

# Reducing air pollution and promoting health through sustainable transport



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**Dr. Maria Neira,  
WHO Director of Public Health & Environment**

**ADB Transport Forum: Manila, 13-15 September, 2016**



**World Health  
Organization**

# WHO Global Burden of Environmental Disease

2016 update



PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENTS

A global assessment of the burden of disease from environmental risks

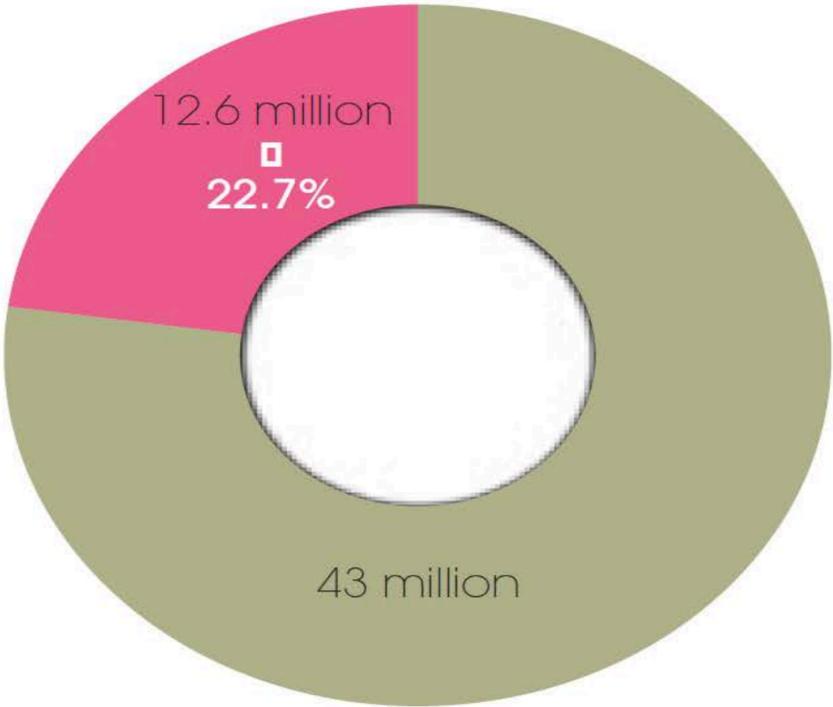
A Prüss-Ustün, J Wolf, C Corvalán, R Bos and M Neira



