

AIR QUALITY

IN THE BUILT ENVIRONMENT

The World Green Building Council global network is targeting the specific impacts of the built environment on the crisis of air pollution across the world in order to reduce the impacts on human health and our natural environment.

Our specific goals are:



Reduce ambient outdoor emissions

Reduce operational emissions from the global building sector, limiting the sector's contribution to climate change

Lower embodied emissions of greenhouse gases from the full life cycle of a building, including material transport, demolition and waste across the supply chain



Mitigate sources of indoor air pollution

Promote sustainable, low emissions and air-purifying building materials to limit pollutants within

Prioritise building fabric and construction quality, and the role of retrofitting existing stock, to lower risk of damp and mould

Utilise appropriate strategies to achieve energy efficiency and health priorities



Radically improve sustainable operation of buildings

Prevent the emissions multiplier effect and endorse sustainable design, operation and retrofit of buildings to protect users

Present solutions to health and environmental threats of indoor air pollution



Increase global awareness

Develop recognition of the impact of the built environment on global air pollution

Promote calls to action for a range of stakeholders, including citizens, businesses and policy makers

Our actions will support the achievement of these

SUSTAINABLE DEVELOPMENT GOALS












Find out more at: worldgbc.org/clean-air-buildings

AIR QUALITY

IN THE BUILT ENVIRONMENT

Sources and solutions:

	Sources and solutions:					
Sources	Ambient	 <p>Energy 39% of global energy-related carbon emissions are attributed to buildings</p>	 <p>Materials Most of the 1,500 billion bricks produced annually are using polluting kilns</p>	 <p>Construction Concrete production can release silica dust, a known carcinogen</p>	 <p>Cooking Traditional cookstoves cause 58% global black carbon emissions</p>	 <p>Cooling HFCs, potent climate forcers, are often found in AC systems</p>
	Indoor	 <p>Heating Combustion of solid fuels causes indoor as well as outdoor pollution</p>	 <p>Damp and mould Caused by air infiltration through cracks in building fabric</p>	 <p>Chemicals VOCs, emitted from certain materials, have adverse health effects</p>	 <p>Toxic materials Construction materials, e.g. asbestos, can cause harmful airborne pollution</p>	 <p>Outdoor infiltration Most exposure to outdoor air pollution occurs inside buildings</p>

Did you know? 91% of world's population, urban and rural, live in places with air that exceeds WHO guidelines for key pollutants¹.

Solutions	Solutions						
	 <p>Plant a Sensor with WorldGBC</p>	 <p>Clean cooling and heating</p>	 <p>Clean construction</p>	 <p>Healthy materials</p>	 <p>Clean and efficient energy use</p>	 <p>Building retrofit</p>	 <p>Building management and ventilation</p>

¹World Health Organisation. 2018. Ambient (outdoor) air quality and health. [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health).

Find out more at: worldgbc.org/clean-air-buildings

AIR QUALITY

IN THE BUILT ENVIRONMENT

Polluted air causes problems for:



People

Air pollution is largest environmental killer, causing 1 in 9 deaths worldwide



7%
lung cancer deaths



18%
pulmonary disease deaths



20%
Stroke deaths



34%
heart disease deaths

Approximately 8 million deaths annually attributed to air pollution, predominantly in developing countries

Airborne particles of dust from construction cause severe health impacts including silicosis, asthma and heart disease

Poor indoor air quality is understood to reduce cognitive functioning, productivity and wellbeing



Planet

Carbon dioxide and other greenhouse gases responsible for the greenhouse effect



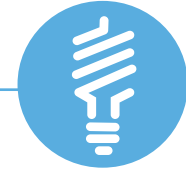
Short Lived Climate Pollutants (SLCPs) are responsible for **45% of current global warming**

Close to 40% of global energy-related carbon emissions being released from buildings

Airborne coarse and fine particulate matter (PM10) can directly alter the global balance of incoming solar radiation, distort the albedo effect and react with other pollutants

A global supply chain, including excavation, brick-making, transportation, and demolition can 'build in' embodied emissions to a building

Building materials and construction practices negatively affect natural habitats



Buildings

Polluted outdoor air reduces use of natural ventilation strategies



Emissions multiplier effect due to **increased filtration demand**

Further increasing urban heat island effect and cooling demand

Where outdoor air is polluted, natural or passive ventilation strategies are often unsuitable due to ingress of polluted air

Create local microclimatic warming impacts due to expulsion of hot air, exacerbating the urban heat island effect

Most of our exposure to outdoor air pollutants occurs when we are inside buildings, due to infiltration through windows, apertures or cracks in the building fabric

Find out more at: worldgbc.org/clean-air-buildings

AIR QUALITY

IN THE BUILT ENVIRONMENT

Solutions for stakeholders:

Citizen



Choose clean energy for power and transportation, and improve energy efficiency as far as possible



Improve home building quality and avoid unhealthy chemicals in furnishings – choose low-VOC options



Ensure good ventilation strategy for fresh air access



Consider investing in an indoor air quality monitor



Engage your facilities management team and/or landlord to provide better air quality for tenants and occupiers

Business



Choose clean energy for power and transportation, and improve energy efficiency as far as possible



Maintain good indoor air quality with healthy materials, ventilation strategy and use realtime monitoring



Prioritise responsible sourcing for buildings – prioritise local, ethical and recycled materials with no (or low) VOC concentrations



Support sustainable finance initiatives for green buildings, particularly microfinancing schemes in developing nations

Government



Invest in clean energy, decarbonisation of national grid and support decentralised renewable energy networks in rural locations



Promote energy efficiency by raising building standards and support retrofit programmes



Monitor outdoor air quality, publicly disclose data and encourage monitoring in high occupancy areas



Incentivise safest and most sustainable methods of construction



Implement national standards for building ventilation and IAQ

Find out more at: worldgbc.org/clean-air-buildings