

# Setting the scene: What do future climate scenarios mean for air quality and health around the world

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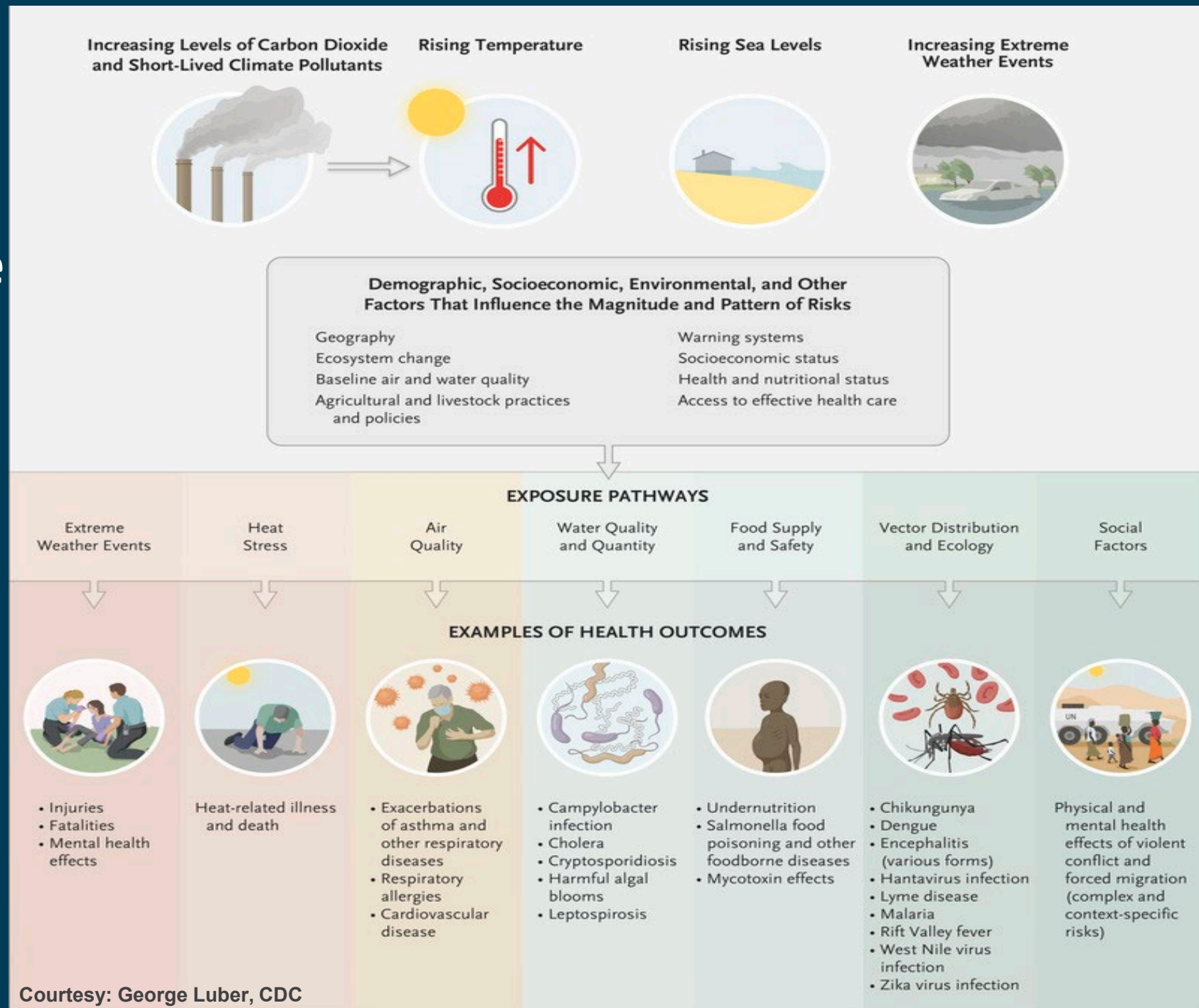
 Health Effect Institute Annual Conference 2024, April 28-30th  
Philadelphia, USA





