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How does air pollution affect health?

Better Air Quality Conference
Manila, Philippines | November 15, 2023

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A vast majority of the world's population is exposed to poor air quality

United States

Smoke hangs over US Midwest, East, hurting air quality

By Brendan O'Brien and Kanishka Singh

June 28, 2023 6:40 PM EDT · Updated 4 months ago



Revealed: almost everyone in Europe is breathing toxic air

More than one million deaths in 2019 linked to air pollution exposure in Africa

Business > Green Industries

Study: Air pollution severe in Northern Manila

SOUTH ASIA IS WORLD'S MOST POLLUTED REGION, NEW STUDY FINDS

Thailand's extreme air pollution: 'I feel sorry for my daughter'

Poor Air Quality Is Routine in Many Parts of the World

- 10-15 (<WHO IT-3)
 - 15-25 (<WHO IT-2)
 - 25-35 (<WHO IT-1)
 - >35 (>WHO IT-1)
- (IT = Interim Target)

Climate & Energy | Climate Change | Public Health

Asia, Africa bear brunt of pollution health burden - research

Reuters

August 29, 2023 7:40 AM EDT · Updated 2 months ago



State of Global Air | March 2022

Delhi- National Capital Region, India | November 13, 2023

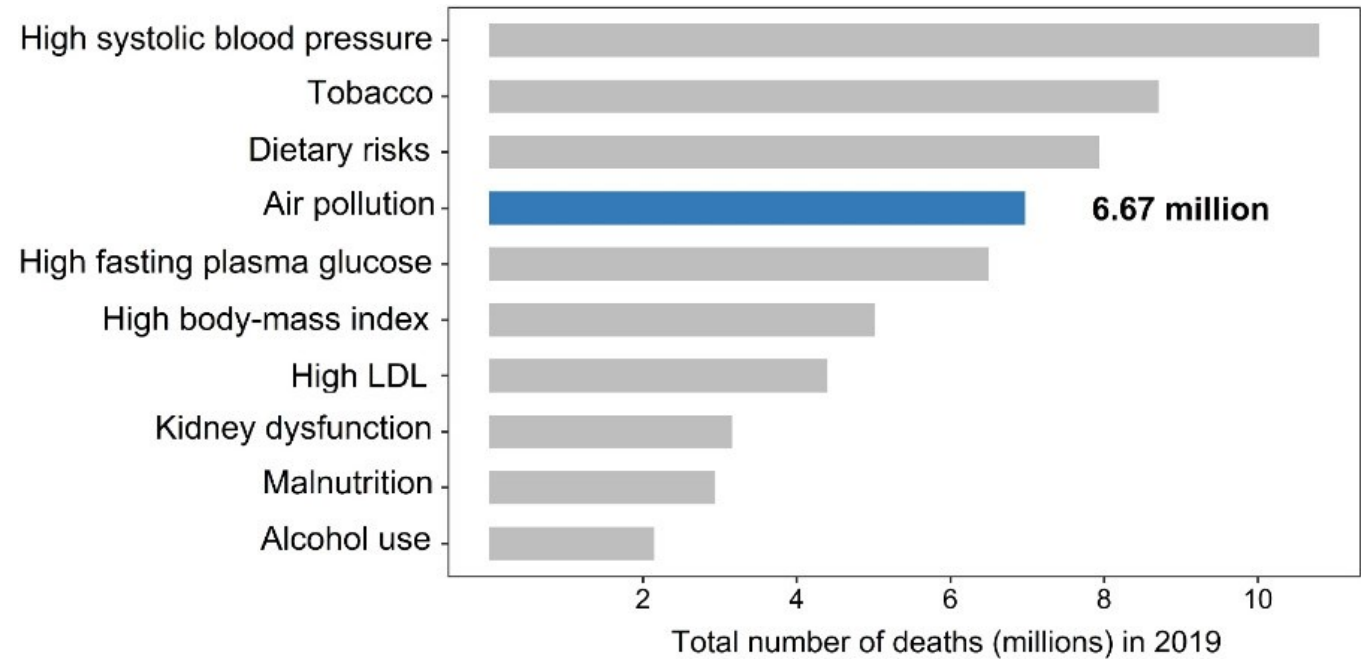


Key Messages

- Air pollution remains the leading risk factor for poor health worldwide. Exposures even at low levels of air pollution can harm human health.
- Children and older adults are particularly vulnerable. Non-communicable lung and heart diseases account for 80% of the total air pollution disease burden.
- In the last decade, PM_{2.5} levels have declined in some places and have stayed similar in other places.
 - WHO Guidelines offer an opportunity to set national and regional roadmaps
- Regions around the world are in different stages of air quality management; solutions need to be localized.

