



**AIR
POLLUTION**



CLIMATE



HEALTH

THE EQUATION IS SIMPLE.



An estimated 7
million people die
annually from air
pollution related
diseases.

+



Many
health-harmful
air pollutants
also damage
the climate.

=



Reducing air
pollution would save
lives and help slow
the pace of
near-term climate
change.

BREATHELIFE

Clean Air. Healthy Future.

AIR POLLUTION: THE HEALTH STORY

1

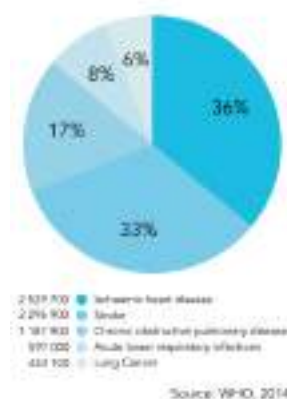
Air pollution is responsible for an estimated 7 million deaths annually, or one in eight premature deaths every year.

This makes it the world's largest environmental health risk, and among the largest global health risks – comparable with “traditional” health risks such as smoking, high cholesterol, and obesity.

Some 4.3 million air pollution-related deaths are due to household air pollution and another 3.7 million deaths are due to outdoor air pollution. Most air pollution-related deaths are from non-communicable diseases (see figure). In terms of global disease burden, air pollution is the cause of over one-third of deaths from stroke, lung cancer, and chronic respiratory disease globally, and one-quarter of deaths from ischaemic heart disease.

The air pollutant most closely linked to excess death and disease is PM_{2.5} (particulate matter less than 2.5 micrometres in diameter), emitted from motor vehicles, power plants, industrial processes, and the combustion of biomass, coal and kerosene. Ground-level ozone is another pollutant that causes significant respiratory illness, including chronic asthma. Methane from waste dumps and diesel vehicle emissions are both major contributors to ground level ozone formation.

Deaths attributable to the joint effects of household air pollution and ambient air pollution in 2012, by disease



AIR POLLUTION AND CLIMATE NEXUS

Black Carbon is a “short-lived climate pollutant” (SLCP) that is a major component of health-harmful PM_{2.5} air pollution – particularly from diesel vehicles, diesel engines, coal and biomass stoves and waste incineration. Since black carbon persists for only a short time in the atmosphere, reducing black carbon emissions can have significant near-term climate and health benefits.

Key health-harmful pollutants	
Ozone (O ₃)	- Aggravated asthma and bronchitis - Respiratory symptoms (coughing, wheezing) - Airway inflammation - Reduced lung function
Particulates (PM _{2.5})	- Ischaemic heart disease - Stroke - Chronic obstructive pulmonary disease - Reduced lung function - Childhood pneumonia - Lung cancer - Adverse birth outcomes
Oxides of Nitrogen (NO _x)	- Aggravated asthma and bronchitis - Breathing problems - airway inflammation - Emphysema

Source: WHO, 2019

Ground-level Ozone is also an SLCP, formed by a mix of air pollutants typically emitted over cities or nearby rural areas, including methane (another SLCP) from urban sewage, waste, and agriculture, as well as oxides of nitrogen from vehicles. Along with being a key factor in respiratory illness, ozone decreases crop yields.

ACT NOW: IMMEDIATE BENEFITS

2

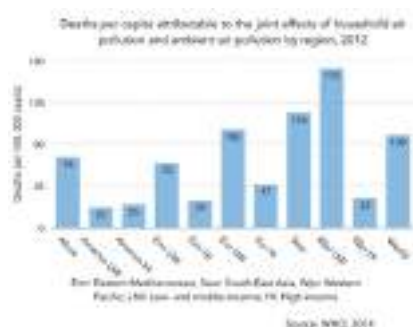
By acting now to reduce short-lived climate pollutants that are also air pollutants we will see substantial and immediate gains in public health, saving millions of lives, as well as slowing near-term climate change.

The United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) have estimated that reducing SLCP emissions from key sources such as traffic, cookstoves, waste, agriculture and industry could reduce global warming by about 0.5° C by the year 2050.



Public health benefits are enjoyed locally – The largest initial benefits of reductions in short-lived climate and air pollution emissions will be enjoyed by people living in the areas where actions are taken – making measures very attractive to policymakers. Public health benefits of reduced ozone and black carbon emissions may begin to be realized within in a matter of days or weeks through improved air quality.

BENEFITS TO THE MOST VULNERABLE



Reductions in air and climate pollutants benefit low-income groups, as well as women and children. Women and children involved in domestic work are disproportionately exposed to household air pollution. Urban air pollution levels also tend to be higher in many low- and middle-income cities and in poor neighbourhoods of high-income cities situated close to traffic and industrial sites. Reductions in

SLCPs and associated air pollutants can therefore have particularly large benefits for lower income groups, as well as women and children. The elderly and individuals with pre-existing lung or heart diseases susceptible to air pollution would also benefit.

