

TOWARD A HEALTHIER WORLD

Connecting the dots between Environmental Health & Public Health

CLIMATE, AIR QUALITY & HEALTH

The environment around us profoundly impacts our health. C40 and Johnson & Johnson are working in partnership to connect the dots between climate action, improved air quality and better health amongst citizens.

C40 has undertaken cutting-edge research to demonstrate the air quality and health benefits of climate action - working with 26 cities to date to measure potential health gains and use this to make a stronger case for action. Based on these learnings, C40 and Johnson & Johnson are setting out a call to action on the challenge and the opportunity for all cities.

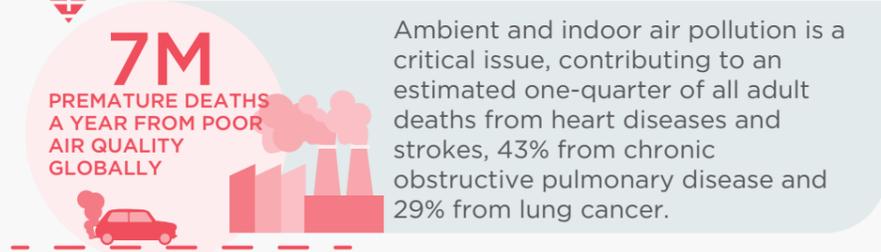
THE TIME FOR URGENT CLIMATE ACTION



THE NEED TO TACKLE AIR QUALITY



THE HEALTH BURDEN



UNDERSTANDING THE PROBLEM

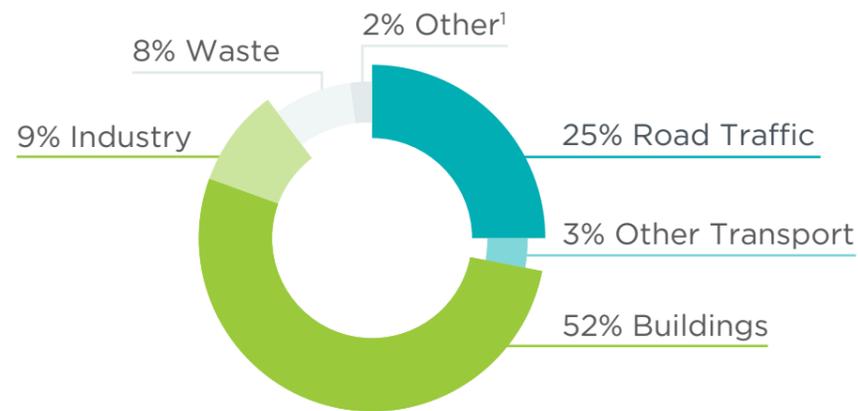
Before cities can begin to plan climate action, they must first establish a clear understanding of the problem - what are the main sources of both greenhouse gas (GHG) emissions and air pollution? These challenges are often understood from differing perspectives, and approached from different policy arenas. However, evidence shows that both the sources of climate change and air pollution are generally aligned and solutions should be found to address them simultaneously.

PM_{2.5} is discussed here as an indicator of both ambient and indoor air pollution. The average contribution of sources to GHG emissions and PM_{2.5} concentration across the 96 C40 cities is shown below.

The first step that cities should take in formulating climate action is recognising the full extent to which sources of air pollution and GHG emissions overlap and, therefore, where cities should be focussing in order to tackle both.