Air pollution is the leading global environmental health risk.

Outdoor and household air pollution linked to 12% of global deaths in 2019.



Global ranking of risk factors by total number of deaths from all causes in 2019.

What happens if we are exposed to air pollution for a few hours or a few days?

Ear, nose, and throat irritation-
coughing, difficulty in breathing,
water in eyes

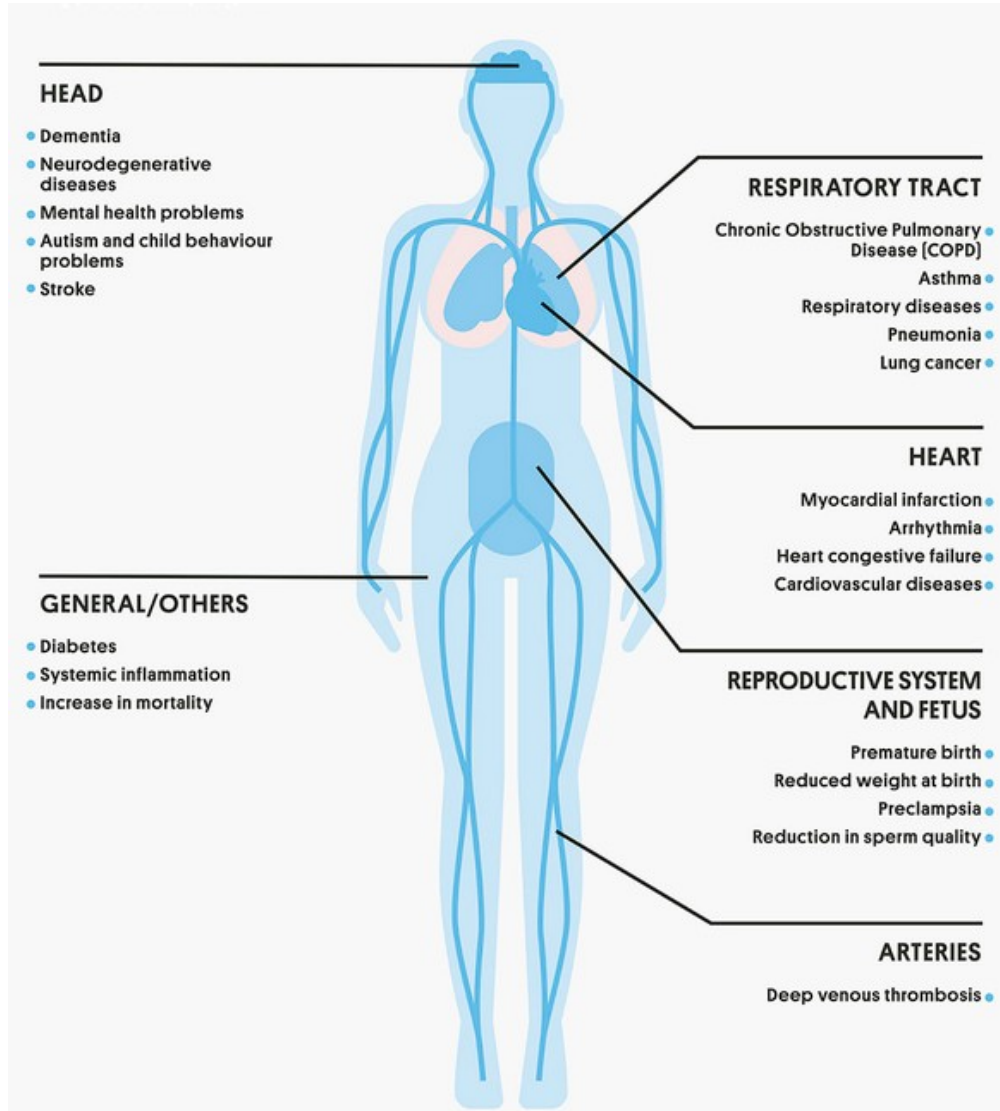
Aggravation of allergies, asthma,
chronic obstructive pulmonary
disease, and bronchitis.

In people with heart disease-
arrhythmias, heart attacks, and
even death

Emergency room visits



What happens if we are exposed to air pollution for many months or years?



