGS:

More than 2 million in South-East Asia Region

More than 2 million in Western Pacific Region

1 million in Africa Region

500 000 deaths in Eastern Mediterranean Region

500 000 deaths in European Region

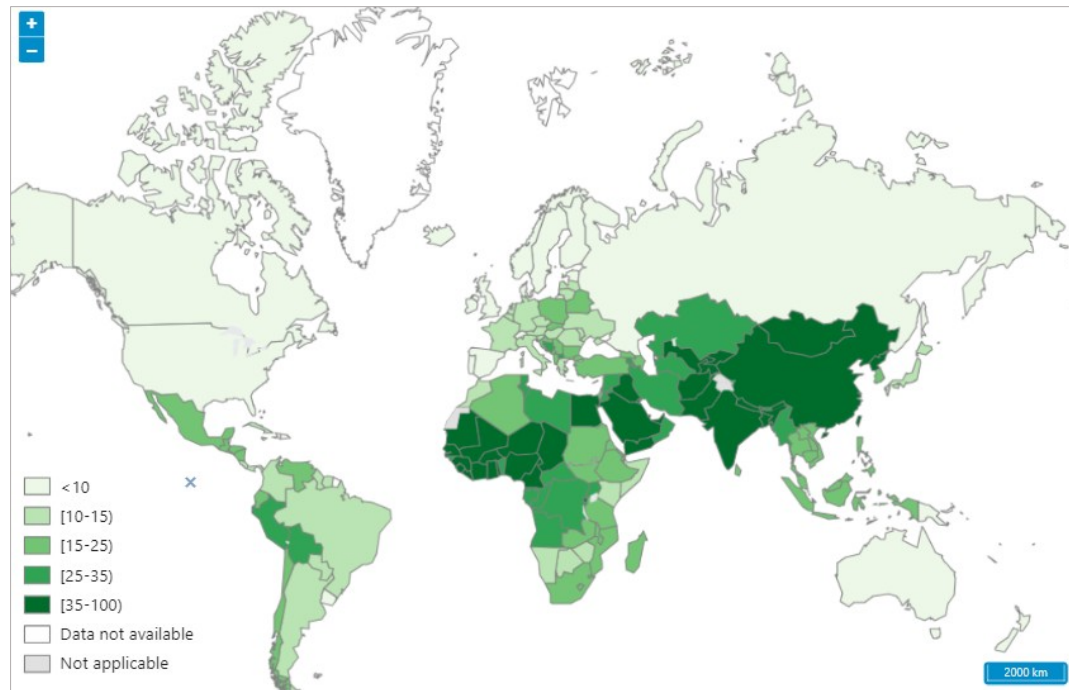**More than 300 000** in the Region of the Americas

- 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 :
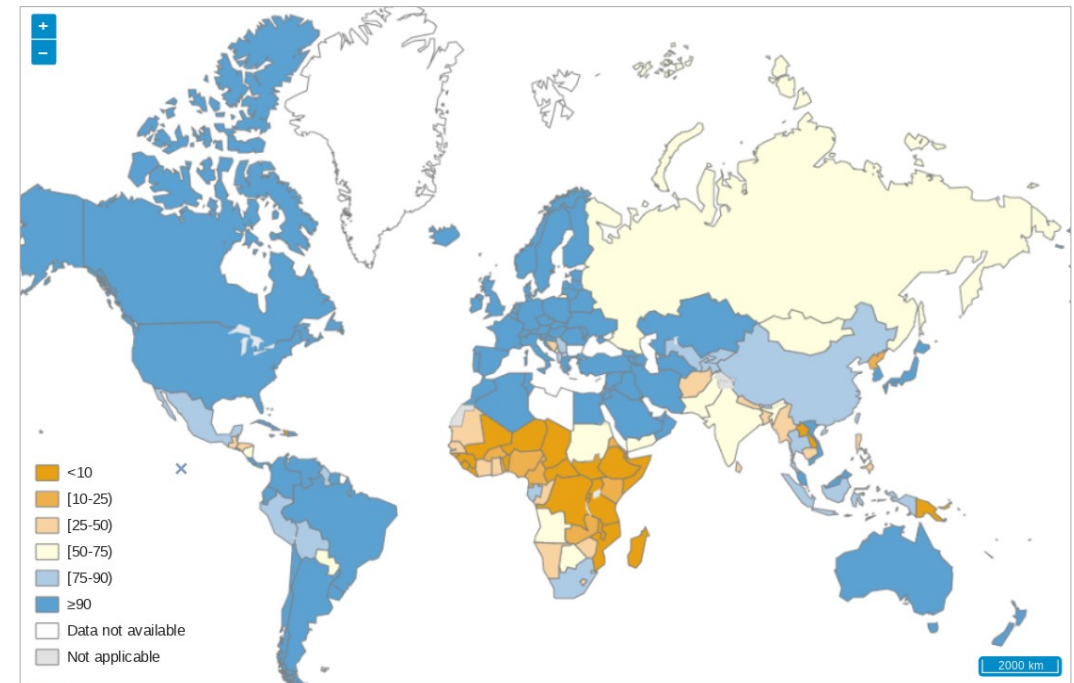 - **78.65** in the Region
  - 47.5 global

