

Nuevos paradigmas para la acción en contaminación ambiental de interiores y exteriores

Resolución de la Asamblea Mundial de la Salud en
Contaminación del Aire y La Salud

Dr Carlos Dora
Coordinator
Department of Public Health and Environment

Key messages for mini-campaign



cuatro retos:

1. La resolución de la Asamblea Mundial de la Salud sobre contaminación del aire y salud
2. Objetivos de desarrollo durable de 2015 – indicadores de contaminación del aire y energía doméstica
3. Orientaciones OMS para la calidad del aire interior, y para la energía doméstica
4. Abordajes integrados – vivienda y salud

Enfermedades no Transmisibles son la mas grande causa de mortalidad

Projected main causes of death, worldwide, all ages, 2005

Communicable diseases, maternal and perinatal conditions, and nutritional deficiencies
30%

Cardiovascular diseases
30%

TOTAL DEATHS 2005
58 million

Injuries
9%

Cancer
13%

Other chronic diseases
9%

Diabetes
2%

Chronic respiratory diseases
7%

2 entre 3 muertes son por ENTs

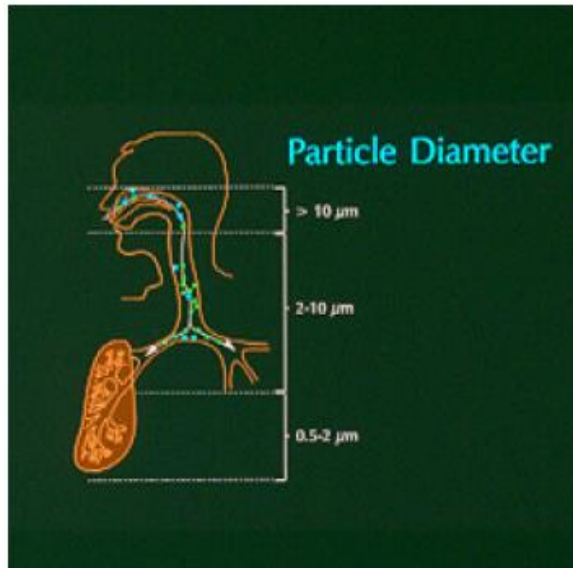
- Cardiovascular disease, mainly heart disease, stroke
- Cancer
- Chronic respiratory diseases
- Diabetes
- Injuries

Costs: Trillions of US\$ dollars

Air Pollutants are a major health risk -

Particles smaller than $2.5\mu\text{m}$ penetrate deep into the lungs and effect the body more systematically leading to diseases like *stroke, heart disease, cancers* and *pneumonia*.