Chronic heart and lung diseases

Diabetes

Stroke

Lung cancer

Impact on newborns

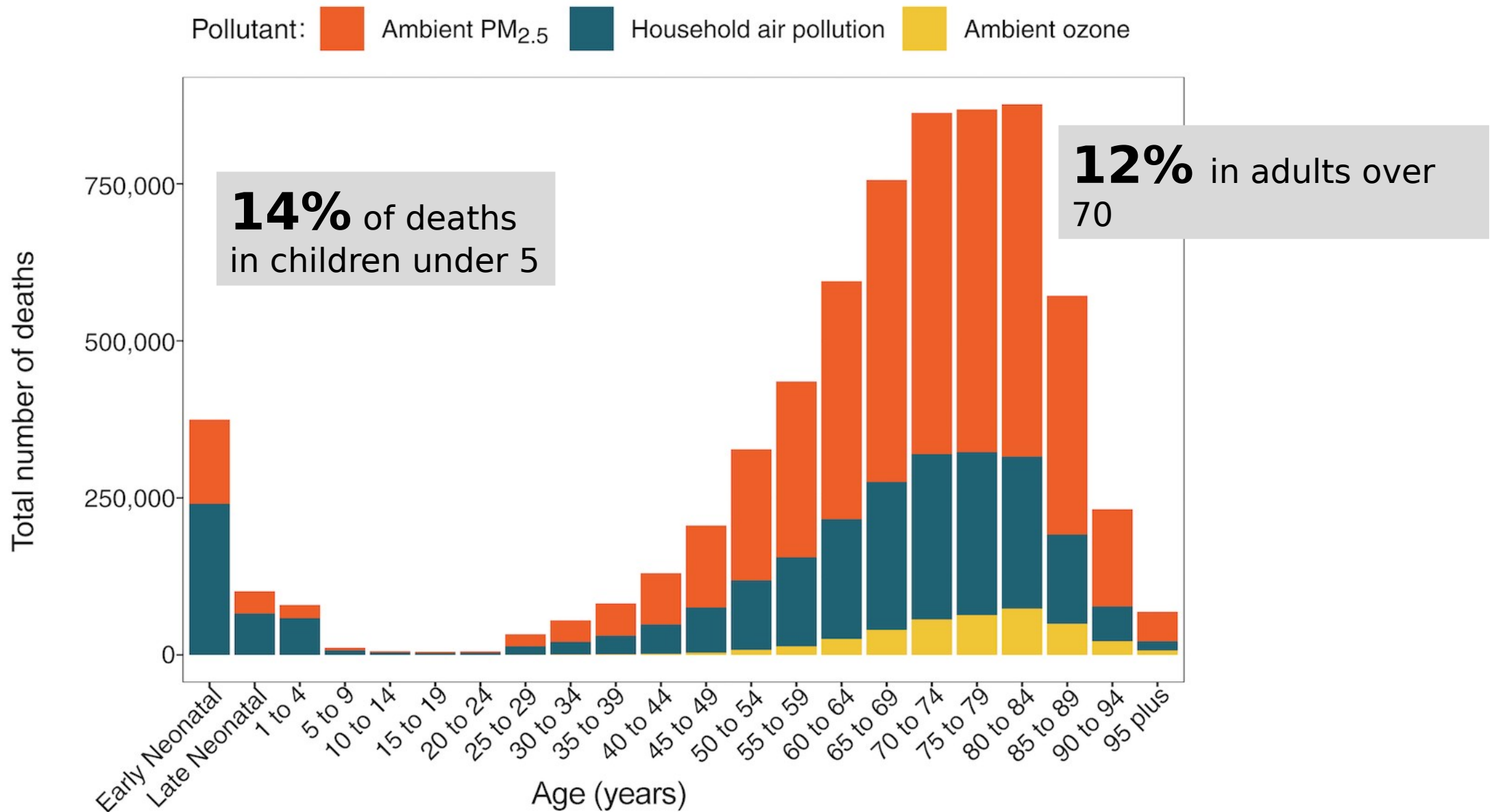