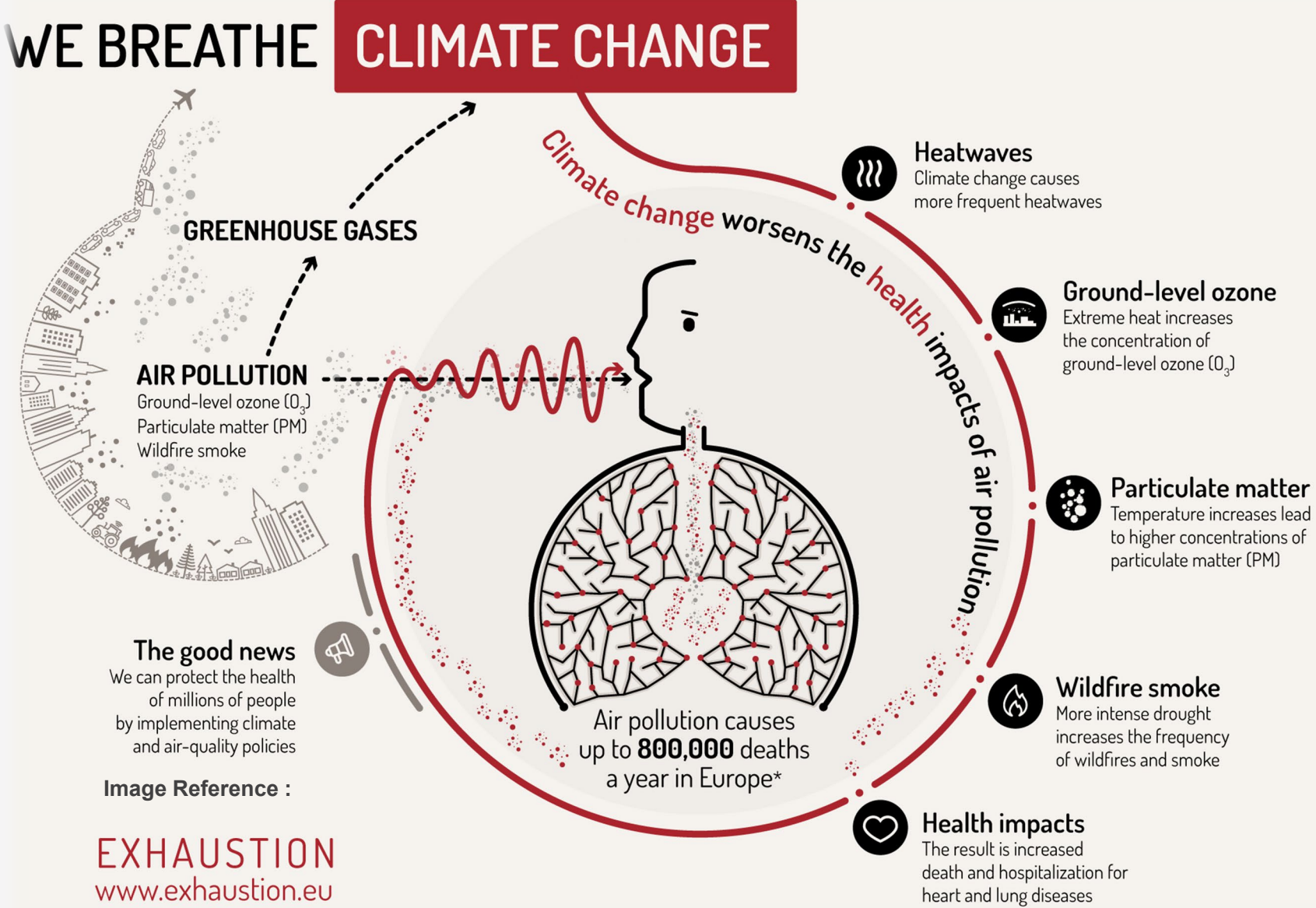
*Air pollution is visible in Los Angeles, California, USA, in February 2023. PHOTO: QIAN WEIZHONG/VCS VIA GETTY IMAGES*