Ambient air pollution attributable deaths (who.int),

Air quality in the Western Pacific: key indicators

Concentrations of fine particulate matter (PM$_{2.5}$)

Legend:
- <10
- [10-15)
- [15-25)
- [25-35)
- [35-100)
- Data not available
- Not applicable

2000 km

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

Legend:
- <10
- [10-25)
- [25-50)
- [50-75)
- [75-90)
- ≥90
- Data not available
- Not applicable

2000 km

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TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS
a UNEP convened initiative

Air quality and health in the Western Pacific: key indicators

- **SDG indicator 3.9.1:** Mortality rate attributed to household and ambient air pollution (per 100 000 population)

  →
  - Global: 87
  - Western Pacific Region: **110** (total cause)

- **SDG indicator 7.1.2:** Population with primary reliance on clean fuels and technologies (%)

  →
  - Global: 72%
  - WPR: 83%; rural (68%) & urban (91) disparity

- **SDG indicator 11.6.2:** Annual mean levels of fine Particulate Matter ($PM_{2.5}$) in cities

  →
  - Global: 31.7 μg/m3
  - WPR: 33 μg/m3

Annual average masks large disparity

Implementing WHO Air Quality Guidelines greatly contribute to achieving SDGs

Source: The global health observatory, https://www.who.int/data/gho/data/themes/air-pollution?lang=en

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Health-based Air Quality Guidelines

Driving incremental improvement of air quality implementing WHO Air Quality Guidelines

Pollutant	Averaging time	Interim target				AQG level
		1	2	3	4	
PM$_{2.5}$, µg/m^3	Annual	35	25	15	10	5
	24-hour[a]	75	50	37.5	25	15
PM$_{10}$, µg/m^3	Annual	70	50	30	20	15
	24-hour[a]	150	100	75	50	45
O$_3$, µg/m^3	Peak season[b]	100	70	–	–	60
	8-hour[a]	160	120	–	–	100
NO$_2$, µg/m^3	Annual	40	30	20	–	10
	24-hour[a]	120	50	–	–	25
SO$_2$, µg/m^3	24-hour[a]	125	50	–	–	40
CO, mg/m^3	24-hour[a]	7	–	–	–	4

[a] 99th percentile (i.e. 3–4 exceedance days per year).
[b] Average of daily maximum 8-hour mean O$_3$ concentration in the six consecutive months with the highest six-month running-average O$_3$ concentration.