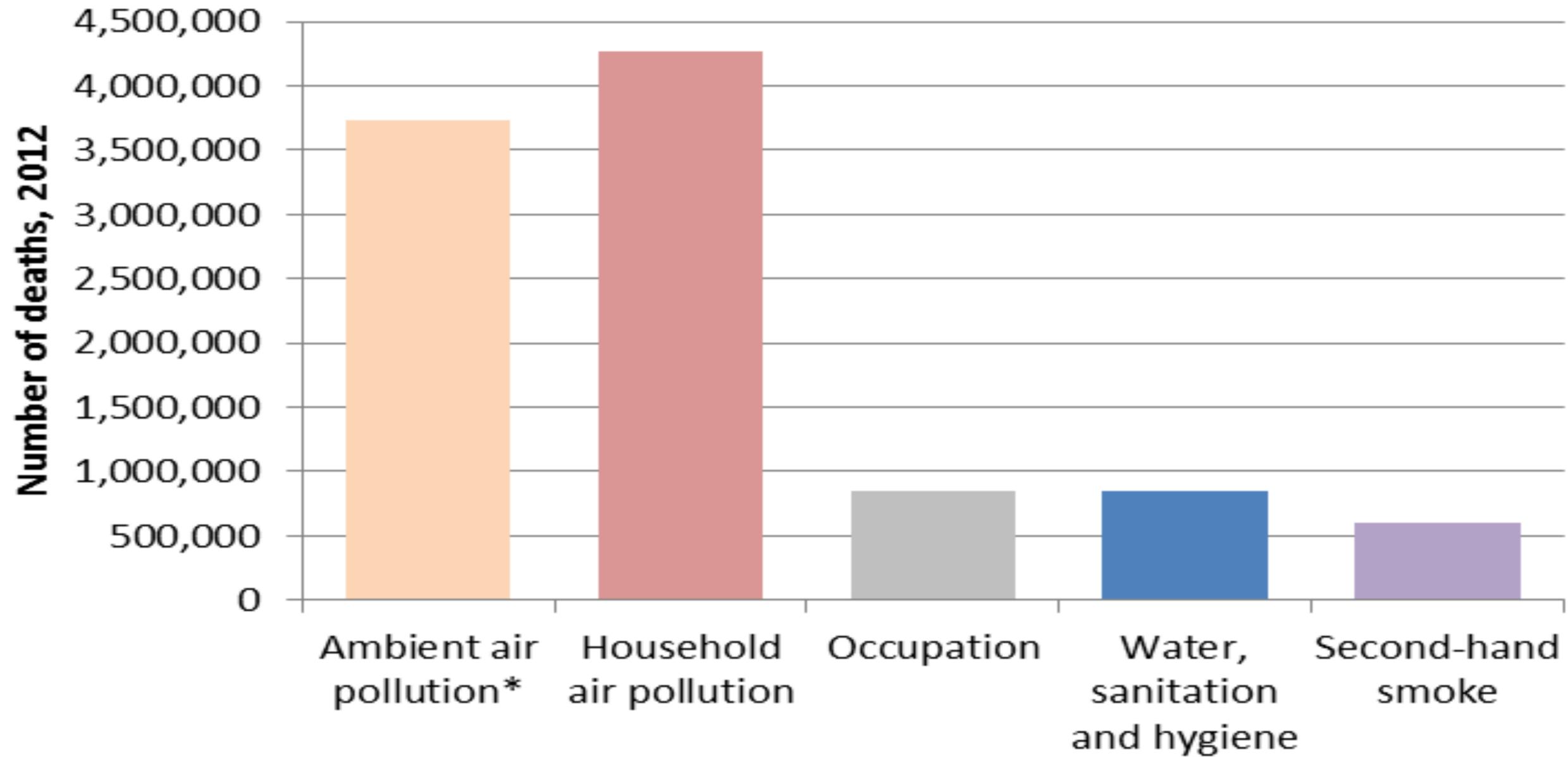
## Nearly 23 % of all deaths

- Attributable to the environment
- Not attributable to the environment

Deaths (millions), 2012



# Major environmental risks to health



# Air Pollution - one of the world's largest single health risks

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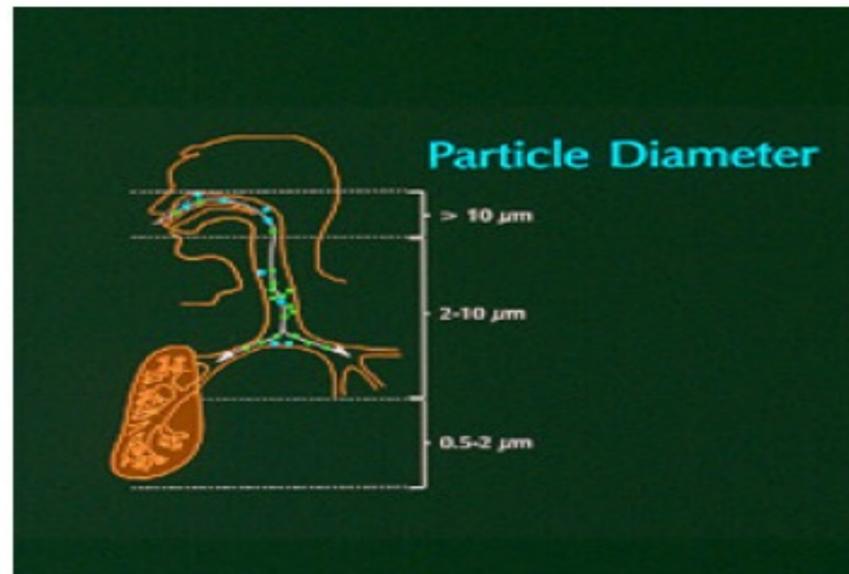
Outdoor air pollution → 3 million deaths/yr – large proportion urban, traffic related.\*

Indoor air pollution → 4 million deaths/yr – mostly from inefficient biomass/coal cookstoves



# Fine particulates: CVD and respiratory impacts

## PARTICLE SIZE AND DEPOSITION



PM<sub>10</sub> – Coarse

PM<sub>2.5</sub> – Fine

PM<sub>1</sub> – Ultrafine



*Medgadget.com*

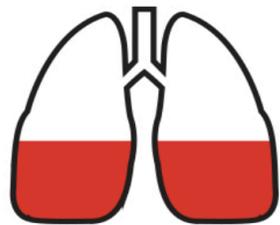
- Particles smaller than 2.5 micrometers are able to penetrate through the lungs, and affect the **cardiovascular system**.
- Toxic **respiratory impacts** include: bronchial irritation, inflammation, genotoxic (i.e. carcinogenic) events, and reduced macrophage response.

# AP causes huge Noncommunicable Disease burden

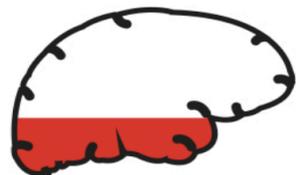
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## THE **INVISIBLE KILLER**

Air pollution may not always be visible, but it can be deadly.