# Major Health Risks Associated with Climate Change





# Climate Change and Air Pollution

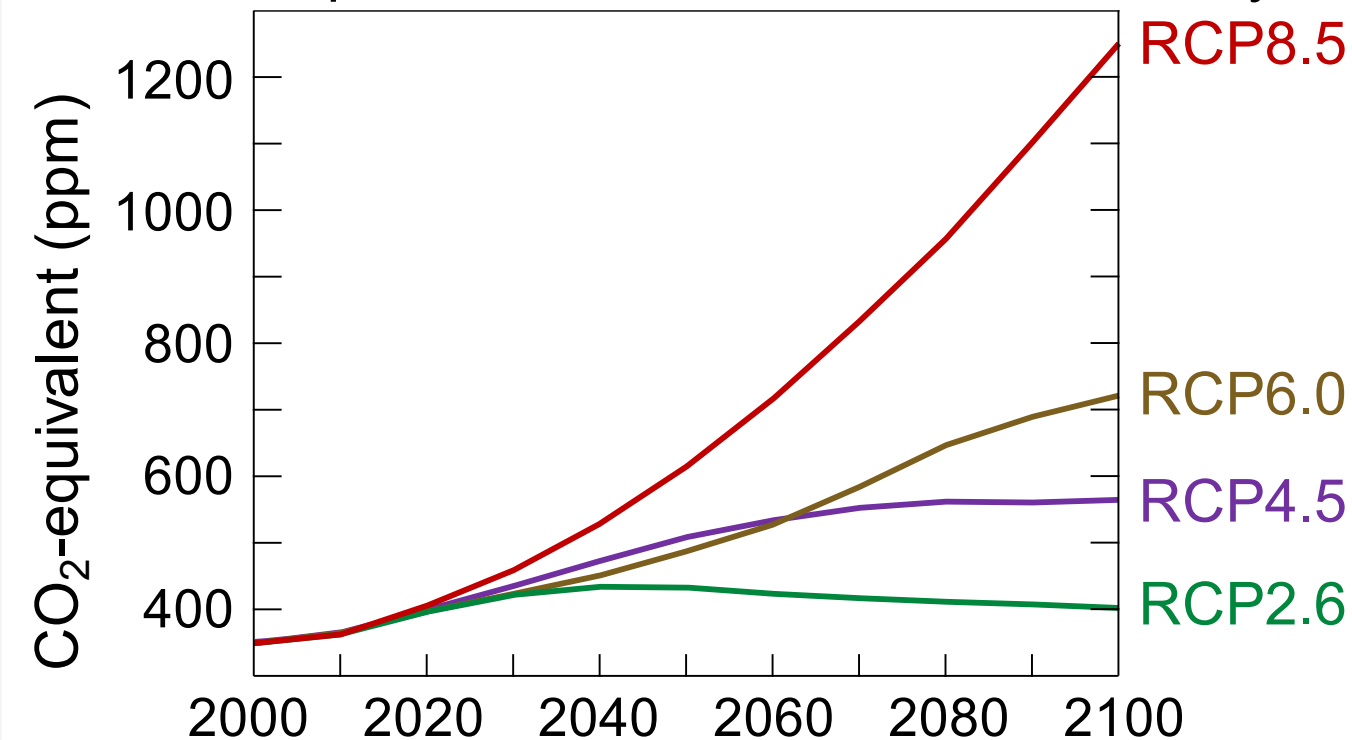


\*EEA 2019b; Lelieveld et al. European Heart Journal 2019

# Climate change Scenarios

## Representative Concentration Pathways

IPCC Representative Concentration Pathways



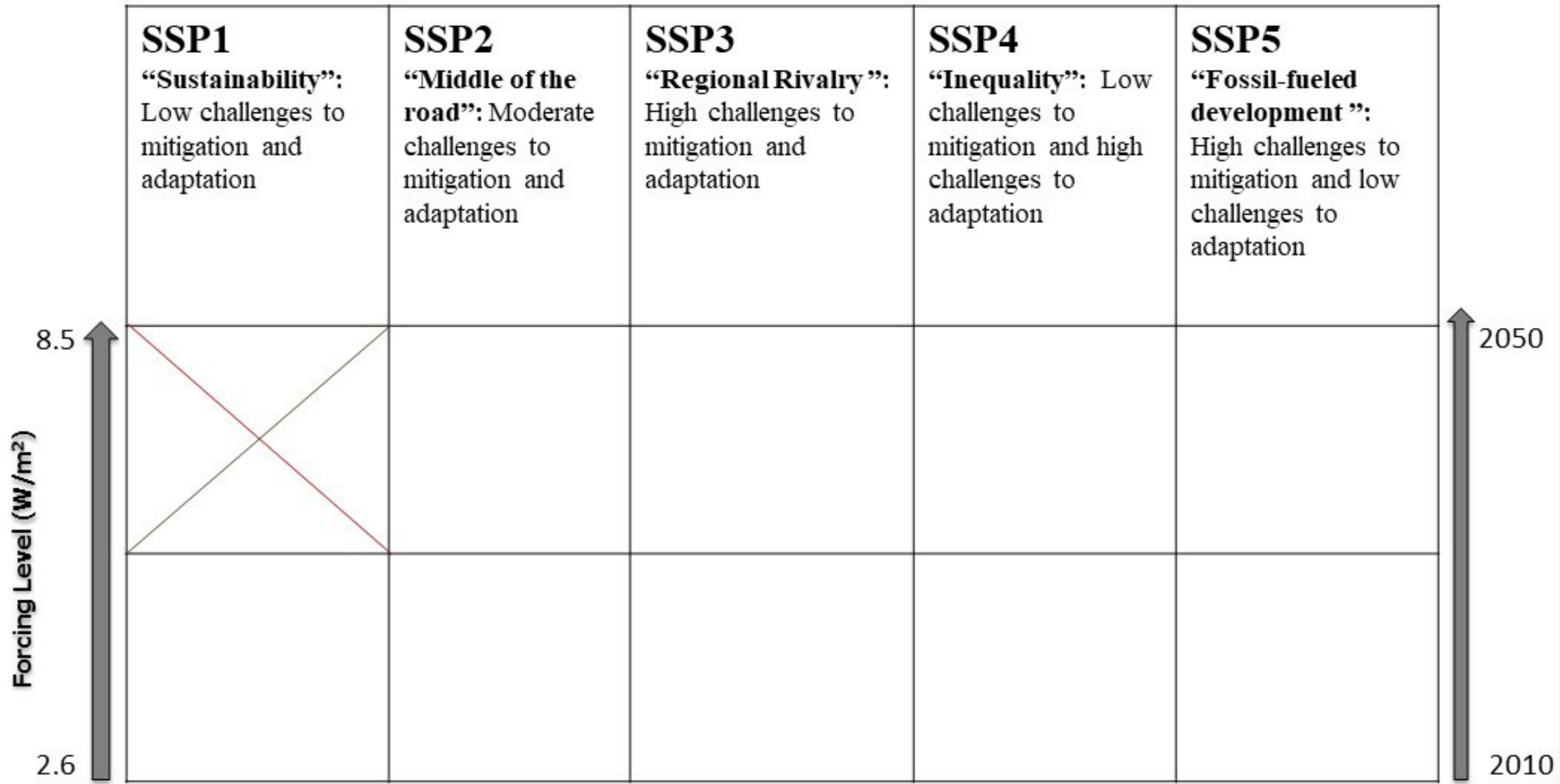
IPCC: Intergovernmental Panel on Climate Change