Reduction in life expectancy

Other

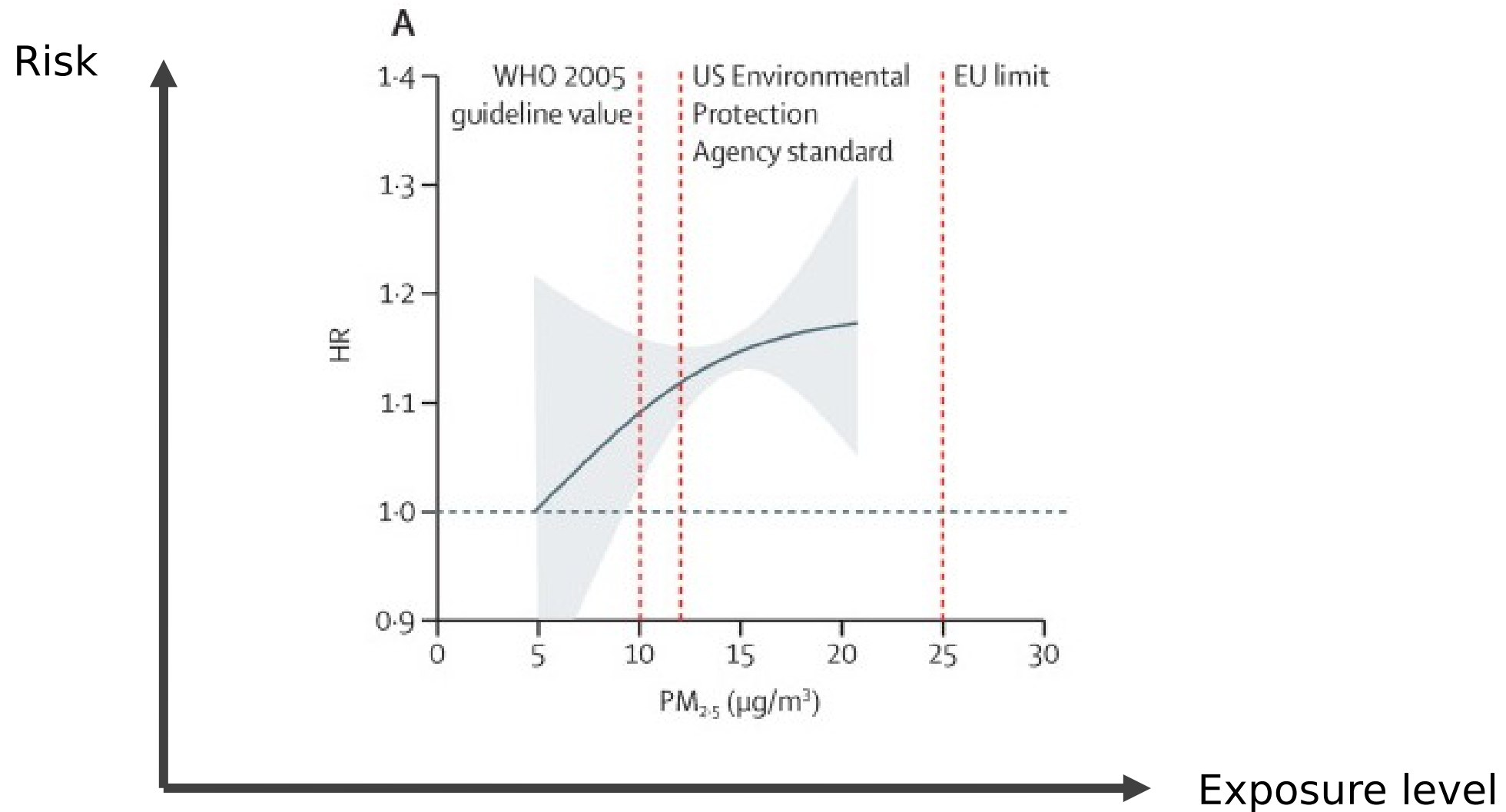
Neurodegenerative diseases- e.g., dementia