**36%**  
OF DEATHS FROM  
**LUNG CANCER**



**34%**  
OF DEATHS FROM  
**STROKE**



**27%**  
OF DEATHS FROM  
**HEART DISEASE**

**Also contributes to:**

50% of child deaths from pneumonia

Other cancers, Asthma (ozone),  
Cataracts, Adverse pregnancy  
outcomes, TB

**BREATHELIFE.**  
Clean Air. Healthy Future.

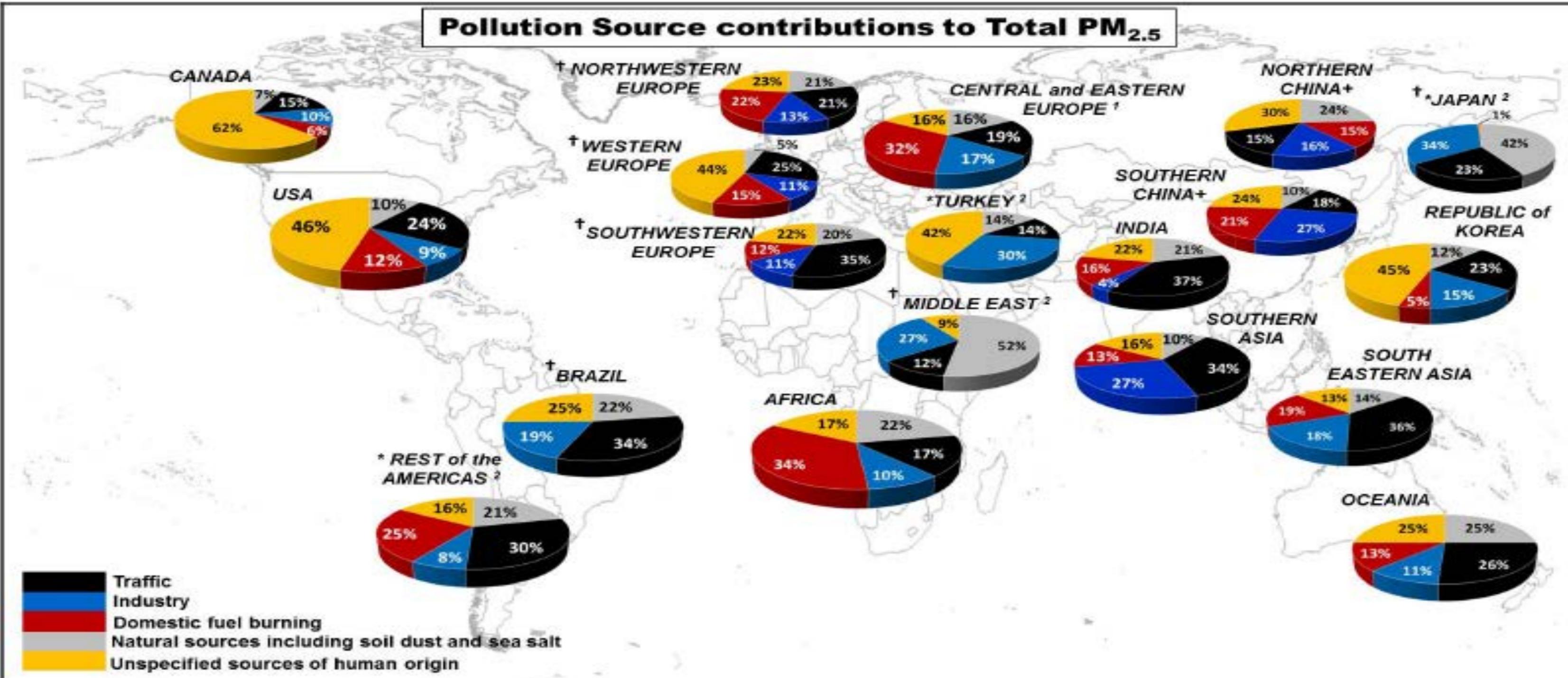


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Organization



CLIMATE &  
CLEAN AIR  
COALITION  
TO REDUCE SHORT-LIVED  
CLIMATE POLLUTANTS

# Traffic a major source of PM emissions – SE Asia



# Transport & Health – There are Multiple Linkages

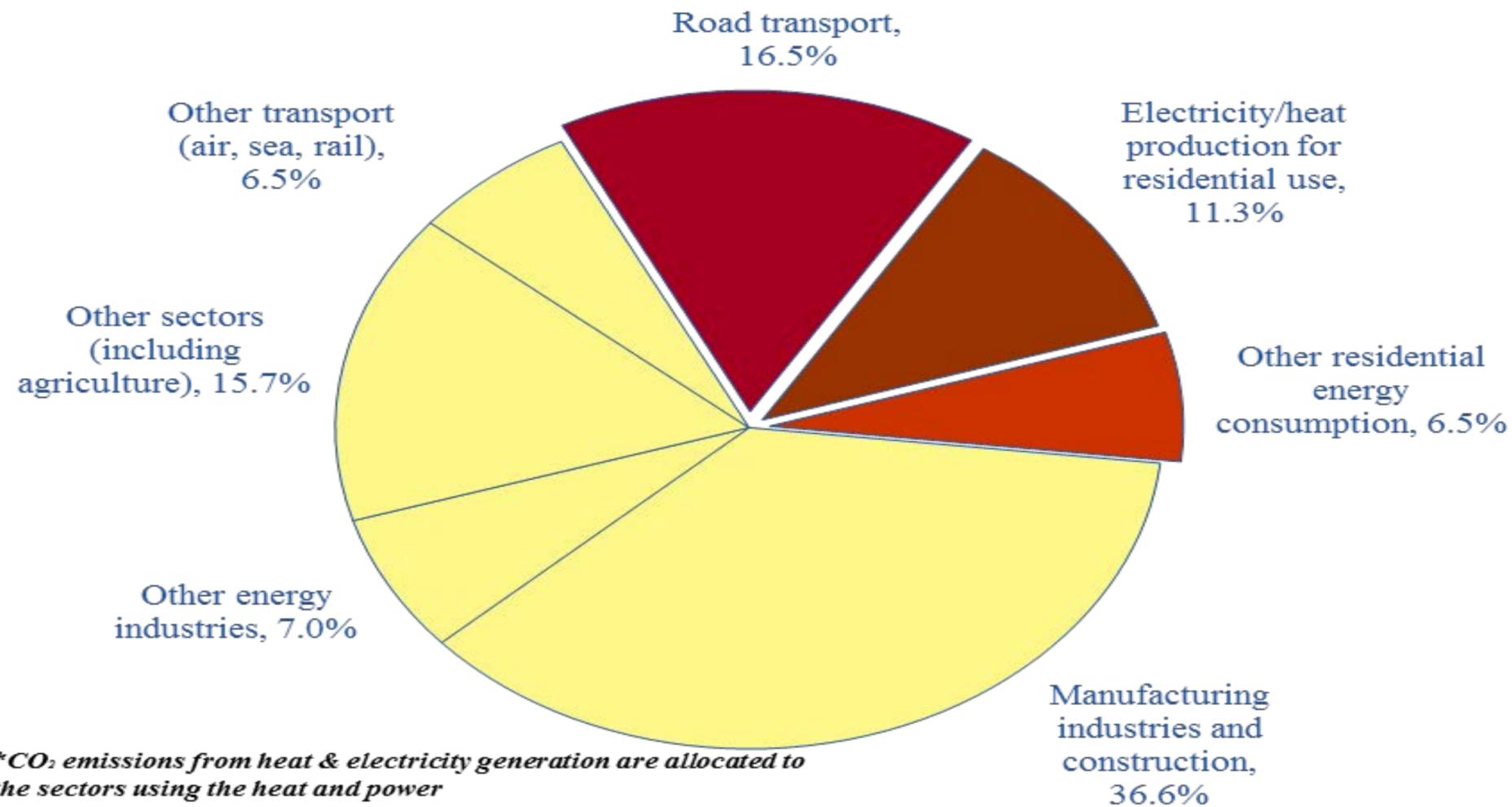
Not only to air pollution, but also physical activity, injury risks & climate impacts



# Transport drives global energy demand: Road traffic + housing = one-third of CO<sub>2</sub> emissions

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CO<sub>2</sub> Emissions from Fuel Combustion (IEA, 2010)



# Transport drives a 'vicious cycle' of traffic injury risks

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More vehicles = more road space/construction for vehicles = greater air pollution, noise and physical activity risks



*Hanoi, 1993*



*2001*



*post 2002*

# Transport shapes patterns of physical activity:

As Asian cities develop further, what

model will they follow ?

More car-dependent and sprawling (USA model)

Or, more energy-efficient & walkable (European)

% by travel mode	Asian cities (high/low)	European cities	USA cities
Active travel	19%	18%	5%
Transit	43%	23%	3%

Source: Peterson R. Sustainable Transport, a Sourcebook for Policymakers, BMZ, 2002



How Can We Meet the “Transport Challenge” to Our Air, Our Health, our Climate and Our Cities ?