PARTICLE SIZE AND DEPOSITION



$\text{PM}_{<10\mu\text{m}}$ – Coarse

$\text{PM}_{<2.5\mu\text{m}}$ – Fine

$\text{PM}_{<1\mu\text{m}}$ – Ultrafine



Lungs exposed to tobacco and to Indoor air pollution

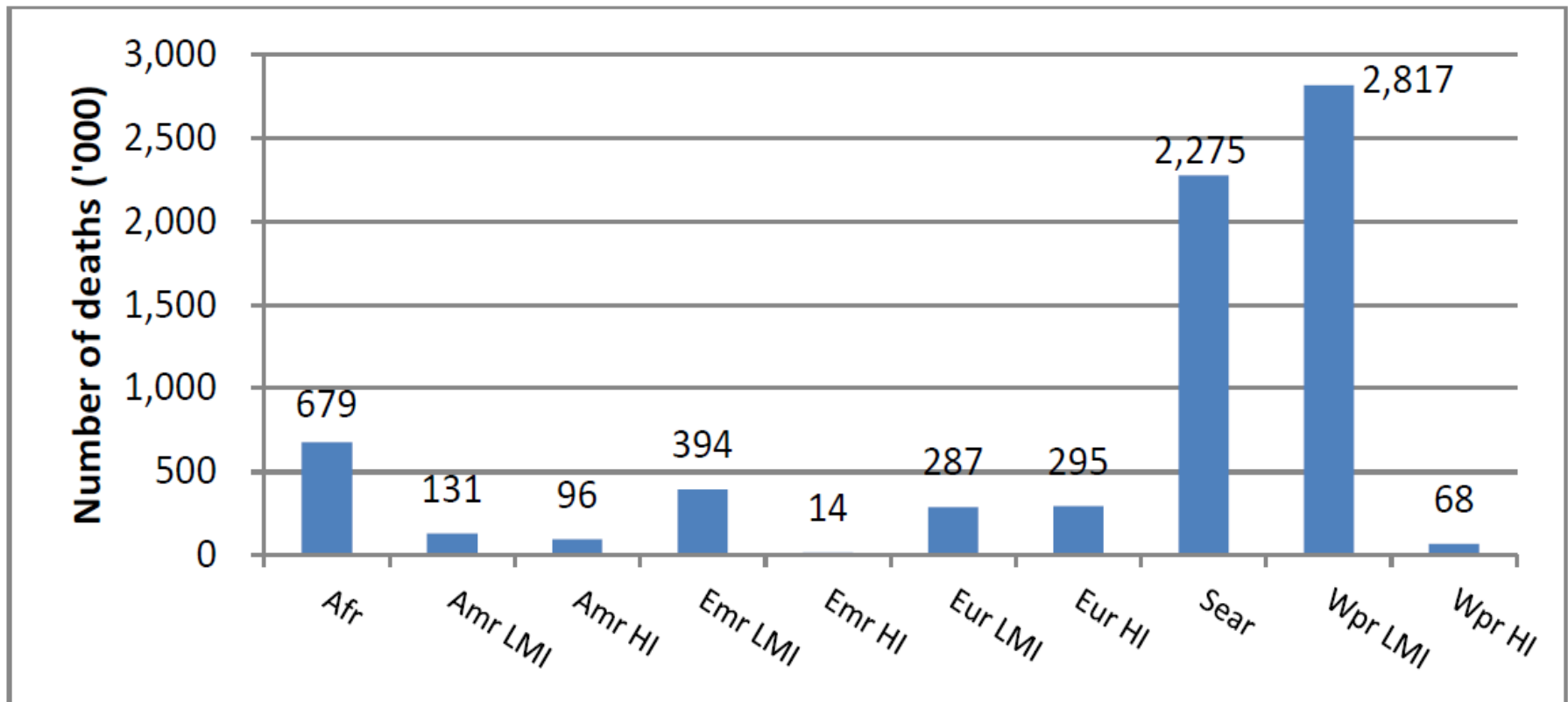


Pathology slides - Courtesy Prof. Saldiva, São Paulo, Brazil

Deaths attributed to HAP + Outdoor Air Pollution

~ 7 million deaths globally in 2012

AP a main RF for around 1/5 of NCDs



Asamblea Mundial de la Salud adopta Resolución destinada a hacer frente al impacto sanitario de la contaminación del aire

- **Papel clave en el potencial de las autoridades sanitarias** nacionales para sensibilizar para salvar vidas y reducir los costos de salud, si se afronta adecuadamente el problema de la contaminación del aire.
- La necesidad de que exista una sólida **cooperación entre los distintos sectores** y de que las preocupaciones sobre la salud se integren en todas las políticas nacionales, regionales y locales referentes a la contaminación del aire.
- Se insta a que Estados Miembros establezcan **sistemas de control de la calidad del aire y registros sanitarios** a fin de mejorar la vigilancia de todas las enfermedades relacionadas con la contaminación del aire;
- Fomenten la adopción de **prácticas, tecnologías y combustibles limpios para la cocción de alimentos, la calefacción y la iluminación**, y fortalezcan la transferencia internacional de conocimientos especializados, tecnologías y datos científicos relacionados con la contaminación del aire.

http://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_ACONF2Rev1-en.pdf

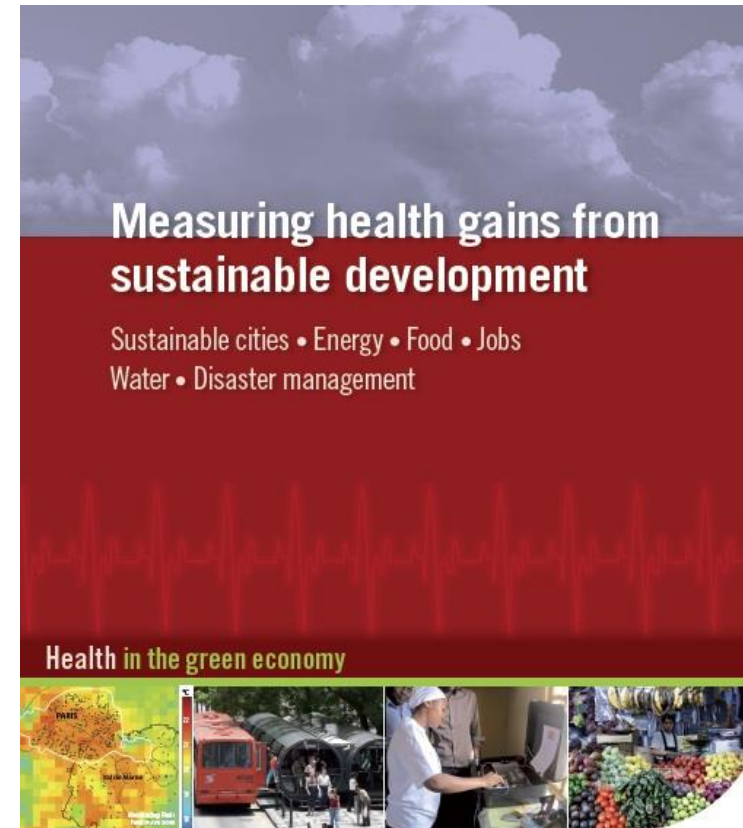
En la resolución se pide a la Secretaría de la OMS que refuerce su capacidad técnica para ayudar a los Estados Miembros a adoptar medidas para hacer frente a la contaminación del aire.