WHO global air quality guidelines

Particulate matter (PM$_{2.5}$ and PM$_{10}$), ozone, nitrogen dioxide, sulfur dioxide and carbon monoxide

World Health Organization

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Tremendous 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

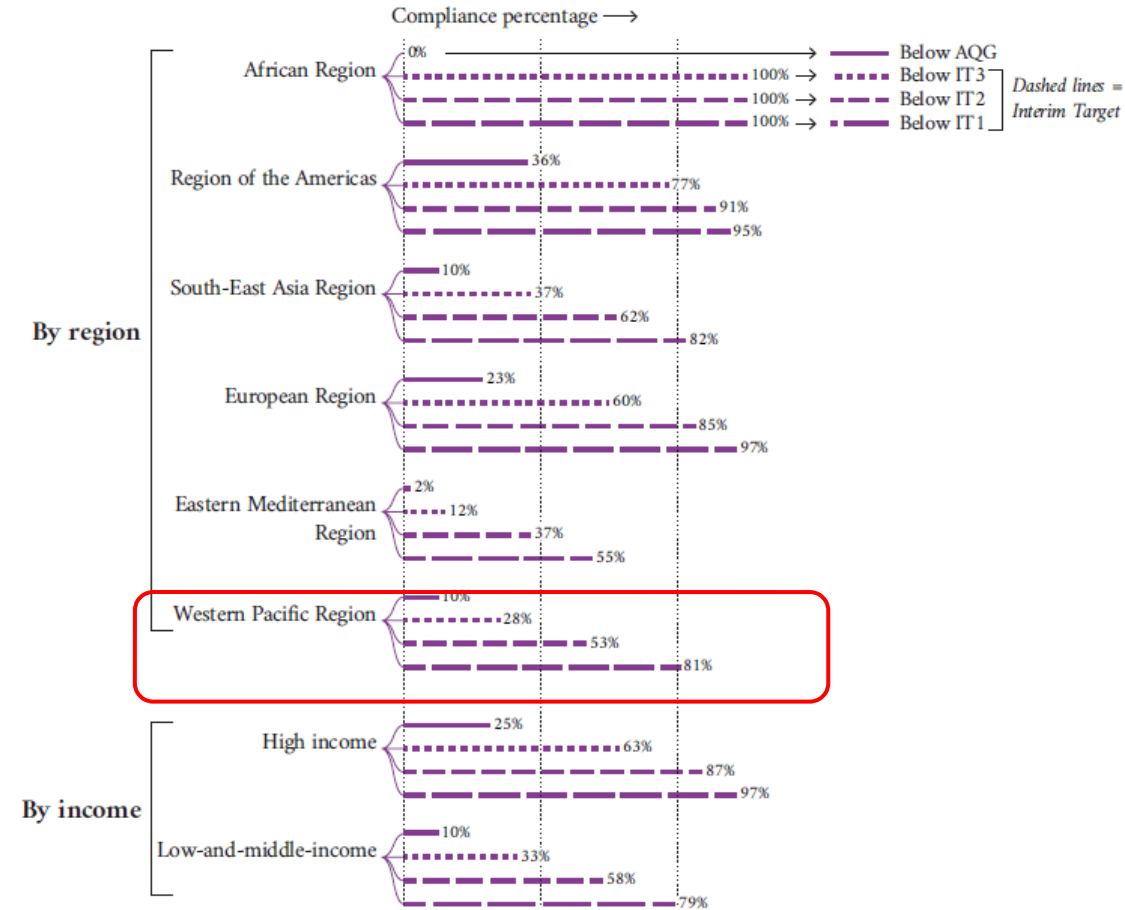| Reducing premature death by achieving AQG level in the Western Pacific Region (scenario analysis for 2016 air pollution levels)				
IT 1	**IT 2**	**IT 3**	**IT 4**	**AQG level**
9%	20%	36%	50%	80%

Compliance with WHO Air Quality Guidelines
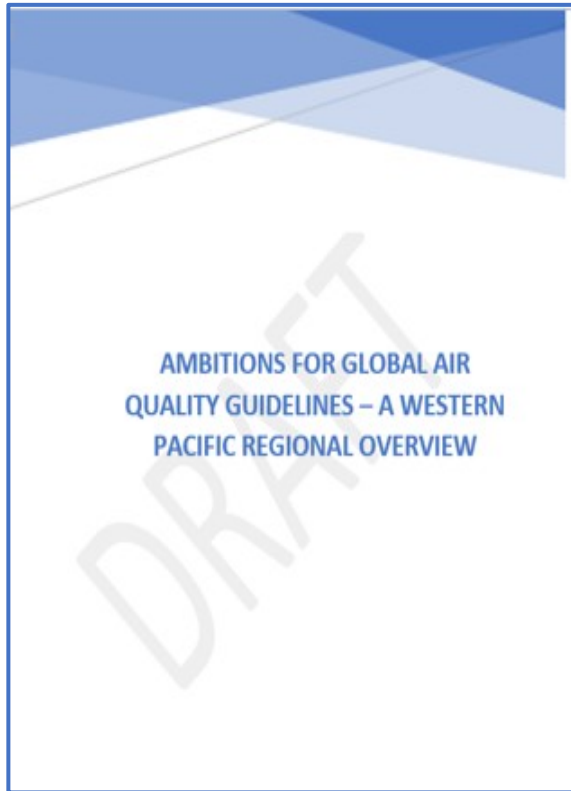