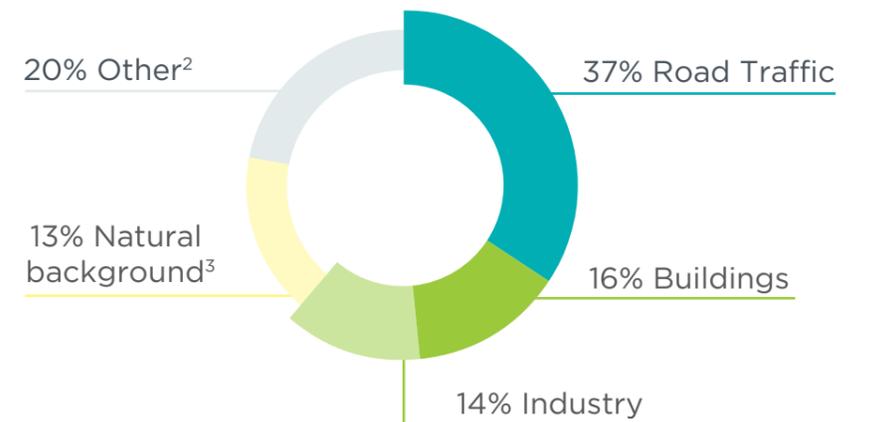
CLIMATE CHANGE

Sources of GHG Emissions



AIR POLLUTION

Sources of PM_{2.5} Concentration



¹Agriculture, forestry and fishing activities ²Unspecified sources of human origins ³Soil dust and sea salt
GHG source apportionment takes into account Scope 1 (not including energy generation) and 2 emissions, while PM2.5 considers Scope 1 only. See methodology report for details.

In order to simultaneously tackle air quality and climate change, cities need **clean, efficient transport, buildings and industry solutions**. Decarbonising the grid will need to be pursued in parallel with this in order to reduce climate change impacts and improve air quality on a wider scale.

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PRIORITY ACTIONS THAT TACKLE CLIMATE CHANGE AND AIR QUALITY

Global climate and air quality goals: clean transport, buildings and industry are common goals required to achieve climate-safe and healthy cities.

Priority actions: we have identified a set of priority actions that will produce the greatest impact on both air quality and climate. However, every city will have to implement a different mix of actions specific to their context.

City-specific actions: cities should prioritise actions based on both their specific sources of GHG emissions and air pollution, as well as the key characteristics of size, density, income and climate.

Please refer to www.c40.org/benefits for further details on the case studies.



CLEAN INDUSTRY

ALL-CITY ACTIONS

- Industrial operational improvements and energy efficient technologies
- Emissions capture
- Fugitive emissions control
- Maintenance and monitoring

CASE STUDY: **MEXICO CITY** Voluntary programme to regulate industrial emissions



CLEAN BUILDINGS

ALL-CITY ACTIONS

- Stringent standards for new buildings
- Retrofit envelope
- HVAC and water heating
- Lighting, automation and controls

CITY-SPECIFIC ACTIONS

HIGHER-INCOME HIGHER-DENSITY Passive design, clean district heating & cooling

CASE STUDY: **PARIS** Low-carbon heat networks

HIGHER-INCOME LOWER-DENSITY Net zero carbon buildings, on-site generation

CASE STUDY: **SANTIAGO** Rooftop solar and energy efficiency retrofits

LOWER-INCOME Retrofits of informal settlements, solar-powered stoves and lighting

CASE STUDY: **JOHANNESBURG** Air quality in informal settlements



CLEAN TRANSPORT

ALL-CITY ACTIONS

- Walking, cycling and mass transit
- Transit-oriented development
- Emission standards
- Zero tailpipe-emission vehicles
- Freight optimisation
- Zero emission area

CITY-SPECIFIC ACTIONS

HIGHER-INCOME HIGHER-DENSITY Reduce congestion

CASE STUDY: **BARCELONA** Zero emission zone

HIGHER-INCOME LOWER-DENSITY Reduce use and electrify private vehicles

CASE STUDY: **VENICE** Low emission zone

LOWER-INCOME HIGHER-DENSITY Reduce congestion, develop public transport and leapfrog to electric

CASE STUDY: **CHENNAI** Bus electrification

LOWER-INCOME LOWER-DENSITY Reduce use of private vehicles, introduce emission standards and checks

CASE STUDY: **QUITO** Vehicle testing



GRID DECARBONISATION

COMMON ACTIONS

Expand renewable mix
Energy storage

HIGHER-INCOME Mix of centralised and decentralised renewables, grid balancing through storage and controls.

