



# THE EQUATION IS SIMPLE.

**HEALTH + AIR POLLUTION = CLIMATE**



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

+



Many health-harmful air pollutants also damage the climate.

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

## BREATHELIFE

Clean Air. Healthy Future.

[www.breathelife2030.org](http://www.breathelife2030.org)

# AIR POLLUTION: THE HEALTH STORY

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**Air pollution is responsible for an estimated 7 million deaths annually, or one in nine 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.

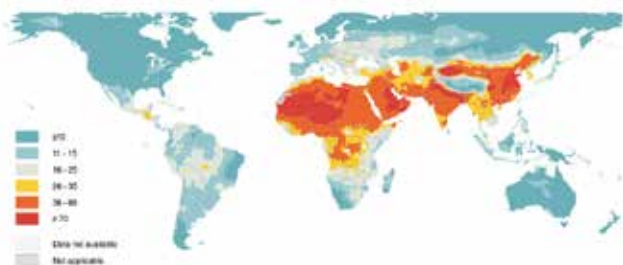
**Some 3.8 million air pollution-related deaths are due to household air pollution and another 4.2 million deaths are due to outdoor air pollution.**<sup>1</sup> Most air pollution-related deaths are from non-communicable diseases (see figure). In terms of global disease burden, air pollution is the 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<sub>2.5</sub>** (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.



## AIR POLLUTION AND CLIMATE NEXUS

Figure 9: Global map of modelled annual median concentration of PM<sub>2.5</sub> in µg/m<sup>3</sup>



PM<sub>2.5</sub> - Fine particulate matter of 2.5 microns or less.

**Black Carbon** is a “short-lived climate pollutant” (SLCP) that is a major component of health- harmful PM<sub>2.5</sub> 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.

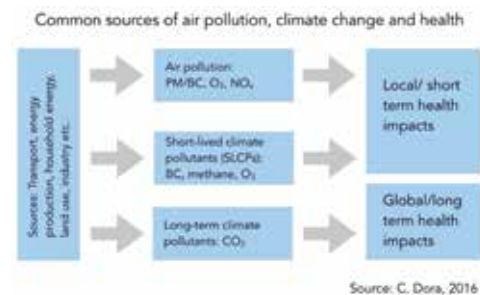
**Ground-level Ozone** is also an SLCP, formed by a mix of air pollutants typically emitted over cities or nearby rural areas, including methane (another SLCP) from urban sewage, waste, and agriculture, as well as oxides of nitrogen from vehicles. Along with being a key factor in respiratory illness,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

<sup>1</sup> Many people are exposed to both indoor and outdoor air pollution, so mortality attributed to the two sources cannot simply be added together, hence the total estimate of around 7 million deaths.

## ACT NOW: IMMEDIATE BENEFITS

**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.**

UN Environment 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?

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## Join the BreatheLife Campaign

The WHO, UN Environment and the Climate and Clean Air Coalition (CCAC) recently launched the BreatheLife campaign, [www.breathelife2030.org](http://www.breathelife2030.org) a new awareness raising initiative aimed at explaining to the broader public the health and climate impacts of air pollution and calling for policy and individuals to act, to make a difference. The campaign is building an alliance of “BreatheLife” cities working on air pollution reductions, and showcase their success stories of progress. The campaign is part of the rollout of a new World Health Assembly Road Map for an Enhanced Global Response to Air Pollution (2016) as well as UN Environment Assembly’s 2014 resolution calling for strengthened action on air pollution. The campaign advocates for solutions to reduce air pollution and short-lived climate pollutants based on the joint WHO/CCAC technical review: Reducing Global Health Risks from Reductions in Short-Lived Climate Pollutants (WHO, 2015).

## Urban Air Pollution

A key focus of the BreatheLife campaign will be cities where 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



Photo: Guilherme Mendes Thomaz

emissions but can reduce traffic injury and support physical activity. More physical activity, in turn, helps reduce obesity and obesity related- diseases. .

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.

## Household/Indoor Air Pollution

A second thrust of air pollution reductions is in the home, where 3 billion people still cook with dirty fuels or stove technologies. New WHO guidelines recommend a) phasing out household kerosene and coal use; b) scaling-up the cleanest household fuels, including LPG, ethanol and biogas; and c) transitioning from heavily polluting biomass cookstoves to cleaner burning models. 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.

Ensuring adequate stove ventilation, and energy- efficient home design is also critical. Finally, rooftop PV solar systems can provide an alternative to heavily polluting kerosene lamps and diesel generators for kerosene lamps – in homes as well as in health facilities – saving fuel costs and also reducing risks of burns and injuries. Investments are repaid many times over through lower disease rates and health care costs.



Photo: Nigel Bruce

# RESOURCES

## WHO

Ambient Air Pollution (2016): [http://www.who.int/phe/health\\_topics/outdoorair/en/](http://www.who.int/phe/health_topics/outdoorair/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/mediacentre/events/HSD\\_Plaq\\_02.2\\_Gb\\_def1.pdf](http://www.who.int/mediacentre/events/HSD_Plaq_02.2_Gb_def1.pdf)

Health in the Green Economy series: [http://www.who.int/hia/green\\_economy/en/](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/UN Environment

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](http://www.wmo.int/pages/prog/arep/gaw/documents/BlackCarbon_SDM.pdf)

Urban Health Initiative: <http://www.unep.org/ccac/Initiatives/health>