- Reforzar la capacidad para:
- **Aplicar las directrices de la OMS sobre la calidad del aire** (WHO air quality guidelines) y sobre la calidad del aire en interiores (WHO indoor air quality guidelines);
- Realizar un **análisis de los costos y beneficios de las medidas de mitigación,**
- Hacer avanzar las **investigaciones sobre los efectos** de la contaminación del aire en la salud y sobre **la eficacia de las medidas adoptadas.**
- Proponer una **hoja de ruta** para reforzar la respuesta mundial del sector de la salud y reducir las repercusiones adversas de la contaminación del aire para la salud, en mayo de 2016.

Health indicators for Post-2015 Sustainable Development

WHO related health to SD policies, through the

- Defining health-relevant indicators for sustainable development goals (EB 136/30)
- Convened consultation on health indicators for Rio + 20 themes/disseminated through civil society/government partners at the conference
- Contributions to the UN Statistics Commission 2015-2016



Indicadores para los nuevos objetivos de desarrollo sostenible - ciudades

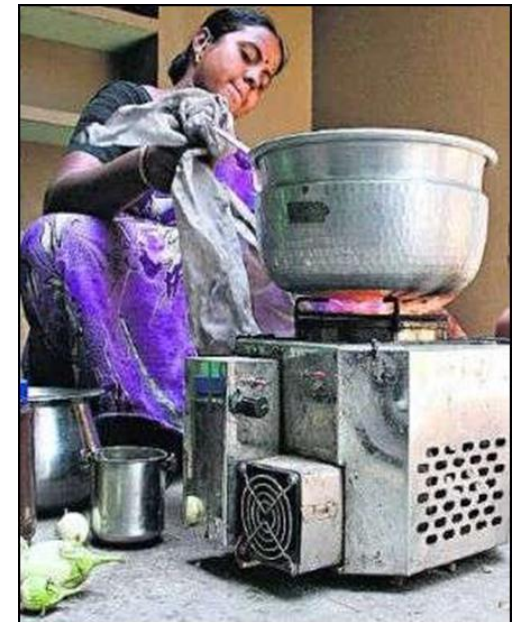
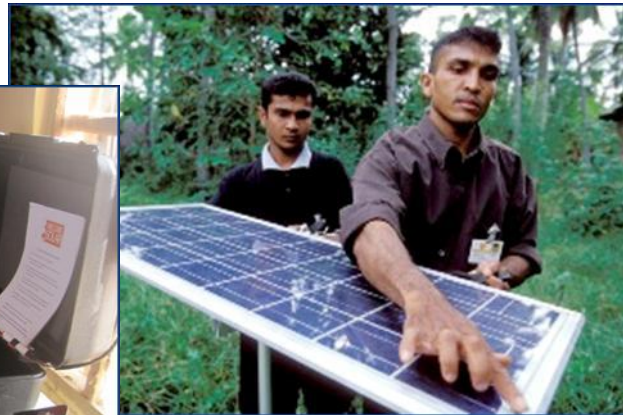
- **Healthy, efficient transport** ↔ as measured by % travel by transit/walking & cycling + mortality rates for pedestrians/cyclists
- **Annual mean levels of fine particulate matter air pollution in cities (population weighted)**
- **Slum housing with access to water/sanitation and energy & improved climate resilience** ↔ sustainable urban development

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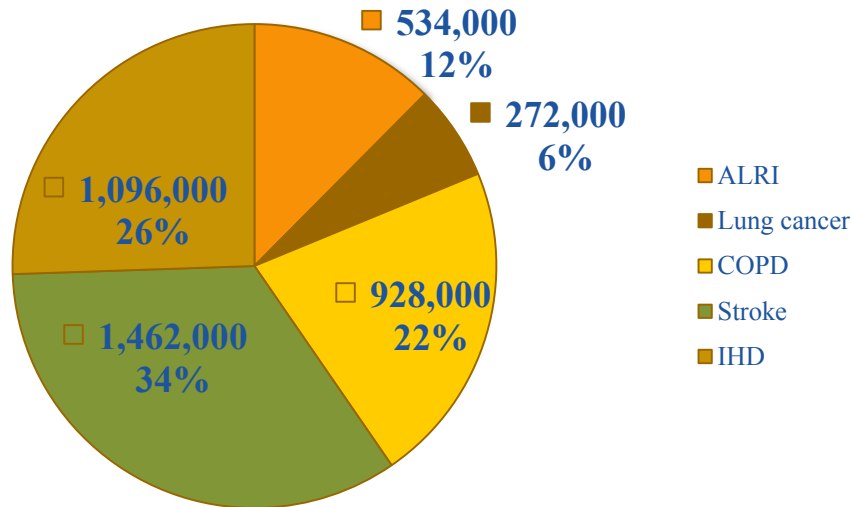
Indicadores para los nuevos objetivos de desarrollo sostenible - Energia