Chronic Kidney Disease

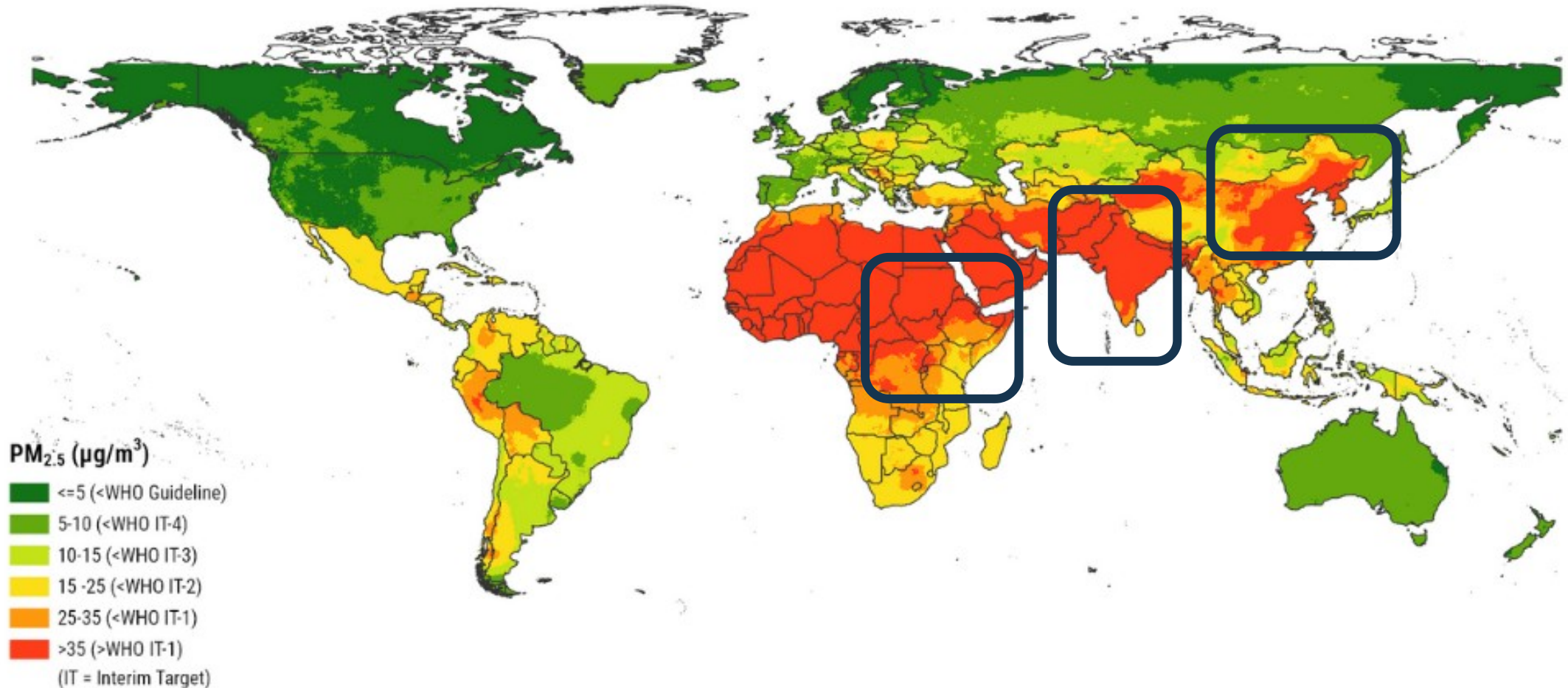
Children under 5 and older adults are particularly vulnerable



Exposures at very low levels can also result in poor health.