## Shared Socioeconomic Pathways

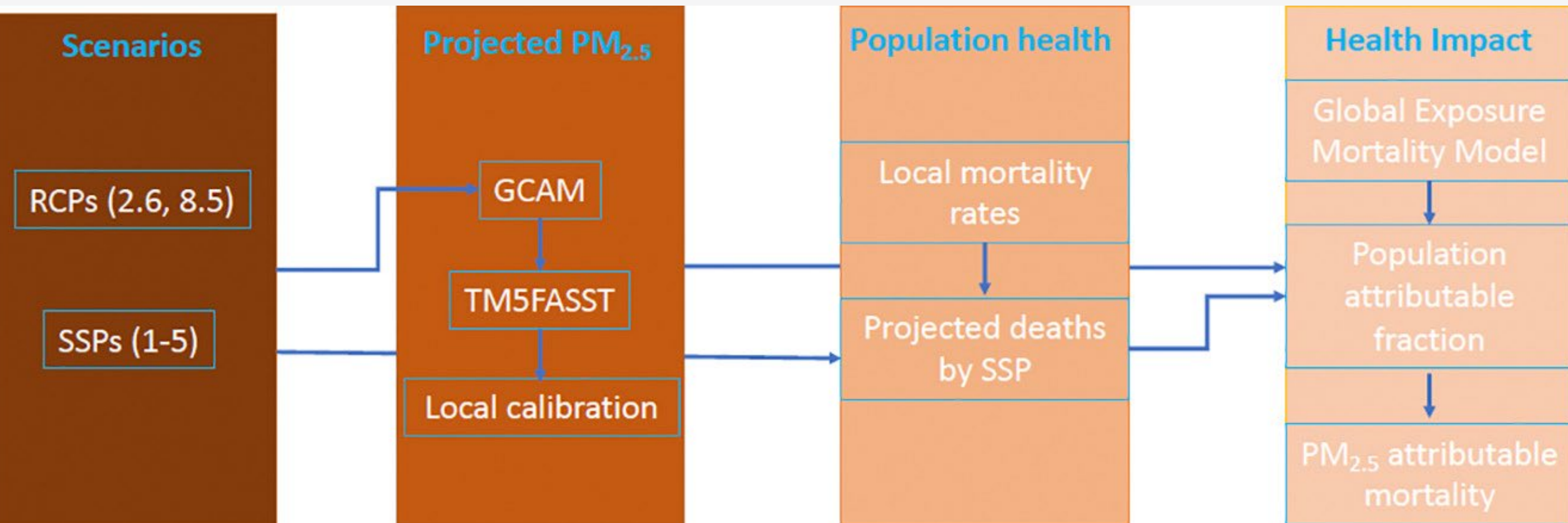


Brian C. O'Neill et al; GEC 2017

# Socio-economic Reference Pathways



# Modelling Framework

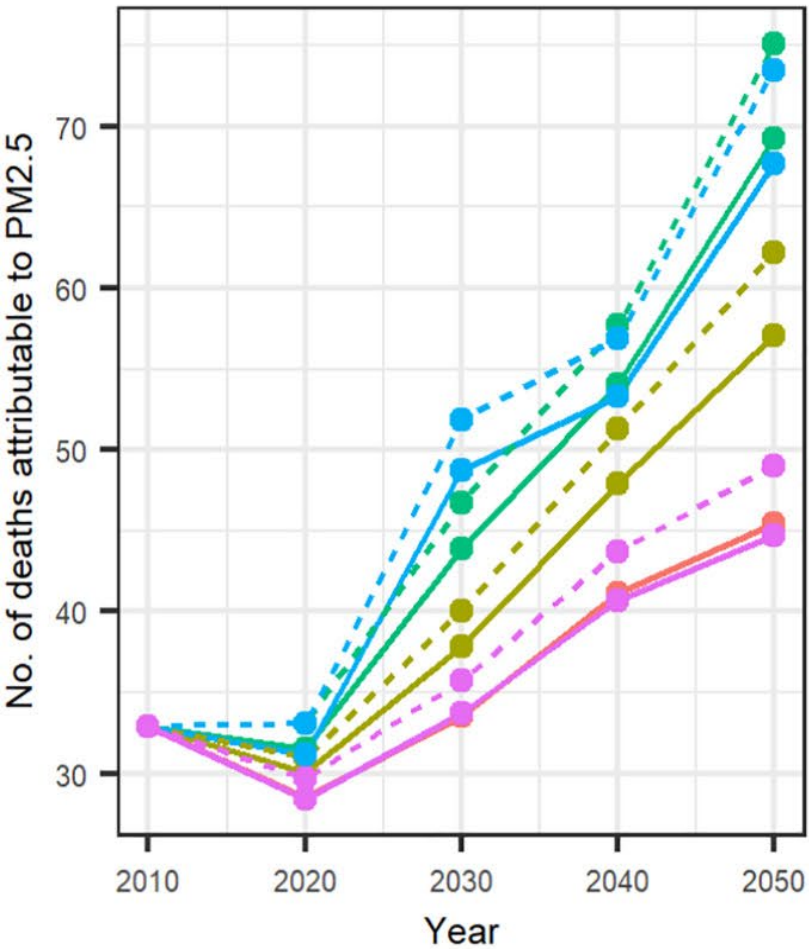


Ingole et al; SOTTE, 2021

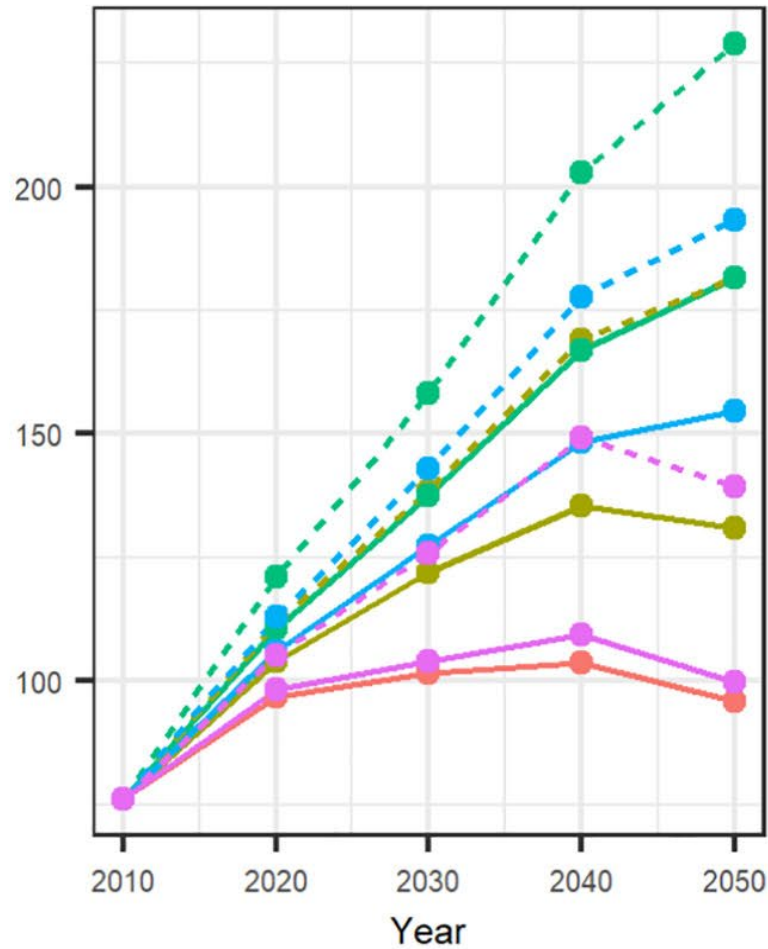


# Projected premature mortality burden attributable to PM<sub>2.5</sub> incorporating demographic change

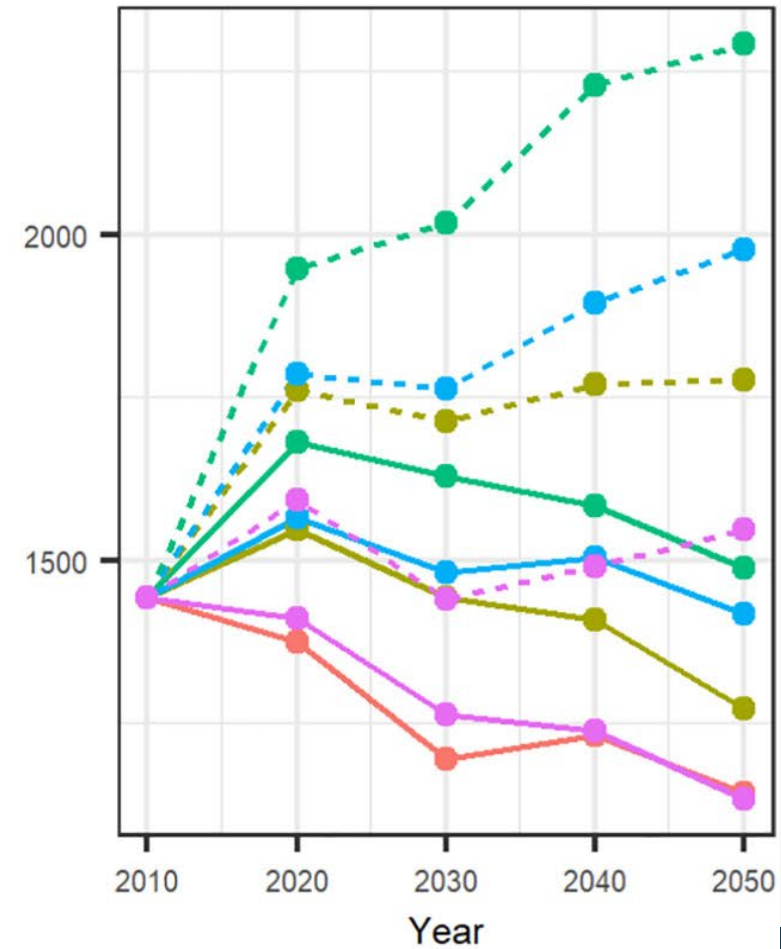
## Mozambique



## India



## Spain



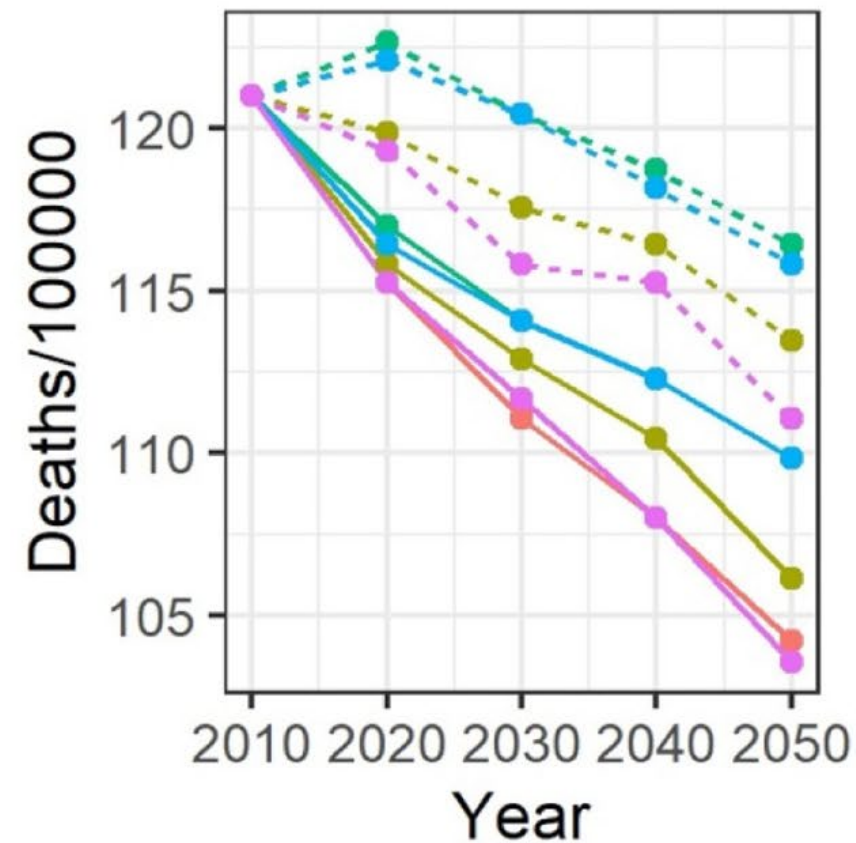
SSP 1 2 3 4 5

Mitigation Scenarios — RCP2.6 - - - RCP8.5

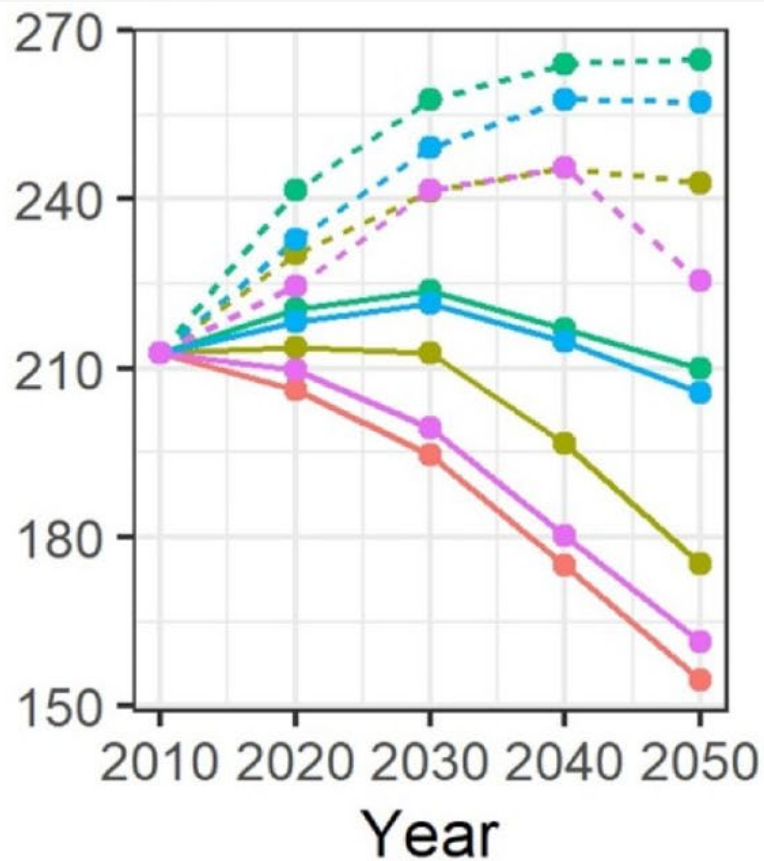


# Projected premature mortality burden attributable to PM<sub>2.5</sub> assuming no demographic change

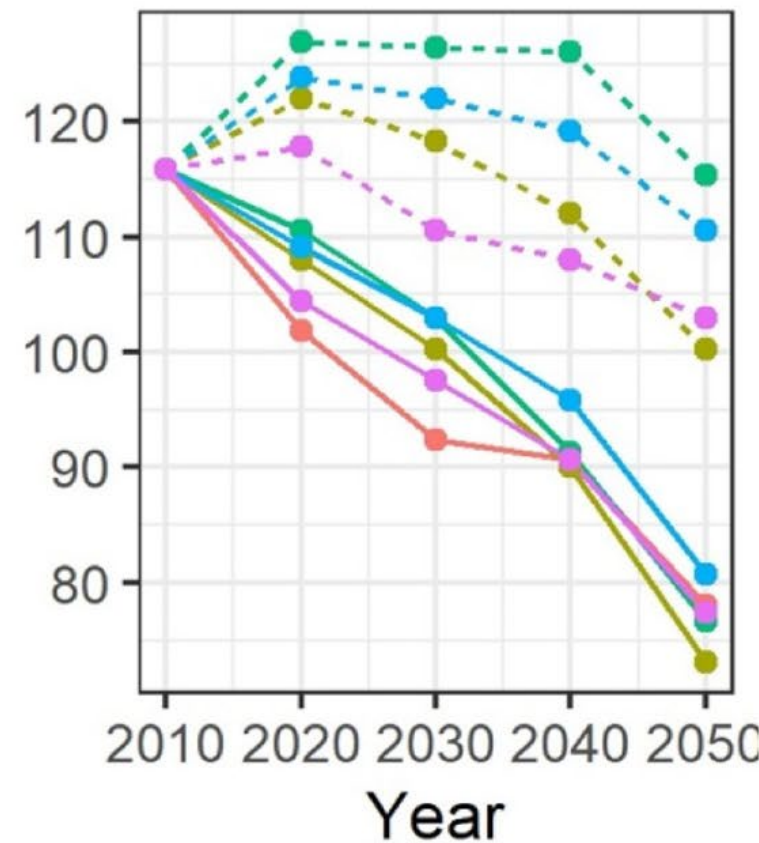