CASE STUDY: **ISTANBUL** Large-scale solar power retrofit

LOWER-INCOME Mostly decentralised renewables (solar), on-site storage

CASE STUDY: **DURBAN** Rooftop solar framework

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CLEAN TRANSPORT, BUILDINGS AND INDUSTRY HAVE MAJOR CLIMATE, AIR QUALITY AND HEALTH **BENEFITS**

By taking these priority actions on climate change and air pollution, cities can work towards clean transport, buildings and industry, all underpinned by a decarbonised grid.

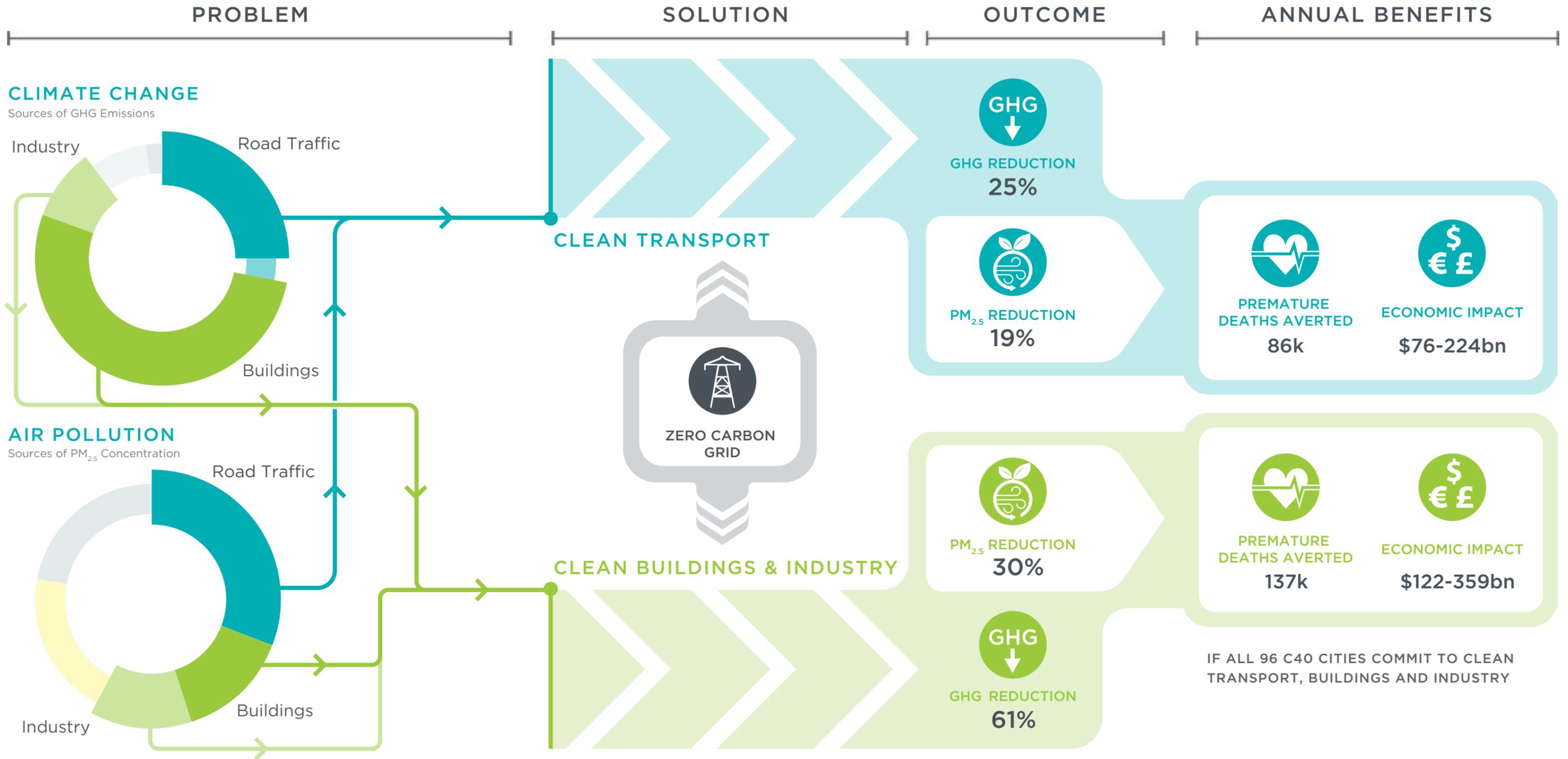
Achieving these goals represents a massive opportunity to improve climate, air quality and health but ambitious, city-wide action is required. Cities, and others, are already leading the way,