World Health  
Organization

# 5 PILLARS OF WHO'S WORK on Air Pollution, Sustainable Transport, and Health

1

Improve evidence on health risks & Economic costs of inaction

2

Strengthen health system monitoring reporting, and assessment capacity

3

Optimize health co-benefits from sustainable transport

4

Global policy leadership

5

Outreach and advocacy



World Health Organization

# Evidence of Health Risks - IARC 2012 finding: Diesel is a carcinogen



**B | B | C** NEWS  
HEALTH

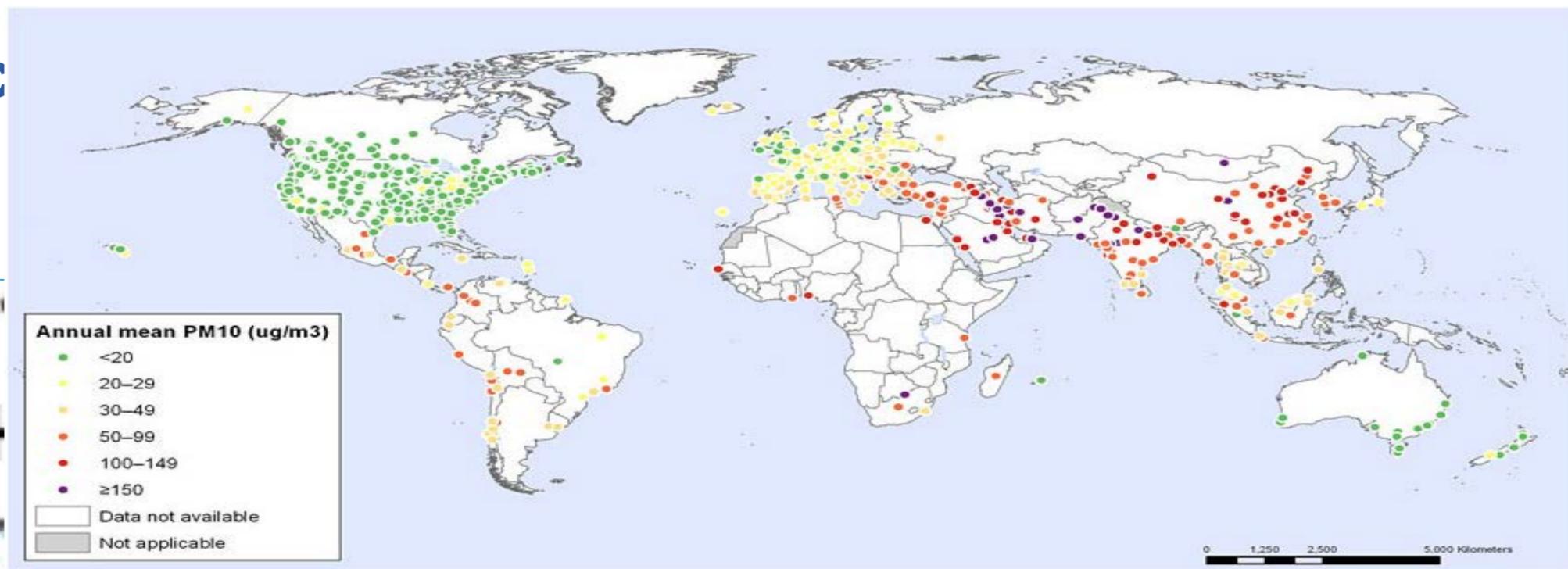
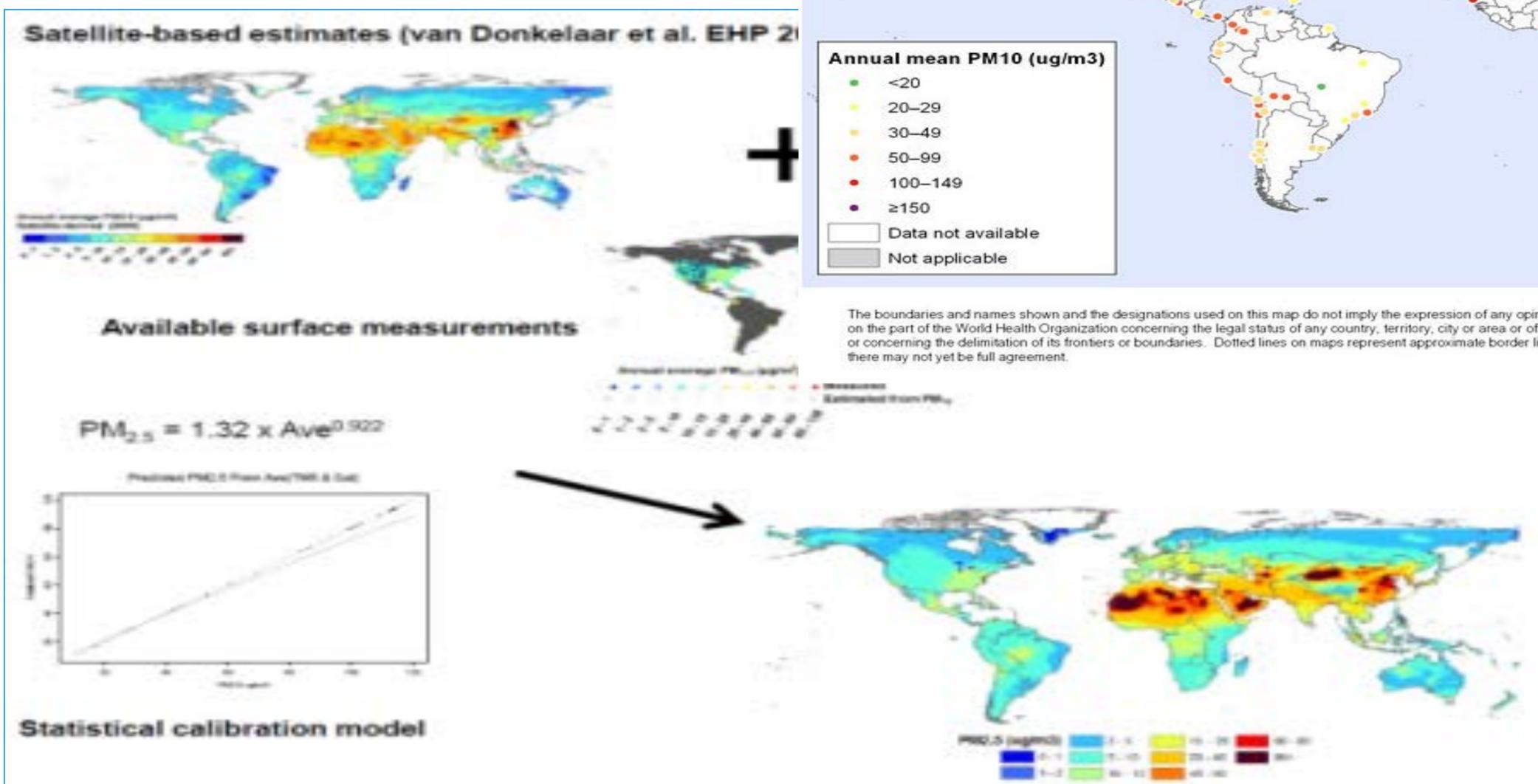
12 June 2012 Last updated at 21:08 GMT

