Promoting sustainable transport, clean energy, waste management and urban planning can improve air quality and health, as well as contribute to the Sustainable Development Goals for Health (3), Energy (7) and Cities (11).

**The global public health emergency**

Air pollution is a global public health emergency. 92% of the world’s population lives in places where air quality exceeds WHO limits. About 6.5 million deaths – 1 in 9 deaths worldwide – is due to air pollution-related diseases. Air pollution is one of the largest causes of the four top noncommunicable diseases – stroke, lung cancer, chronic respiratory disease and heart disease – accounting for between one-third and one-quarter of those deaths. Air pollution is also responsible for 50% of childhood pneumonia deaths.

**Major impacts on health, development and climate**

- Fine particulate matter (PM) is one of the most health-damaging air pollutants also classified as carcinogen. Fine PM penetrates through the lungs into the bloodstream causing both respiratory and cardiovascular impacts.
- Ambient (outdoor) air pollution caused 3 million deaths (2012), mainly from transport, waste burning, agriculture, building energy use, industry, power production and forest fires.
- Household air pollution causes about 4 million deaths annually (2012), mainly due to smoke from inefficient cookstove technologies and fuels, e.g. biomass, coal, and kerosene.
- About half of the world still cooks over smoky stoves using biomass, coal, charcoal, dung or agricultural residues.¹
- Everyone’s health is affected by air pollution, but low- and middle-income countries as well as poor and marginalized groups in high-income countries are at greater risk. Children, older people, and people with respiratory or heart diseases also are more vulnerable.
- Air pollutants such as methane and black carbon are powerful short-lived climate pollutants (SLCPs) that contribute to climate change. Black carbon, a component of PM, is one of the largest contributors to global warming after CO₂.
- WHO monitors three air pollution-related SDG indicators:
  - 3.9.1 Air pollution-related mortality
  - 7.1.2 Access to clean energy in homes
  - 11.6.2 Air quality in cities

**New opportunities – the time is right**

In 2015, WHO Member States unanimously adopted a resolution recognizing air pollution as a global health risk and committing to action in four areas: building the knowledge base; monitoring and reporting; institutional capacity strengthening and global leadership and coordination. Other recent developments include:

- Technology – More cities are monitoring air quality and low-cost personal sensors also are becoming commonplace. Even so, air quality monitoring networks in developing regions, particularly Africa, still require significant development.
- Public awareness – Increased awareness of air pollution’s health and climate impacts has mobilized public opinion.
- Policy action – Reducing air pollution is a key objective of initiatives such as the Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC), and increasingly, for urban leaders. For example, Madrid, Paris, Madrid, Athens and Mexico City recently committed to phase out diesel cars and vans by 2025.

**Global ambient air pollution, WHO Guideline values (annual mean)**

<table>
<thead>
<tr>
<th>PM&lt;sub&gt;2.5&lt;/sub&gt; (µg/m&lt;sup&gt;3&lt;/sup&gt;)</th>
<th>WHO Guideline values (annual mean)</th>
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<tr>
<td>10</td>
<td>20</td>
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</table>

Circles: monitoring station/background: modeled estimates

- <10
- 11-15
- 16-25
- 26-35
- 36-69
- 70 or more

Population

- >25,000,000
- 20,000,000
- 15,000,000
- 10,000,000
- <5,000,000
WHO’s response: and global leadership and coordination on air pollution and health

In line with the 2015 World Health Assembly resolution and a 2016 “Road Map” for enhanced action, WHO is providing global leadership and technical support to member states as follows:

1. Global monitoring of SDG progress

The WHO databases on household energy and air quality are unique resources used by scientists, UN agencies, countries and others to monitor global progress towards clean air. They supply data to track progress on SDG 7.1.2 (access to clean fuels and technologies), as well as SDG 11.6.2 (improving air quality in urban areas). They are the basis for determining disease burden from air pollution for SDG 3.9.1. Ongoing improvements in modeling of air pollution exposures, pollutants (beyond PM$_{2.5}$) and disease outcomes, will further refine analyses.

2. WHO Air Quality Guidelines

WHO’s guidelines are a basis for formulating national standards and policies. These cover:

1. Ambient air quality: health relevant limits for pollutant concentrations indoors and outside;
2. Household fuel combustion: defines clean fuels and technologies, with reference to emissions targets for health-damaging pollutants;
3. Chemical indoor pollutants: limits for pollutants from indoor sources, such as building materials & furnishings;
4. Biological indoor air pollutants: indicators for mould and control measures.

3. Support to countries for evaluating new policies and interventions

WHO has recently launched the AirQ+ software tool, which allows countries and cities to estimate locally deaths attributable to outdoor air pollution based on inputs such as: average ambient air pollution concentrations, population and population health data. Through the Urban Health Initiative, WHO is working with cities and national Ministries of Health to build capacity for evaluating and shaping strategies that reduce pollution from energy, transport, waste and other urban sectors in ways optimal to health. WHO is also working with Member States in the Americas, Africa and Asia to develop a clean household energy solution toolkit with resources for developing national policies and programmes for clean household energy.

4. Leadership

Global Air Quality and Health Platform – WHO, in collaboration with the World Meteorological Organization and UN Environment, convenes regular meetings with other intergovernmental agencies and academia, to harmonize data and methods for assessing air pollution’s health burden, addressing research gaps and trends, such as use of new portable monitoring technologies.

Endnotes:
1 Total estimated annual air pollution deaths of 6.5 million is somewhat less than the sum of deaths from indoor and outdoor air pollution, due to overlap in deaths from these two air pollution risk factors.
2 WHO air quality guidelines: www.who.int/airpollution/ambient