## Mozambique



## India



## Spain



SSP 1 2 3 4 5 Mitigation Scenarios — RCP2.6 ---- RCP8.5

# What do climate change scenarios mean for air quality and health?

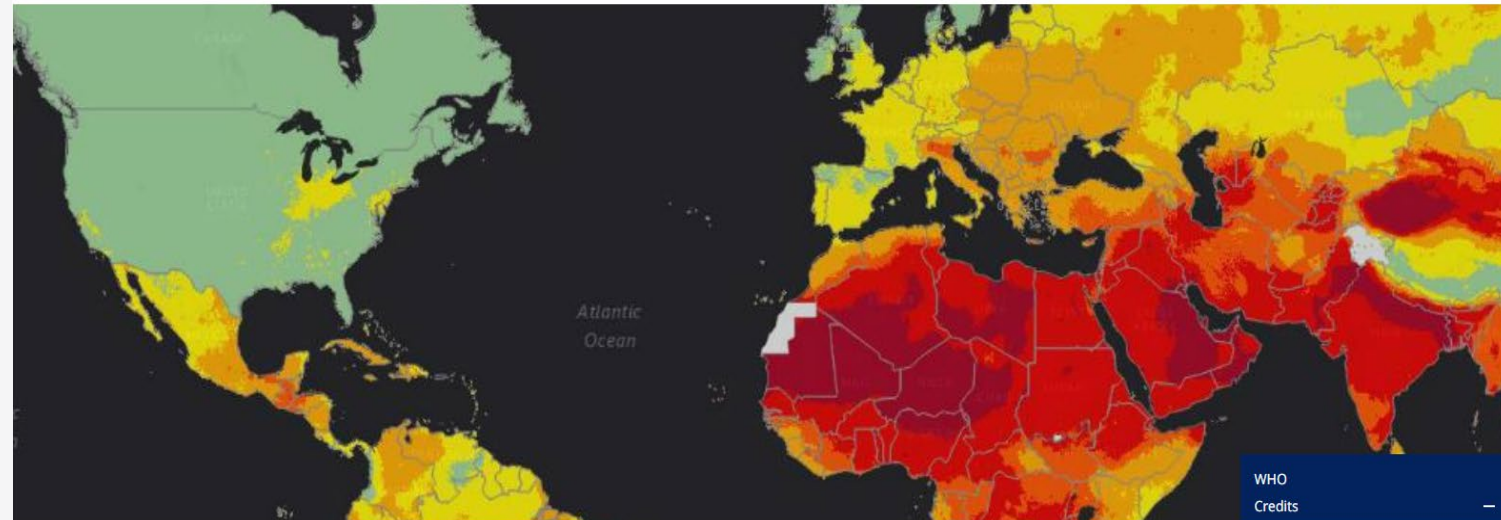
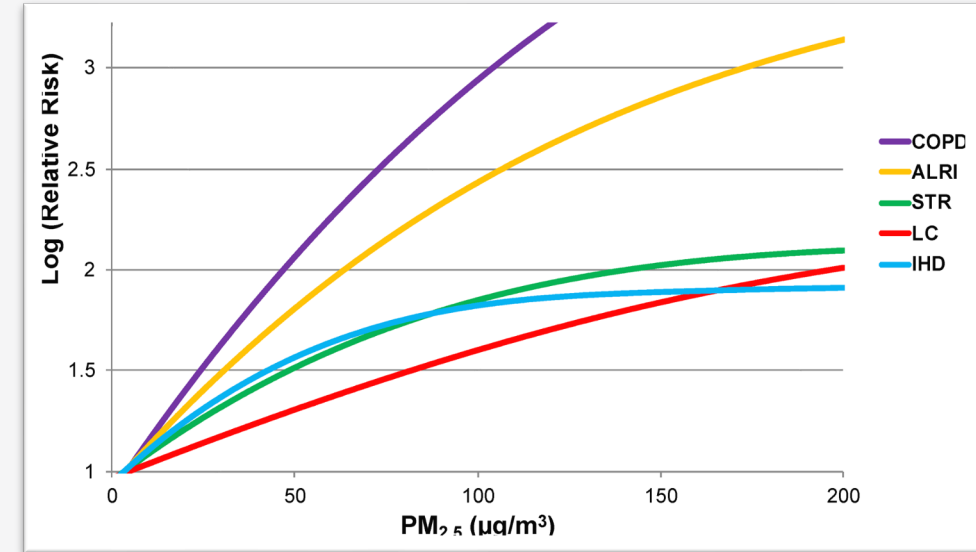
1. Global scenarios related to **societal development** as well as climate action affected **exposure to air pollution and premature mortality**
2. SSPs reflecting high challenges for adaptation caused by a combination of **slow development, low education, high inequality, and weak institutions** (SSPs 3 and 4) consistently resulted in the highest PM<sub>2.5</sub> attributable burdens
