# *Mitigating Near-Term Climate Change while Advancing Human Development*

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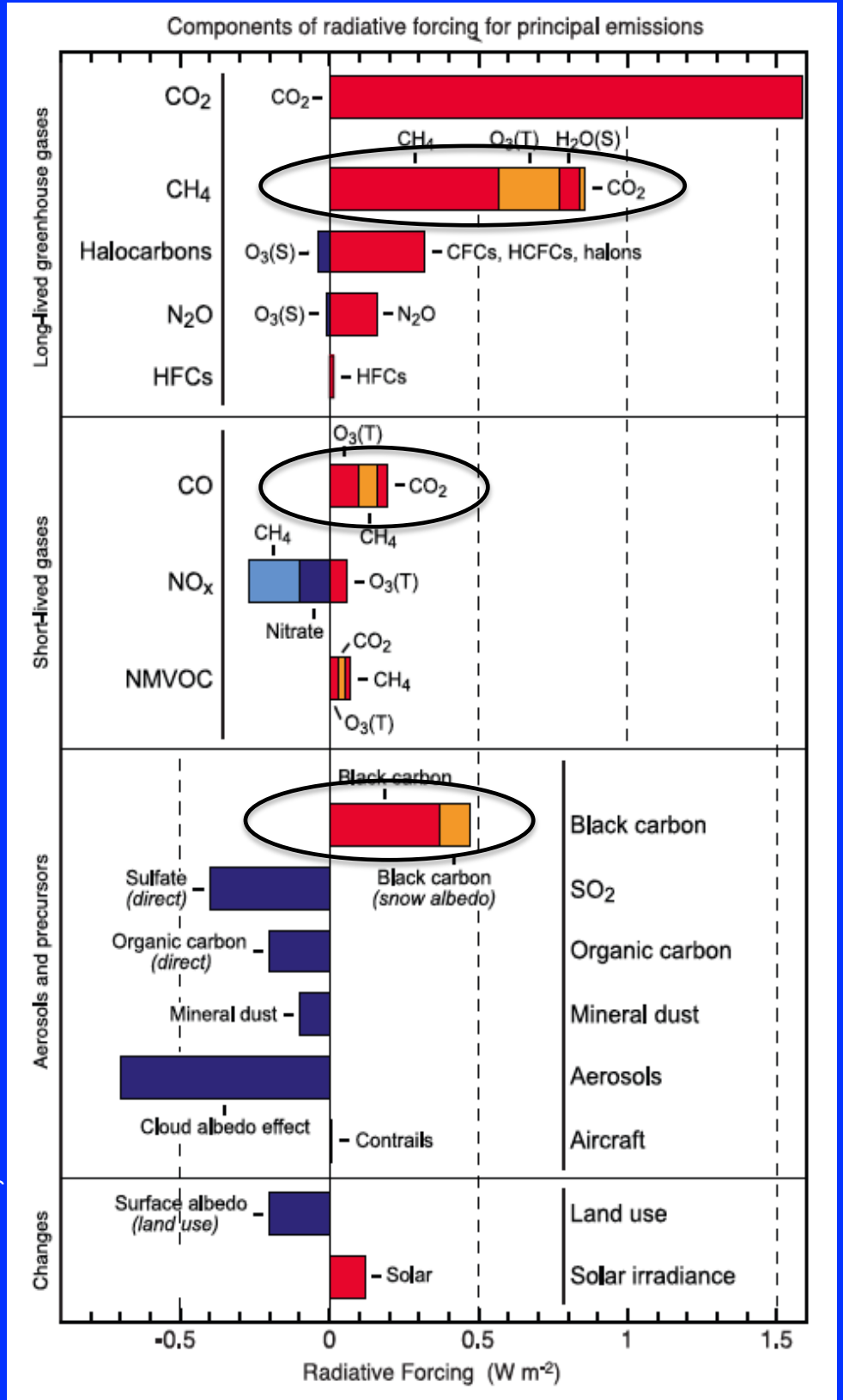



IPCC AR4, 2007

# Climate change is driven by many agents

Historical forcing from methane + CO + BC approx. equal to CO2

*Physical differences:* Methane, CO and BC all lead to degraded air quality and are relatively short-lived

