



Health and Climate co-benefits from reducing indoor air pollution

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1. Background

Around 3 billion people cook and heat their homes using solid fuels on open fires or traditional stoves. This generates high levels of indoor air pollution, which includes a range of health damaging Short Lived Climate-Active Pollutants (SLCPs) such as black carbon, particulate matter, carbon monoxide. Reducing them would generate an **immediate** reduction of GHG emissions and substantial health gains.

2. Objectives

- To measure and compare the lung function via spirometer as an indicator of chronic obstructive pulmonary disease in women and relate it to the exposure as measured
- To measure and compare the PM 2.5 and elemental black carbon of women using different cook stoves
- To estimate the effect of introducing clean fuels climate benefits

3. Methodology

- Household health questionnaire
- Portable Spirometer (measure lung function)
- Measurement of 24 hour kitchen air concentrations of black carbon and particulate matter 2.5
- Estimation of climate and health effects of introducing clean fuels on both women's health and climate mitigation in Pune District

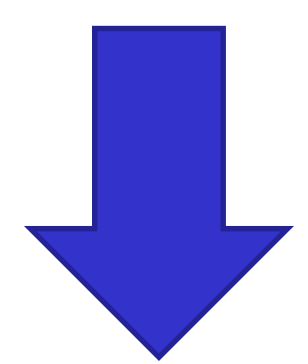
4. Climate active pollutants

Lifetimes of important long-lived gases and short-lived gases and particles in the atmosphere and their effect on climate.

Gases and Particles	Average Lifetime	Effect on Climate
Long-lived gases		
Carbon Dioxide	more than 100 years	↑
Methane	10 years	↑
Nitrous Oxide	120 years	↑
Short-lived gases and particles		
Tropospheric Ozone	days to weeks	↑
Black Carbon	1 week	↑
Organic Carbon	1 week	↓
Dust	days	↓
Nitrate	1 week	↓
Sulfate	1 week	↓

Warming ↑ Cooling ↓

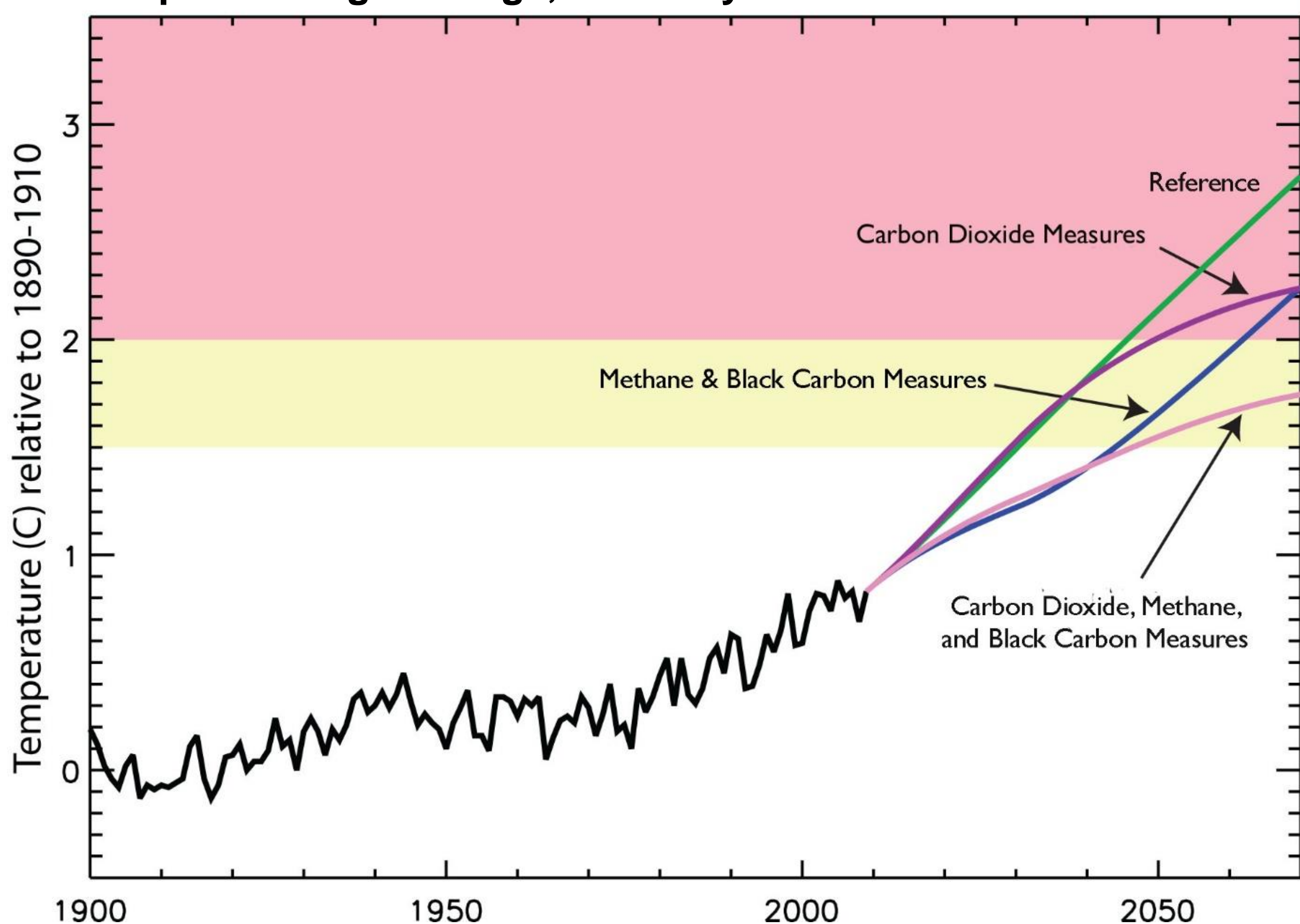
Reduction in short - lived climate active pollutants lead to a rapid cooling effect