## **Diesel exhausts do cause cancer, says WHO**

**LONDON/GENEVA (Reuters) - The air we breathe is laced with cancer-causing substances and is being officially classified as carcinogenic to humans, the World Health Organization's cancer agency said on Thursday.**

# DATA SYNTHESIS - Urban Air Quality Data (WHO)

3000 cities, still sparse coverage in East Asia



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization  
Map Production: Public Health Information and Geographic Information Systems (GIS)  
World Health Organization

 **World Health Organization**  
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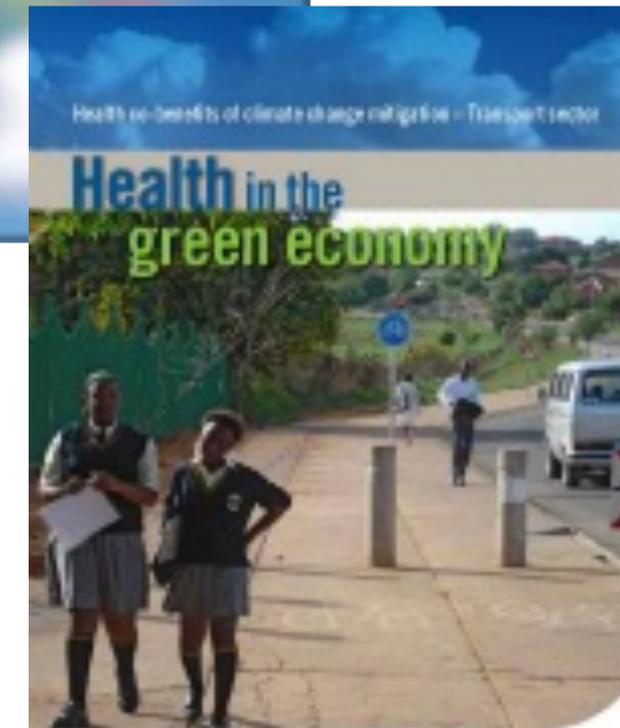
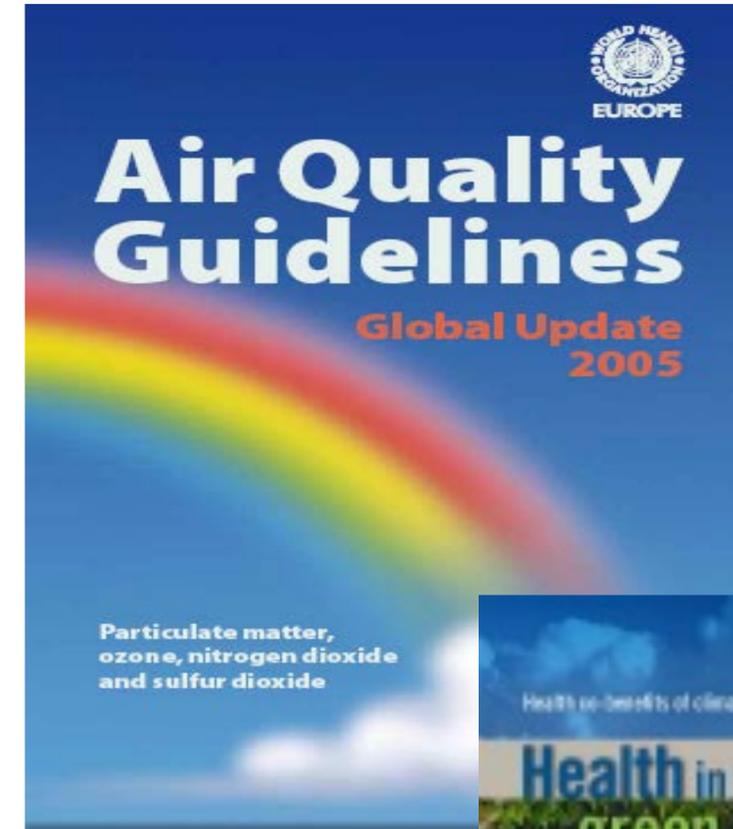
# WHO Guidelines & Guidance

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## Contribution towards norms and standards

**WHO Air Quality Guidelines:** provide the scientific evidence on the health impacts of air pollution as well as recommendations on pollutant levels safe for health

**Guidance to Policy Makers – WHO Urban Health Initiative, Health in Green Economy Series, etc.**



# Health-Economic analyses – HEAT

## WHO tool for estimating health economic gains from cycling

cycling



**ECONOMIC ASSESSMENT OF TRANSPORT INFRASTRUCTURE AND POLICIES**

**Methodological guidance on the economic appraisal of health effects related to walking and cycling**

By: Nick Cavill  
 Sonja Kahmeier  
 Harry Rutter  
 Francesca Racioppi  
 Pekka Oja

Microsoft Excel - Cycling HEAT v1 0.xls

**Health Economic Assessment Tool for Cycling**

Fill in the two fields in Step 1 with your values and read the corresponding results in Step 3. You can use the default parameters supplied in Step 2 or adjust them according to your needs. The population parameters used to calculate the results are displayed at the bottom of the sheet.