# Emission Control Measures for SLCPs

**'Methane measures'**

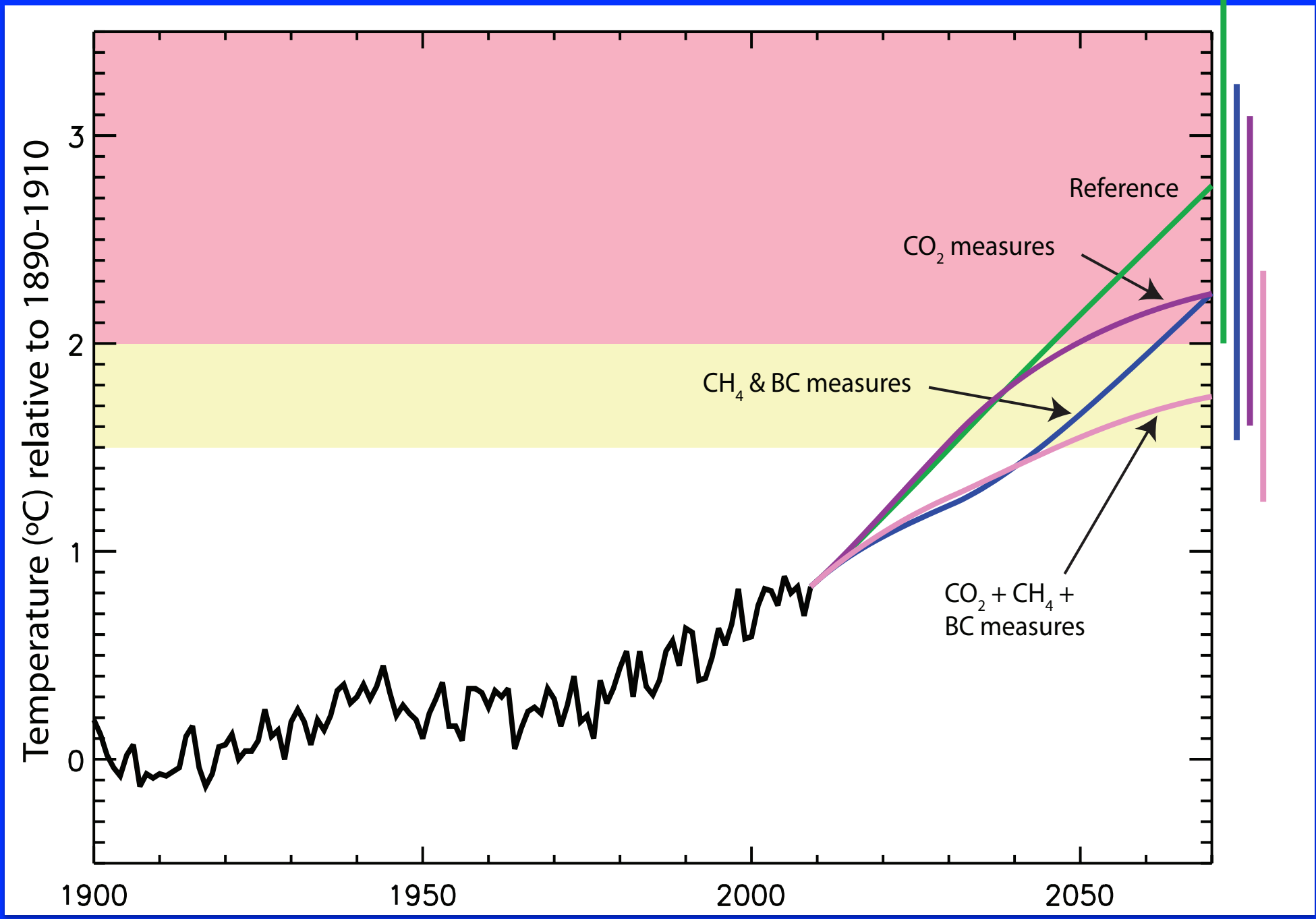
- extraction and long-distance transport of fossil fuels
- waste management; municipal, landfills & wastewater
- agriculture; livestock manure & intermittent rice aeration