- % of health care facilities with access to clean/sustainable energy
- **Percentage of population with primary reliance on clean fuels and technologies in the home***
- Deaths and disease attributed to indoor and outdoor air pollution (above WHO Air Quality guidelines)



According to recommendations of the *WHO guidelines for indoor air quality: household fuel combustion*¹⁵

4.3 million deaths were attributed to household air pollution exposure in 2012

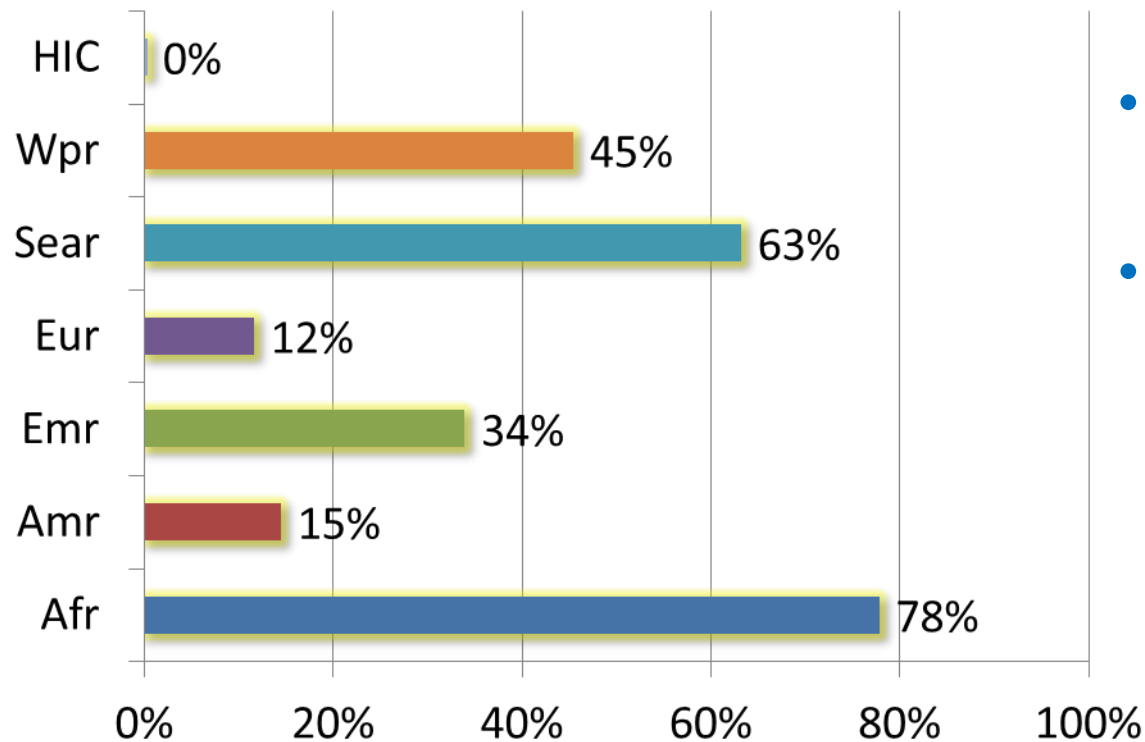


- **Over half** of deaths from childhood pneumonia are attributed to the exposure to HAP
- **88%** of these deaths are to non-communicable diseases like cardiovascular disease and chronic obstructive pulmonary disease (COPD).