a critical climate strategy of reducing near term global warming

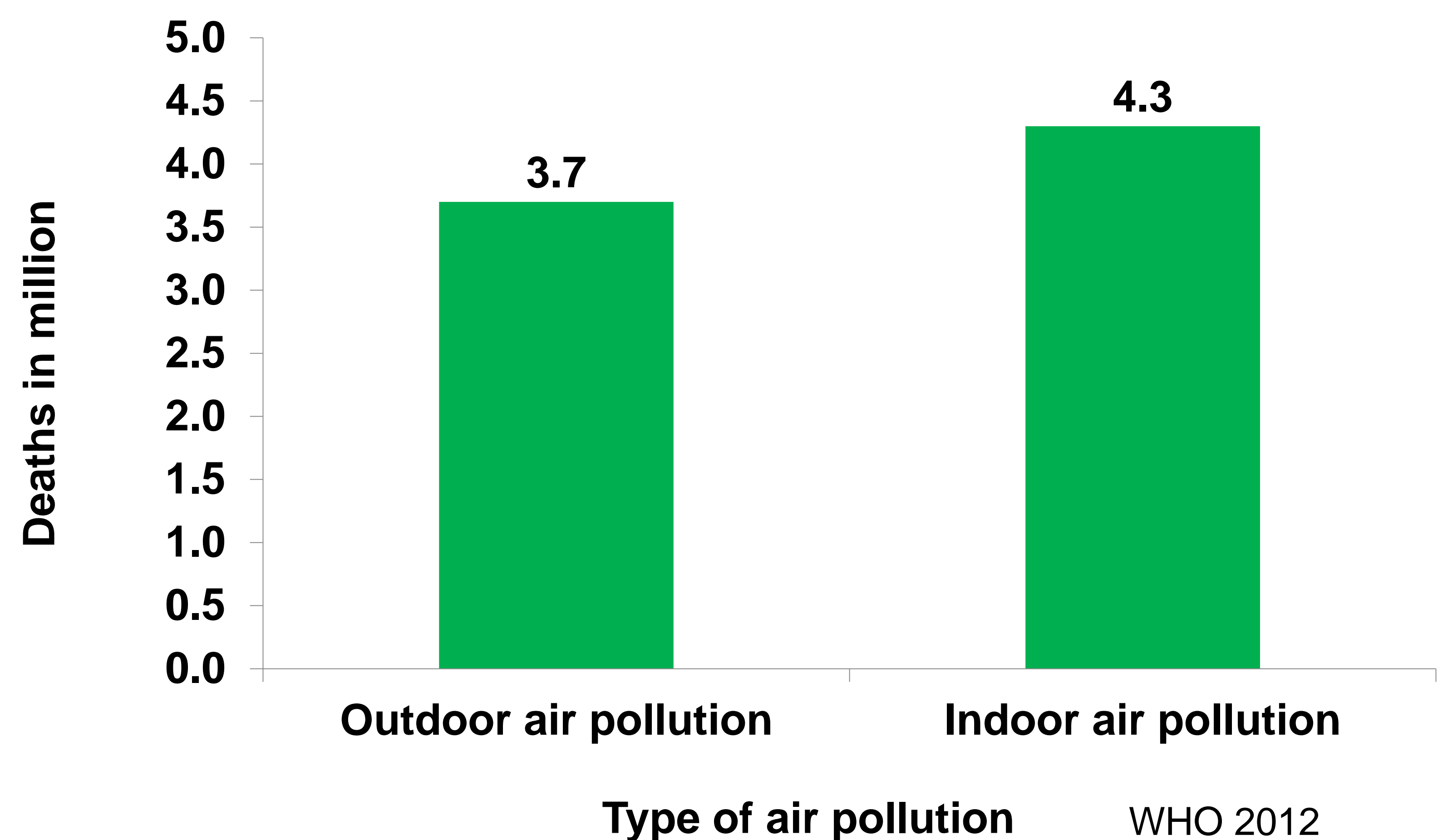
5. Climate benefits

Short-lived climate active pollutants (blue curve) lead to an immediate, if small, reduction of GHG mitigation, complementing the large, but delayed effect of CO₂ reduction



6. Health benefits

Indoor air pollution kills more people than outdoor air pollution



7. Conclusion

- Limiting emissions of SLCPs will have substantial health **and** climate co-benefits
- On balance, household use of clean fuels is the policy of choice for India and other low income countries.