**'BC Measures': those that reduce emissions of black carbon and co-emissions (e.g. OC, CO)**

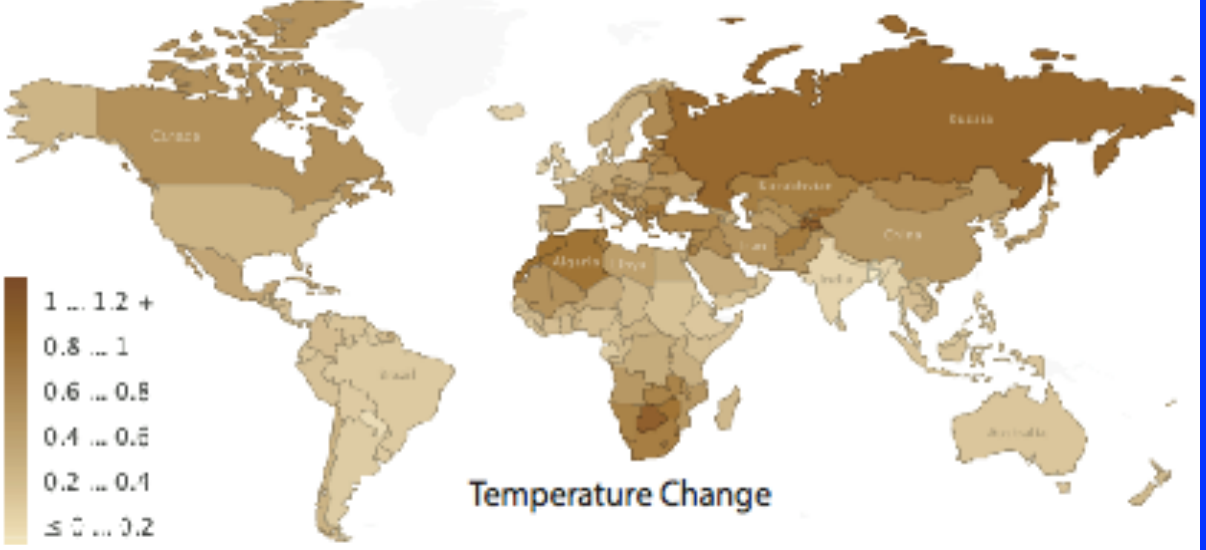
- Diesel vehicles (particle filters+)
- Coal briquettes replacing coal in residential stoves
- Pellet stoves & boilers replacing residential wood burning in Industrialized countries
- Clean-burning cookstoves in developing countries
- Modern brick kilns
- Modern coke ovens
- Ban of open burning of agricultural waste

***Different than $CO_2$ mitigation measures***

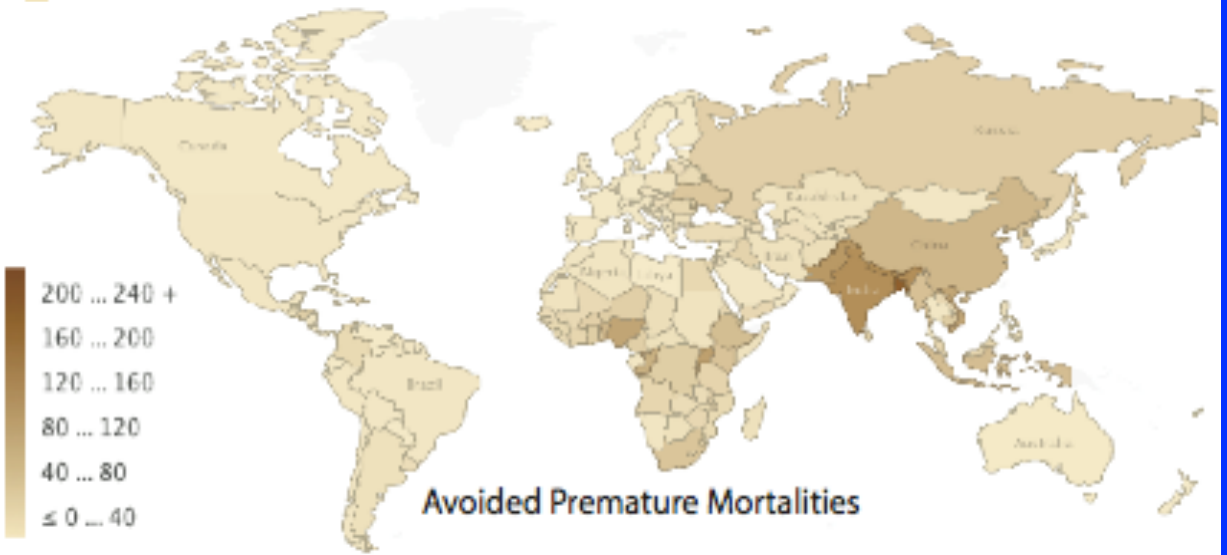
# Global Temperature Change (hybrid of results from GISS and ECHAM models and assessment of literature) added to the historical record