HAP Exposure, 2012

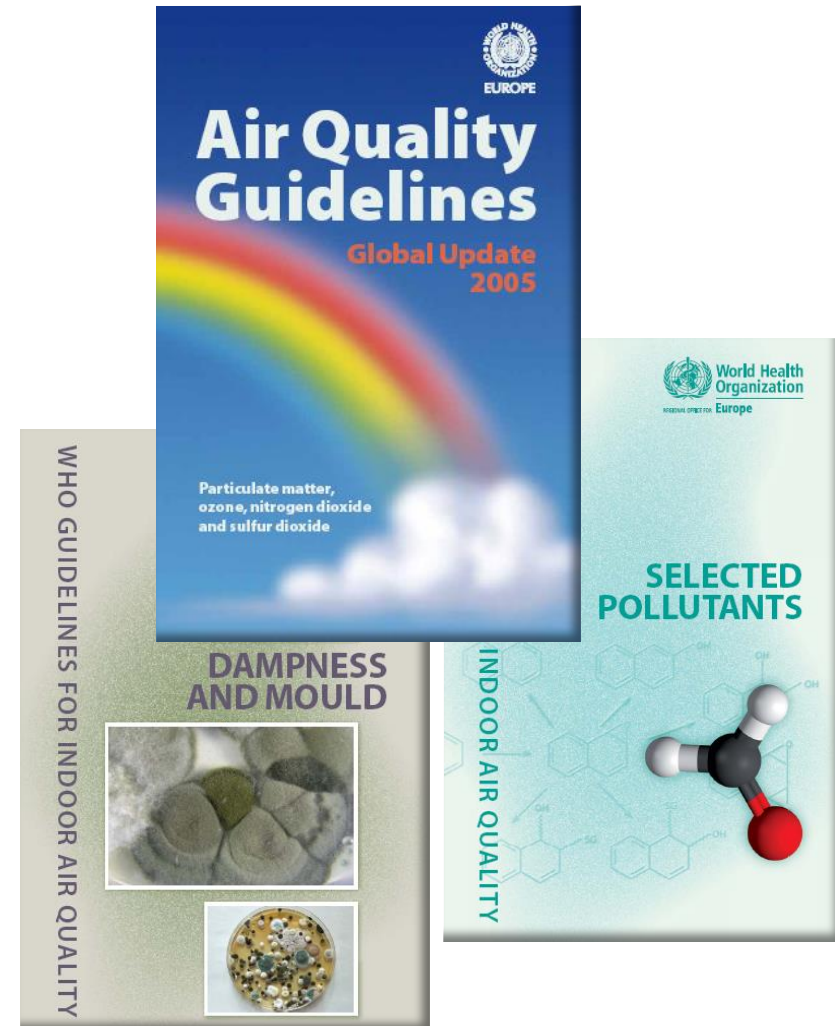
Population Primarily Cooking with Solid Fuels



- 2.9 billion people exposed or...
- 42% of the global population
- % exposed has decreased, but the absolute # exposed has remained relatively constant

Existing WHO Air Quality Guidelines (AQG)

- Global update (ambient) 2005:
 - PM_{2.5}, PM₁₀
 - Chapter on IAP
- Indoor AQG:
 - Dampness and Mould: 2009
 - Selected pollutants: 2010
 - Household fuel combustion: this project





HOUSEHOLD FUEL COMBUSTION

Executive Summary



When cooking, heating and lighting in the home:

1. Don't use Kerosene
2. Don't use Coal
3. Use only very efficient cookstoves (following emission rates provided by WHO)

Use clean fuels – LPG, Biogas, ethanol...

Extensive Evidence Reviews

- **Fuel use:** Global; for cooking, heating & lighting
- **Emissions:** range of technology & fuel options, how relate to AQG
- **Levels:** HAP and exposure
- **Health impacts of HAP:** risk for pneumonia, COPD, lung cancer, etc., including exposure-response.
- **Burns and poisoning:** risks, burden and interventions
- **Intervention impacts:** HAP/exposure in routine use
- **Adoption at scale:** barriers and enablers, costs/benefits, finance



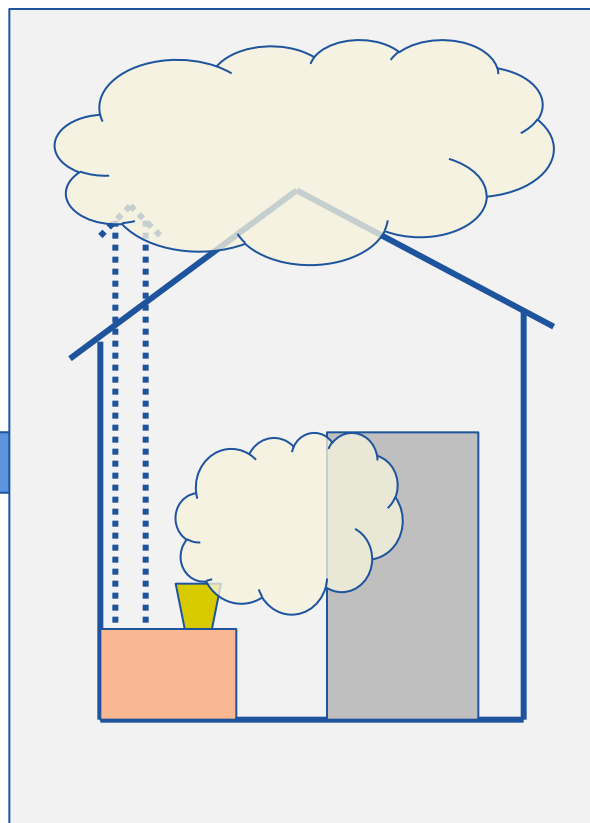
Energy solutions that work in your context