It is important to remember, however, that urban air pollution disperses very widely. Ozone pollution levels may often be highest on the urban periphery. So rich and poor alike benefit when SLCP emissions, and consequent air pollution, are reduced.

WHAT CAN WE DO?

3

World Health Assembly Resolution (68.8)

In May 2015, the 68th World Health Assembly (WHA) passed a landmark resolution on air pollution. The resolution calls on Member States and the WHO to enhance action to reduce air pollution and its consequent health risks. This includes strengthening air pollution monitoring and surveillance, and promoting multisectoral measures to prevent and control air pollution. The WHA69 *Draft road map for an enhanced global response to air pollution* builds on this resolution, etching out a vision forward.

Household/Indoor Air Pollution

New WHO *Indoor Air Quality Guidelines: Household Fuel Combustion* set emissions thresholds, by which the cleanest cookstove and lighting technologies may be identified. These guidelines also recommend a) phasing out household kerosene and coal use altogether; b) scaling-up production and use of the cleanest household fuels, including LPG, ethanol and biogas; and c) transitioning from inefficient biomass cookstoves to improved models with adequate venting. The Global Alliance for Clean Cookstoves, a leading member of the Climate and Clean Air Coalition (CCAC), is promoting initiatives to develop and distribute improved cookstove technologies.



Photo: Nigel Bruce

Ensuring that stoves are placed in well-ventilated spaces and as part of an energy-efficient home design is also critical. Finally, small solar systems to power lights can be substitutes for kerosene lamps – in homes as well as in health facilities – reducing risks of burns and injuries. Many of these innovations also have clear economic benefits in both health and climate terms – repaying the investment many times over through lower disease rates and health care costs. These strategies are highlighted in the new WHO report *Burning Opportunity: Clean Household Energy for Health, Sustainable Development, and Wellbeing of Women and Children*.

WHAT CAN WE DO? (CONTINUED)

Urban Air Pollution

Urgent action to tackle air pollution in cities is needed to improve the health and well-being of over half of the world's population. More than 80% of people living in urban areas that monitor air pollution are exposed to air quality levels that exceed the WHO guideline limits, with 98% of large cities in low-income regions suffering from unhealthy air quality. Many low- and middle-income cities in WHO's Eastern Mediterranean and South-East Asia Regions suffer from air pollution levels 5-10 times higher than guideline levels.

The good news is that improved urban planning along with provision of more energy-efficient buildings; high quality public transit, walking & cycle networks; and methane gas capture from municipal sewage and solid waste can reduce urban air pollution and climate emission, with very large and immediate health benefits. For instance, investing in clean urban transit, pedestrian and bike networks not only reduces emissions but can reduce traffic injury and support

physical activity. More physical activity, in turn, helps reduce obesity and obesity related-diseases. These strategies are highlighted in the joint WHO/CCAC review: *Reducing Global Health Risks from Reductions in Short-Lived Climate Pollutants*, and in the WHO *Health in the Green Economy Series*.

A new Urban Health Initiative (UHI) led by WHO in collaboration with the CCAC, World Bank, Norway, and other partners, aims to raise awareness of the linkages between SLCPs, air pollutants and health, and build health sector capacity to address these issues, and stimulate intersectoral collaborations that reduce emissions.



Photo: Guilherme Mendes Thomaz

RESOURCES

WHO

Ambient Air Pollution Cities Database (2016):

http://www.who.int/phe/health_topics/outdoorair/databases/cities/en/

Breathe Life campaign: <http://www.BreatheLife2030.org>

Burden of disease estimates for AAP and HAP (2014):

http://www.who.int/phe/health_topics/outdoorair/databases/en/

Burning Opportunity: Clean Household Energy for Health, Sustainable Development, and Wellbeing of Women and Children (2016):

<http://www.who.int/indoorair/publications/burning-opportunities/en/>

Health and Sustainable Development website:

<http://www.who.int/sustainable-development/en>

Health in the Green Economy series: http://www.who.int/hia/green_economy/en/

Indoor Air Quality Guidelines: Household fuel combustion:

<http://www.who.int/indoorair/guidelines/hhfc/en/>

Reducing Global Health Risks Through Mitigation of Short-Lived Climate Pollutants (2015): <http://www.who.int/phe/publications/climate-reducing-health-risks/en/>

CCAC

Breathe Life campaign: <http://ccacoalition.org/en/news/breathe-life>

CCAC initiatives on household cooking/heating; diesel vehicles, municipal solid waste, industrial and agricultural SLCP emissions: <http://www.ccacoalition.org/en/initiatives>

UNEP/WMO Integrated Assessment of Black Carbon and Tropospheric Ozone Report (2011): http://www.wmo.int/pages/prog/arep/gaw/documents/BlackCarbon_SDM.pdf

Urban Health Initiative: <http://www.ccacoalition.org/ru/initiatives/health>