for example through committing to Fossil Fuel Free Streets, Net Zero Carbon Buildings and 100% renewable energy.

Due to constraints in data availability, clean buildings and industry are grouped together (see methodology report). The benefits of curbing climate change, although not quantified, will be massive

and will also impact health through reduced frequency of extreme weather conditions and floods.

However, the path to get there won't be easy and cities can't do this alone - we need national and regional governments, business and civil society, alongside cities, to take bold action.



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HOW CITIES GET THE JOB DONE

Based on learnings from C40's experience of working with the cities participating in this programme, we have identified key elements to be considered throughout the whole decision-making process.

These elements can support cities to better address potential barriers and to drive bold and ambitious action tackling simultaneously climate change and air quality while improving the health of their citizens.

PRIORITISATION

START FROM THE PROBLEM

Understand the problem to identify the best solution

THINK HOLISTICALLY

Map all potential impacts, identify synergies and make a stronger case on a wider range of benefits

COLLABORATION

CITIES CAN'T DO THE JOB ALONE

Collaboration with different scales of government, private and civic sector partners is required to successfully drive action

CROSS-SECTOR AND CROSS-CITY

Engagement with different departments within a city and with other cities to join efforts and share learnings

AMBITION

THINK BIG

Take bold and radical action, scaling up and leapfrogging to more ambitious solutions

THINK QUICK

Harness the potential of short-term action while ensuring they are part of a longer-term strategy

INCLUSIVE CLIMATE ACTION

EQUITY

Ensure the fair distribution of negative and positive impacts across different population groups

INCLUSIVITY

Include all relevant stakeholders in the process, to ensure equitable and fair policy-making

IMPACT

NET IMPACT

Consider both positive and negative impacts (social, environmental and economic) to ensure best overall impact from action

EFFECTIVE IMPLEMENTATION

Consider contingent and contextual factors (e.g. political, social, economic, climatic) affecting the outcomes of an action

COMMUNICATION

STAKEHOLDER PRIORITIES

Identify at the start the priority benefits that speak to decision-makers and gain buy-in

UNLOCK AND DRIVE ACTION

Once impacts of actions have been quantified, communicate the results to tell a compelling story

THE TIME FOR ACTION IS NOW

Delivering on the objectives of the Paris Agreement will require **all cities** to take transformative actions and yet climate change is far from being the only topic on the agenda for citizens and their leaders.

BOLD AND AMBITIOUS ACTIONS

Radical action is needed to stop climate change and improve the quality of life for people living in cities. Demonstrating the health and wider benefits enables cities to tackle multiple priorities and maximise impact on the ground.

CLEAN TRANSPORT, BUILDINGS AND INDUSTRY

Cities are leading the way by taking bold action towards a healthier and more sustainable future, by committing to clean transport, buildings and industry. Every city is different: cities need to develop their own roadmap of actions, considering pollution sources, contextual factors and city characteristics.

THE WIN



Cities could expect an 87% drop in GHG emissions



Cities could expect a 49% drop in PM_{2.5} levels



Cities could avoid 223,000 premature deaths per year

These are the climate, air quality, health and economic benefits generated if all 96 C40 cities took action on clean transport, buildings and industry