- Test them to check they are clean
 - Using the emission rates given in the guidelines
- Evaluate actual use and satisfaction of user
 - To avoid fuel stacking
- Evaluate health benefits and air pollution reductions in a sample of users/non users
 - To demonstrate costs and benefits

Model linking emissions to air quality

Inputs:

- Emission rates:
 - PM2.5
 - CO
- Kitchen volume
- Air exchange rate
- Duration of use (hours per day)



Outputs:

- Predicted average concentrations of:
 - PM2.5
 - CO

Assumes uniform mixing of pollutants and air in kitchen

Focus on emissions reductions – why?

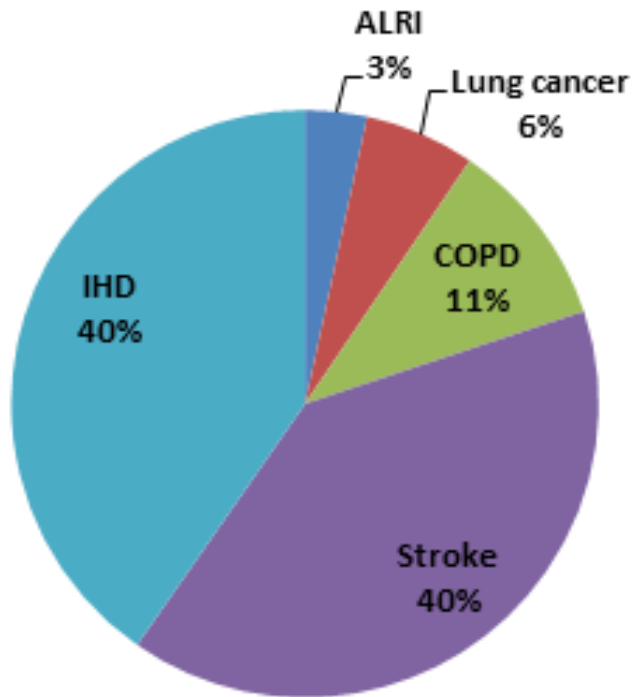
- Outdoor \leftrightarrow indoor
- Evidence base stronger than for other approaches
- Implementation practicality – via design, production, standards, etc
- Some options (clean fuels), are relatively independent of user behaviour.



Ambient Air Pollution



Breakdown of **3.7 million** deaths by disease



~21 % of **all** deaths from ischaemic heart disease (IHD)

~23% of **all** deaths due to stroke

~13 % of **all** deaths to chronic obstructive pulmonary disease (COPD)

Integrated approaches: **Energy-efficient homes reduce air pollution & other housing risks such as...**

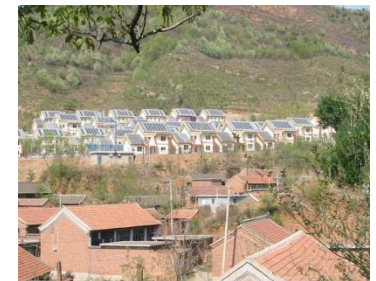
Housing risks

- Indoor/outdoor air pollution
- Damp, mould & allergens
- Poor indoor ventilation
- Planning, transport access
- Urban waste, sanitation & water
- Heat Island
- Storms/flooding



Health impacts

- Chronic/acute respiratory disease
- Allergies, respiratory disease
- Respiratory disease
- Physical inactivity, NCDs, traffic injuries
- Water and sanitation-borne disease
- Strokes
- Injuries/poverty



Housing that is good for health

« Improved insulation saved 0.26 months of life per person » (UK Warm Front Programme)

« Reduced wheezing, days-off school, doctors' visits were reported by occupants of insulated homes » (NZ Insulation study)



Reduction of respiratory illness by 9% to 20% and increase of individual productivity between 0.48% and 11% with natural ventilation strategies

Health co-benefits in housing

Energy-efficient heating, cooling and natural ventilation can reduce **strokes and respiratory illness as well as TB and vector-borne diseases**;

A focus on **slums /sub-standard housing** - where needs are greatest/benefits could be multiplied



Solar hot water heating - India



Slum in Mexico City  World Health Organization

Health co-benefits in energy

Light a billion lives – solar substitutes kerosene, India

Solar hot water heating is an fast-growing, popular technology in Turkey, China, South Africa, Middle East, etc.