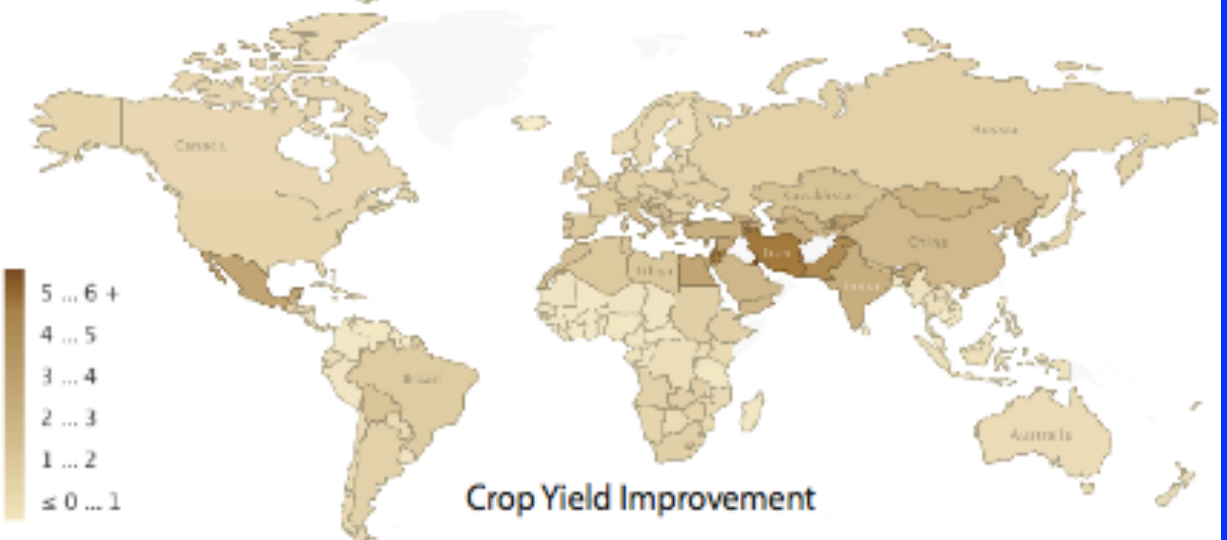

Shindell et al, Science, 2012




Projected 2010-2050 warming cut by half




More than 3 million premature deaths prevented every year




More than 50 million tons of crop yield increases every year

Shindell et al, Science, 2012

# Summary & Implications

- Physical Science differences
  - $CO_2$ long-term, SLCPs near-term
- Mitigation differences
  - $CO_2$ from power, large industry, transportation sectors
  - SLCPs largely distinct activities
- Impact differences
  - $CO_2$ for long-term climate stabilization; global benefits
  - SLCPs for near-term climate change, human health, agriculture and human development; regional benefits
- Reducing the SLCPs is important to:
  - those already suffering from the impacts of climate change
  - preventing biodiversity loss
  - providing additional time for adaptation
  - realize the associated health and agricultural benefits
- Tackling both near-term and long-term climate change worthwhile
  - Near-term for our children's generation
  - Long-term for our great-grandchildren's generation