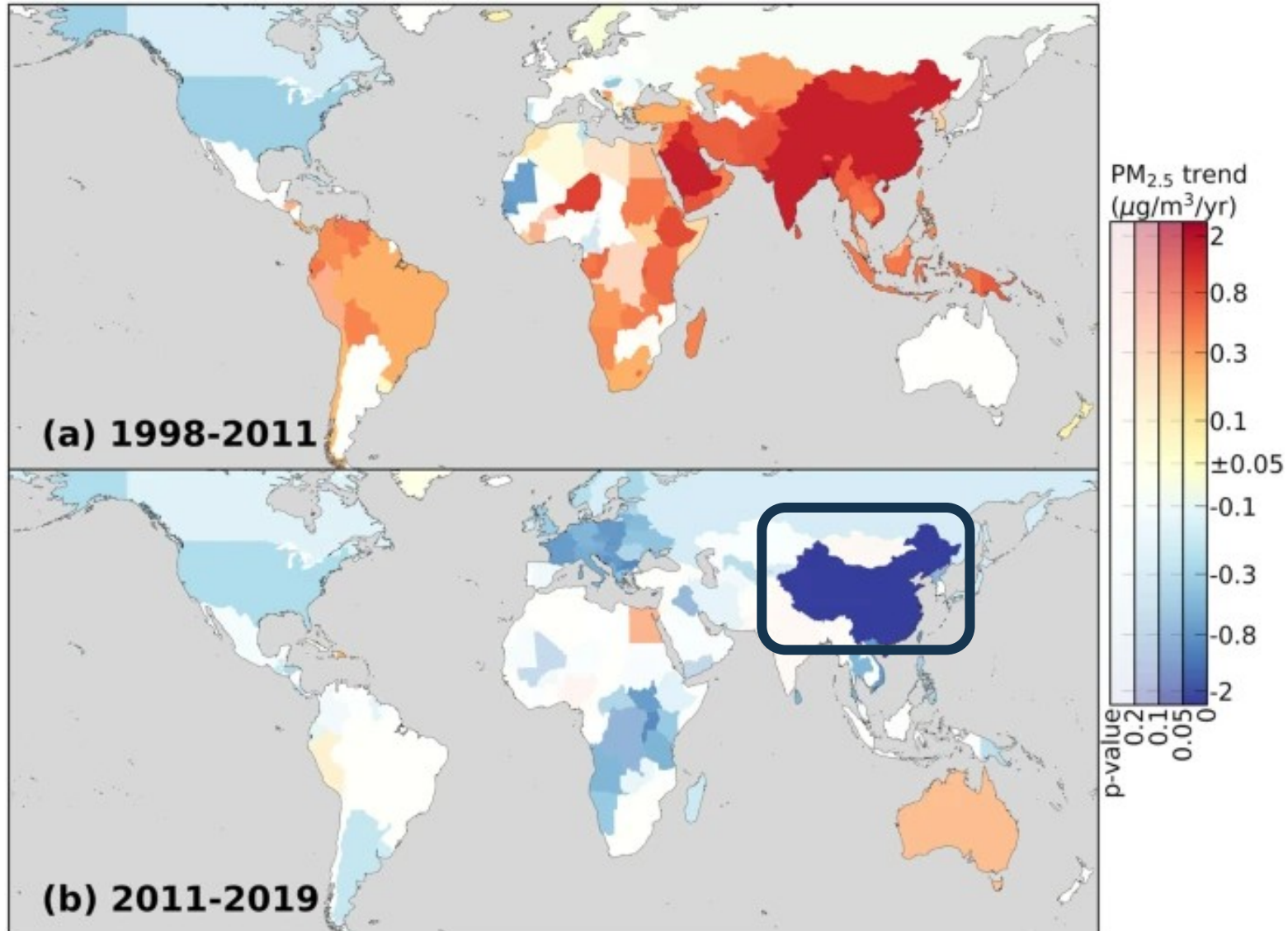


Regions around the world are in different stages of air quality



















State of Global Air | March 2022