**Step 1: enter your data** (all users must fill in the red fields)

Number of trips per day	10,000
Mean trip length (km)	4

**Step 2: check the parameters**

Mean number of days cycled per year	124
Proportion of trips that are one part of a return journey (or 'round trip')	0.9
Proportion undertaken by people who would not otherwise cycle	0.5
Mean proportion of working age population who die each year	0.005847
Value of life (in Euros)	EUR 1,500,000
Discount rate	5.0%

**Step 3: read the economic savings resulting from reduced mortality**

<b>Maximum annual benefit</b>	<b>EUR 4,209,000</b>
Savings per km cycled per individual cyclist per year	EUR 0.81
Savings per individual cyclist per year	EUR 765
Savings per trip	EUR 3.39
<b>Mean annual benefit:</b>	<b>EUR 3,136,000</b>
<b>Present value of mean annual benefit:</b>	<b>EUR 2,283,000</b>

Based on:  
 5% discount rate  
 5 year build-up of benefit and 1 year build-up of uptake, averaged over 10 years

**Population parameters used to calculate results**

Population that stands to benefit	2750
Mean proportion of working age population who die each year	0.005847
Expected deaths in the local population	16.08
Protective benefit, according to actual distance traveled	0.17
Lives saved	2.81

**Notes on how to use this tool.** For additional instructions, hold the mouse over any red triangle.

**The default parameters in green are based on best available evidence available.**

Click here to change local parameters  
 Click here to view underlying study parameters  
 Click here to change the timeframe used in calculation  
 Click here to view full calculation, graphs and adjust error



**ECONOMIC ASSESSMENT OF TRANSPORT INFRASTRUCTURE AND POLICIES**

**METHODOLOGICAL GUIDANCE ON THE ECONOMIC APPRAISAL OF HEALTH EFFECTS RELATED TO WALKING AND CYCLING**

**Health Economic Assessment Tool for Cycling (HEAT for cycling)**

**User guide**



[www.euro.who.int/transport/policy/20070503\\_1](http://www.euro.who.int/transport/policy/20070503_1)

# Health Focused Policy Assessment – Support Investments in rapid transit, walking & cycling

## Reduce air pollution

- Increase physical activity
- Reduce traffic injury
- Free urban road/parking for green spaces
- Facilitates more equitable access to mobility
- Ease movements of elderly, children, disabled, women
- Promotes social cohesion in local communities



# Partnerships, Leadership & Advocacy

'WHO DG DECLARES that Air Pollution is one of the largest global health risks we face today'



**United Nations**  
Framework Convention on  
Climate Change

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WHO is integrating air pollution into  
Climate action



**PARIS2015**  
UN CLIMATE CHANGE CONFERENCE  
COP21·CMP11

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Air and climate pollutants linkages to  
health featured at high-level side  
events Health aspects of COP21  
covered in 185 media articles.

Over 40% of total coverage, referred  
somehow to air pollution, climate and  
health linkages.

**BREATHELIFE**  
Clean Air. Healthy Future.

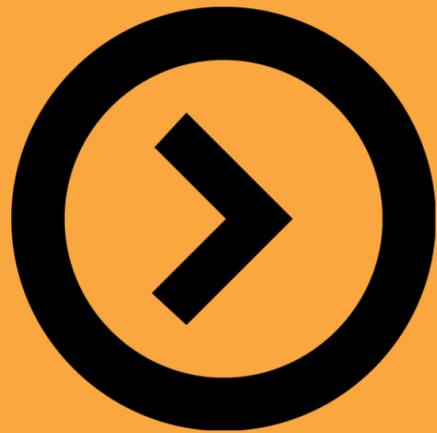
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Public BREATHE Exhibition  
visited by tens of thousands.  
One exhibit gets 400,000  
views on YouTube.