Particulate matter (annual average)
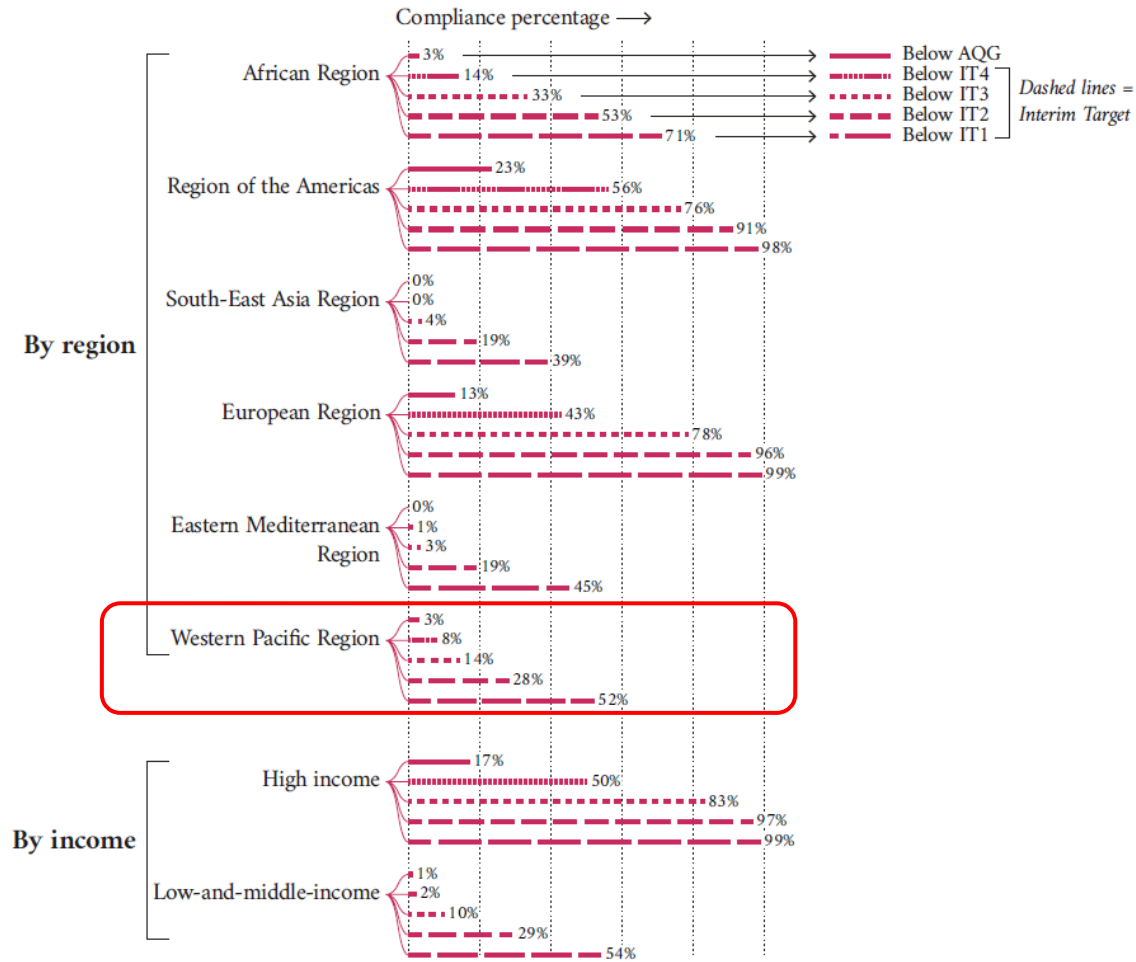
Nitrogen dioxide (annual average)