Air quality levels are improving in some locations.



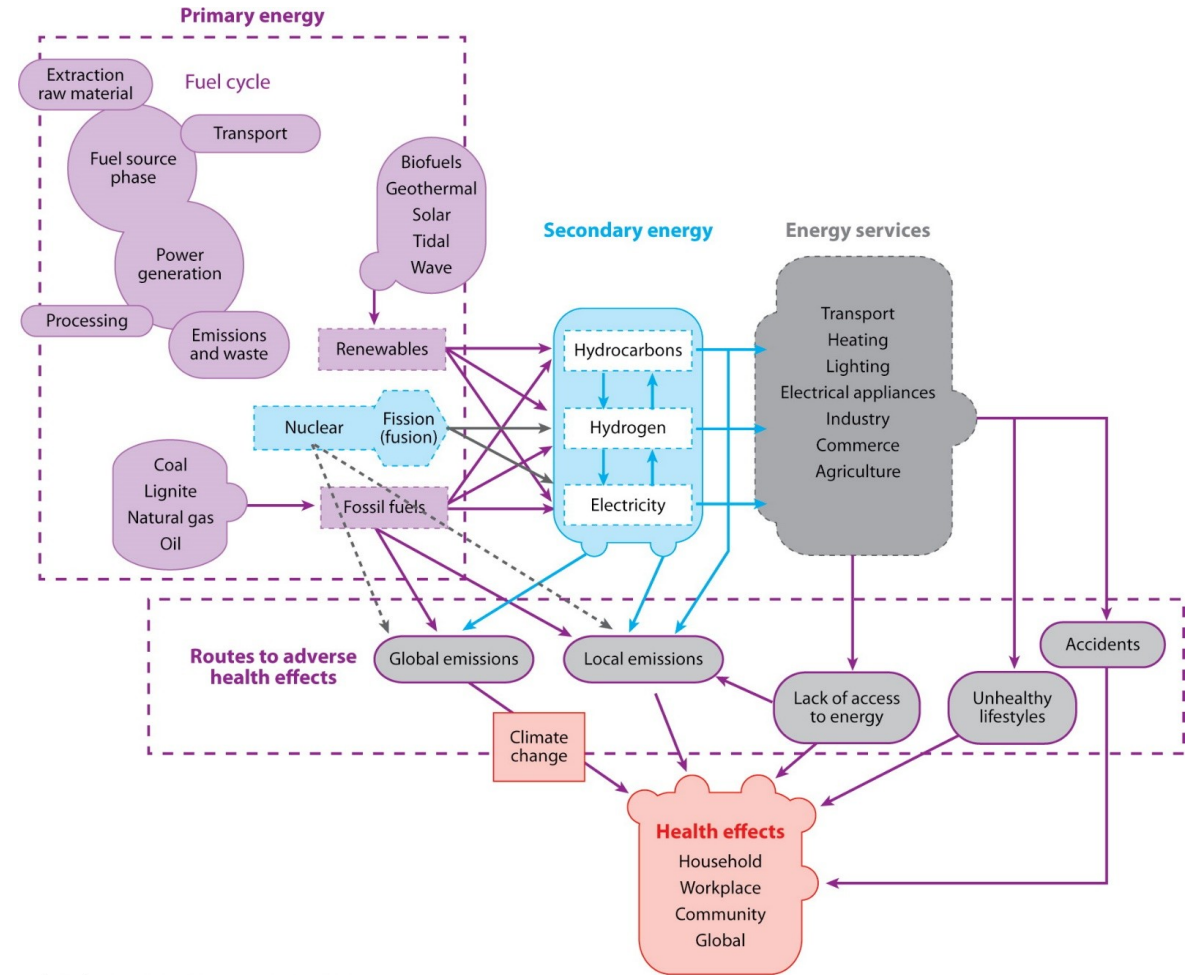
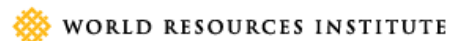
Air quality, energy and climate pathways are interlinked