3. Better spatial resolution of current and projected air pollution emissions, particularly in global regions with high uncertainties.
4. Improved vital statistics and cause of death data in many world regions including India and Sub-Saharan
5. Importance of socioeconomic development and climate policy in reducing the health burden from air pollution





# Research and Policy Gaps?

1. Exposure-response function
2. Social inequalities
3. Data and research at local level
4. Science to policy gaps (Pathways?)



# Data, Methods and Platform

## Statistical framework

**METRICS:** Develop a transparent and globally generalisable framework for official statistics on climate change and health containing a series of applicable metrics

## Online knowledge sharing platform

**DATA:** Develop a global reporting and knowledge-sharing platform and open-source toolset to facilitate high quality research and official statistics in line with the agreed framework

The screenshot shows the homepage of the 'Climate & Health Data Explorer' platform. At the top, the Office for National Statistics logo is on the left, and the text 'Climate & Health Data Explorer' is on the right. Below this, a 'BETA' badge is followed by the citation: 'Office for National Statistics (2023) Climate & Health Data Explorer.' The main navigation bar includes 'Welcome', 'Upload', 'Time series', 'Choropleth', and 'Indicator calculator'. A large green banner in the center reads 'Welcome to the Climate and Health Data Platform!' with a link to 'see below for further information'. Below the banner, there are three expandable sections: 'Platform background', 'How to use the platform', and 'Future plans', each with a 'Show' button. At the bottom, the Open Government Licence (OGL) logo is on the left, and the Royal Coat of Arms with '© Crown copyright' is on the right.



# Acknowledgement



**INDEPTH Network**  
Better Health Information for Better Health Policy


**ISGlobal** **Barcelona**  
**Institute for**  
**Global Health**

# Thank you



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