China is mass marketing next-generation solar PV & passive. Below passive solar "combi" hot water space heating raised night-time winter temperatures from 6-8^o C lows in village near Beijing



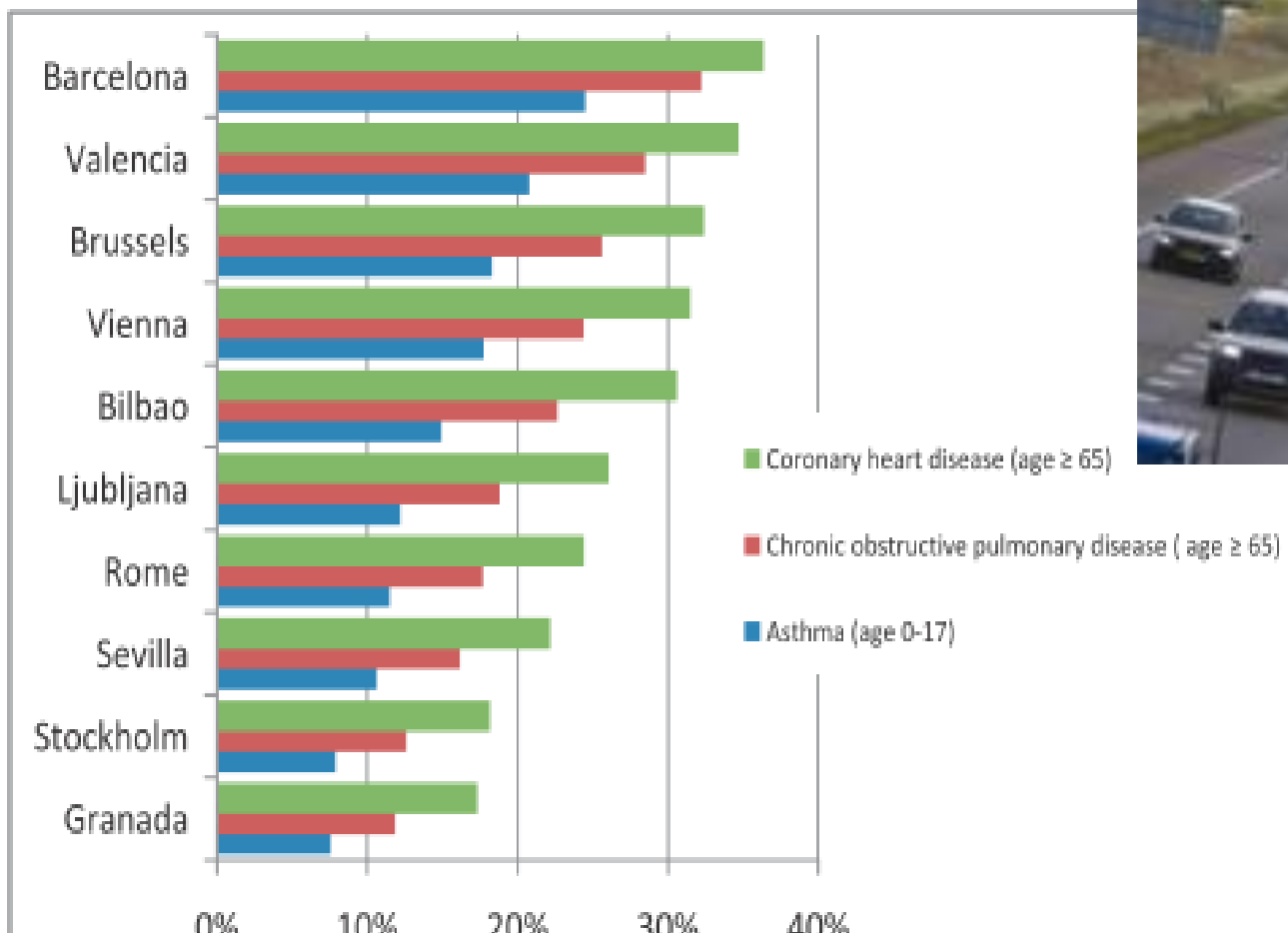
Health Impact Assessment of urban innovations can demonstrate health benefits and enhance global support and financing for scale-up

Cape Town, South Africa's Kuyasa neighborhood slum upgrade: First to be financed by UN Clean Development Mechanism (CDM). Solar hot water systems, sewage and insulation (below) will help reduce heat-related, respiratory and waterborne diseases.