# MUSTERING THE PRESTIGE AND “BRAND” RECOGNITION OF WHO TO COMMUNICATE ABOUT RISKS AND BENEFITS

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# Awareness- raising



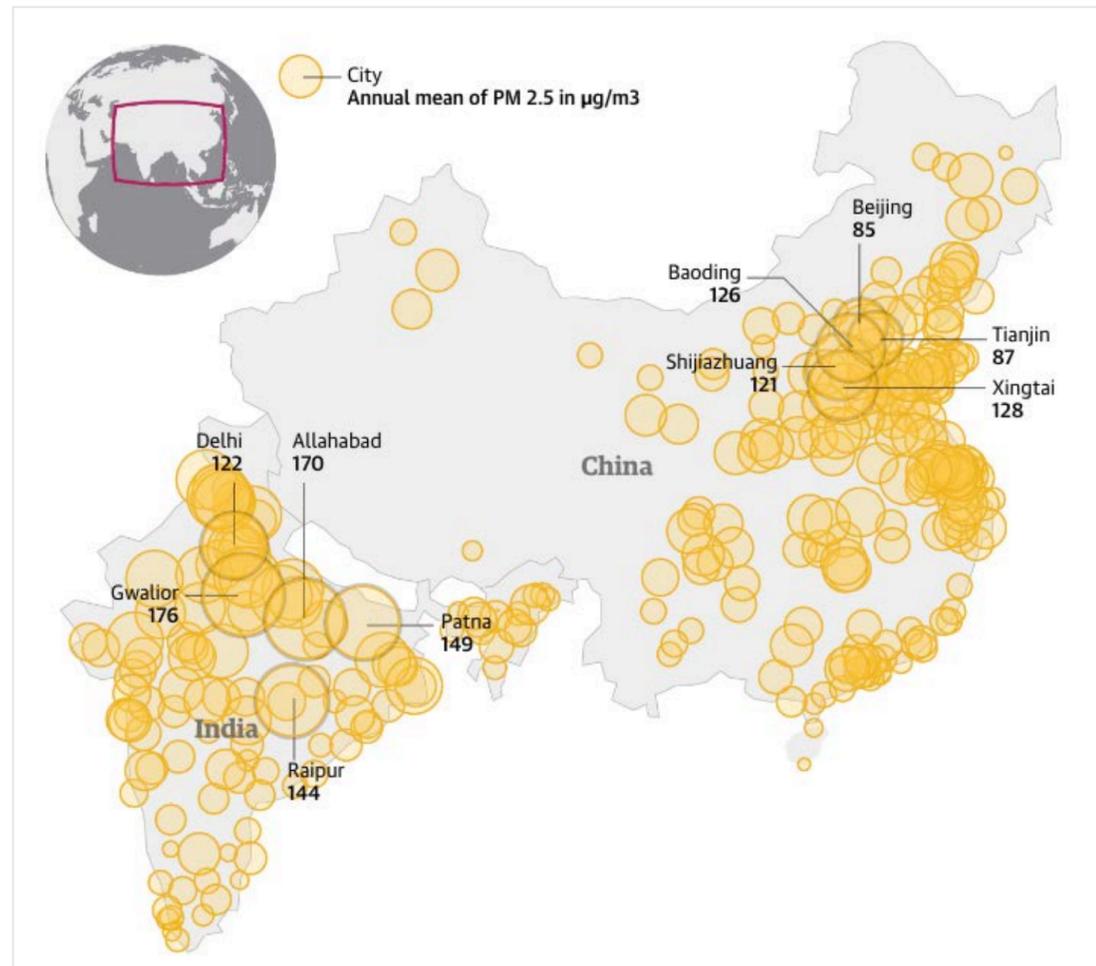
Public Health has a solid record of successful campaigns on topics like anti-smoking and HIV/AIDS awareness

Let's bring those lessons to one of our greatest contemporary public health challenges – combating air pollution for better health

# MAKE WHO DATA UNDERSTANDABLE AND RELEVANT

the guardian

BREATHELIFE



**BREATHELIFE.**  
Clean Air. Healthy Future.

The Issue Air Pollution Map Take Action Partners

**ACCRA, GHANA**  
**HAZARDOUS**

Accra's air quality is **four times** above the WHO healthy level.

**145,000** Ghanaians die from air pollution related disease each year.

**Heart Disease** is the leading cause of air pollution related deaths.

[See more air pollution and health-related data](#)

**SHARE YOUR CITY'S DATA WITH A FRIEND**

[Share](#) [Tweet](#)

World Health Organization

A large crowd of people is gathered on a city street for a climate march. In the center, a large, realistic-looking globe of the Earth is suspended in the air, held up by a person whose arm is visible. The crowd is diverse in age and appearance, with many people wearing blue and green shirts. Some are holding signs, including one that says "SPOON" and another that says "HOPE CLIMATE MARCH". The background shows tall city buildings under a clear sky.

**CREATE A SENSE OF “URGENCY” ABOUT THESE SEVERE & GROWING ISSUES – BUT ALSO PROVIDE HOPE**

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**SPOON**  
Spoon University

HOPE CLIMATE MARCH  
September 21, 2014  
NEW YORK, NY

# PILOTING NEW APPROACHES

## BREATHELIFE

Clean Air. Healthy Future.

A GLOBAL CAMPAIGN TO IMPROVE AIR QUALITY AND REDUCE THE 7 MILLION LIVES LOST EACH YEAR FROM THE EFFECTS OF AIR POLLUTION IN HALF BY:

Raising awareness of air pollution as a public health crisis

Pressuring leaders to commit their cities to safe air quality targets

Engaging citizens and local leaders to take actions that accelerate solutions

Strengthening partnerships with media and civil society

# ELEMENTS OF A CAMPAIGN

## Goals

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Set clear campaign goals that relate to your theory of change

## Partnerships

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Strengthen partnerships with media and civil society

## Segmentation

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Identify key audiences (e.g., health sector, the public) and create tailor campaigns messaging that speaks to them

## Distribution

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Disseminate the message on various platforms for outreach – print, digital and social media – in an integrated fashion

## Calls-to-action

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Link to attainable policy goals and targets

## Storytelling

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Inspire action through content that is visually powerful, engaging and relevant content



Join us in breathing life back into our cities.