Translating global air quality guidelines in national standards

AMBITIONS FOR GLOBAL AIR QUALITY GUIDELINES – A WESTERN PACIFIC REGIONAL OVERVIEW

- A snapshot of the current air quality standards set by Member States of WPR for tracking progress progress towards achieving 2021 WHO AQG recommendations

- Focus on classical air pollutants: $PM_{2.5,}$ PM_{10}, ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide

- Prompting national and regional actions to strengthen regulatory framework and enforcement capacities

Overview of national air quality standards

| Note: Work in progress

Country experiences: Australian Ambient Air Quality Standards

Pollutant	Averaging period	Maximum (ambient) concentration	Goal within 10 years (maximum allowable exceedences)
CO	8 hours	9.0 ppm	1 day a year
NO_2	1 hour	0.12 ppm	1 day a year
	1 year	0.03 ppm	none
Photochemical oxidants (as ozone)	1 hour	0.10 ppm	1 day a year
	4 hours	0.08 ppm	
SO_2	1 hour	0.20 ppm	1 day a year
	1 day	0.08 ppm	
	1 year	0.02 ppm	none
Lead	1 year	0.50 µg/m³	none
PM_{10}	1 day	50 µg/m³	5 days a year
$PM_{2.5}$[a]	1 day	**25 µg/m³**	–
	1 year	**8 µg/m³**	–

Notes:
a. Advisory reporting standards

- Based on international scientific evidence and WHO AQG World

- Climate, geography, and demographics considered in estimating the likely exposure

https://www.transportpolicy.net/standard/australia-air-quality-standards/

Country experiences:
Pollution reduction targets and measures

World Health Organization
Western Pacific Region

Striving progress in the Republic of Korea

Target: to lower the national average concentration of ultrafine dust particles from 18 $\mu g/m^3$ in 2021 to 13 $\mu g/m^3$ by reducing ultrafine dust by 30% by 2027

Measures:

- **seasonal fine dust management** program

- **ban grade 5 vehicles** in the cities (Seoul, Busan, and Daegu) and increase use of **zero-emission** vehicles

- Monitor **indoor air quality** in public places

- Monitor fine dust around **port areas** and the use of fuel oils with reduced sulfur content for ships

- Tackling illegal disposal of **waste** from major industrial complexes and collecting **agricultural waste**.

Korea-China Joint Research program

- Ground-based $PM_{2.5}$ monitoring: analyze mass and chemical composition and identify sources, including during high concentration events in major cities

- Assess effectiveness of air quality seasonal management policies

Outcomes:

- Significant decrease from oil combustion, industry and coal burning after implementation of these policies

- Provide scientific evidence for policy makers for developing source-specific management policies

Source: Ministry of Environment, Republic of Korea

Main take aways

- Setting and enforcing **health-based air quality standards** and **policies** aligned with WHO AQG are key drivers for reducing pollution and its adverse effects

- Need for **regulatory push,** especially in countries with increased level of exposure to air pollution

- Strengthen air quality **management** and **accountability** mechanisms at all levels

- Develop/maintain vigilant **monitoring, surveillance and reporting** systems

- Promote proactive **multisectoral actions**

WHO activities on air quality and health in the Region

Improving evidence

- Regional overview on air quality and health

- Indoor air quality and health

- Air quality in megacities

- Collating best practices in regulations and mitigation solutions

Policy support

- Review national adoption of WHO Air Quality Guidelines

- Support countries in setting and enforcing air quality standards, targets and policies

Capacity building

- Trainings on air quality and health

- Application of WHO tools to assess health impacts and benefits

- Technical consultation and meetings

Strengthening health systems

- Embed air pollution mitigation in public health programmes (e.g. non-communicble and respiratory diseases)

- Scale up action towards climate resilient and low carbon health systems

THANK YOU

For more information, please contact:
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