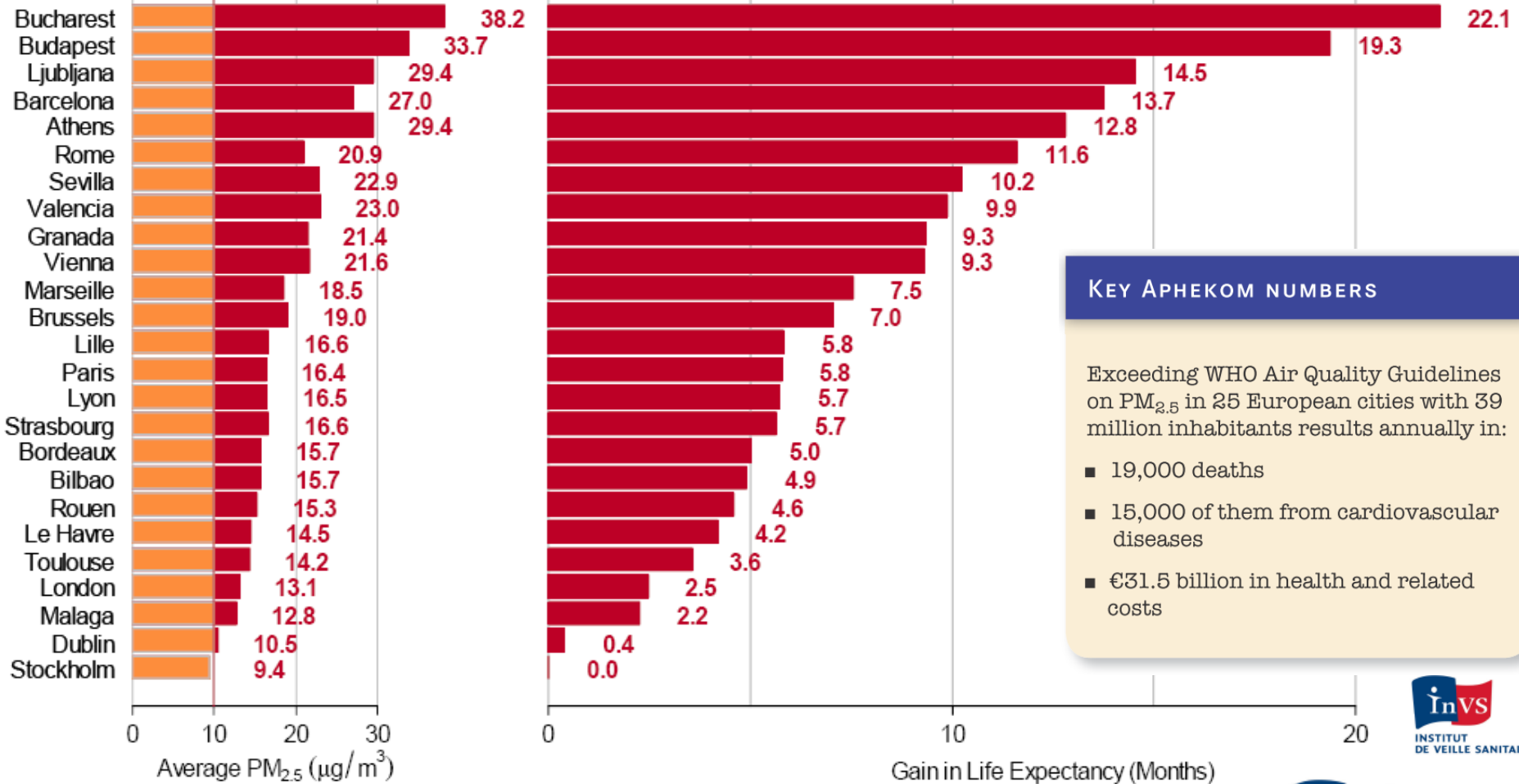
A significant fraction of NCDs is attributable to **exposure to traffic-related air pollution**

Percentage of population with chronic diseases whose disease could be attributed to living near busy streets and roads in 10 Aphekom cities



Gain in life expectancy (months) in 25 Aphekom cities for a decrease in PM_{2.5} to WHO AQQ (10 µg/m³) (age 30+)

WHO AQQ



KEY APHEKOM NUMBERS

Exceeding WHO Air Quality Guidelines on PM_{2.5} in 25 European cities with 39 million inhabitants results annually in:

- 19,000 deaths
- 15,000 of them from cardiovascular diseases
- €31.5 billion in health and related costs



'Healthy' urban transport can reduce chronic disease, injuries and improve health equity

Better fuels and engines help, but private vehicle transport increases congestion, injuries, pollution, and physical inactivity.

Rapid transit/NMT improves access to schools, jobs & services for poor, children, women, elderly & disabled, improving equity. It can reduce injury, cardiovascular disease & support healthy physical activity.

Cycling to work reduced premature mortality by 30% among commuter groups in Shanghai & Copenhagen.





Access to clean/sustainable energy in Health Care

- Substitute diesel generators for sustainable sources (solar, hydro...)
- Adopt energy efficient medical technologies
- This can avoid gaps in energy – lack in electricity can be fatal for deliveries of babies or other urgent services during nigh-time, and is needed for maintaining vaccines, for sterilization of equipment...



Solar suitcase powering a health care facility in Nigeria.



Solar powered refrigerator in Vietnam.



**A vision of
health &
equity in
Sustainable
Development**

Preventing disease – addressing their route causes in the environment and in development



The link between air pollution and climate change