Highly Potent Short-Lived Climate Pollutants—Sources and Impacts

POLLUTANT	SOURCES	MAJOR IMPACTS
BLACK CARBON	 black coal  diesel exhaust  biomass for cookstoves	 local regional
METHANE	 natural gas  livestock  landfills	 global
TROPOSPHERIC OZONE	 methane  carbon monoxide  nitrogen oxide  volatile organic compounds	 local regional
HYDROFLUOROCARBONS	 air conditioning  refrigeration	 global

Source: The Climate and Clean Air Coalition.

Notes: Black carbon and tropospheric ozone also have a small global impact; methane also has small local and regional impacts.



Smith KR, et al. 2013. Annu. Rev. Public Health. 34:159–88

Tropospheric ozone levels are rising in some places.

Secondary air pollutant,
short-lived climate
pollutant

11% of global COPD deaths
in 2019 were linked to ozone
exposure.

365,000 deaths worldwide in
2019

Significant implications for
climate, health, food
production and security



Critical drivers for air quality action in the last decade

Increase in research output, advocacy

(inter)national attention, funding

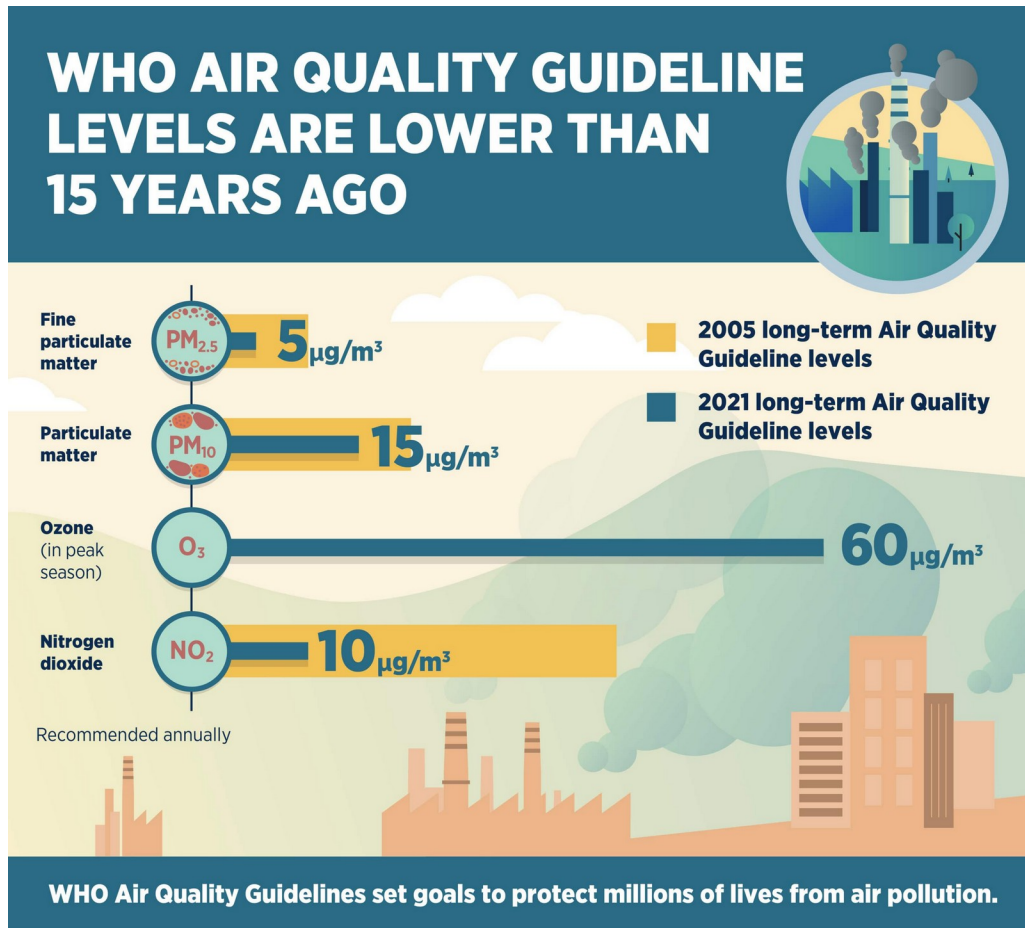
Data is increasingly accessible

Air quality data from low-cost sensors, satellites, models; data on the impacts on health



Social media

How are air quality levels regulated around the world?



CLEAN AIR FOR HEALTH

#AirPollution



CLEAN AIR FOR HEALTH

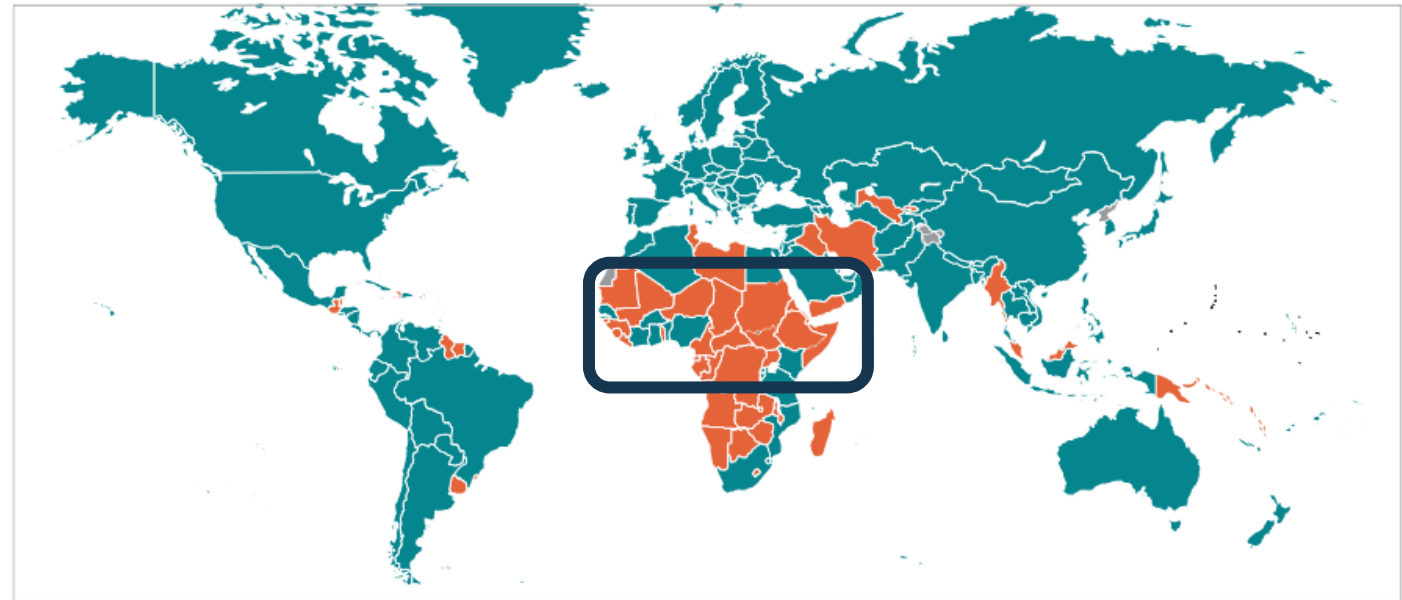
#AirPollution



<https://www.unep.org/resources/report/regulating-air-quality-first-global-assessment-air-pollution-legislation> ;
<https://www.who.int/news/item/22-09-2021-new-who-global-air-quality-guidelines-aim-to-save-millions-of-lives-from-air-pollution>

Case Study

Air Quality Management Plans in African Countries



Countries with legal instruments containing Ambient Air Quality Standards

Yes No No Data

Local data, engagement, and leadership is critical for progress towards clean air.



Thank you!

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