

CCAC Scientific Advisory Panel 2018 Annual Science Update

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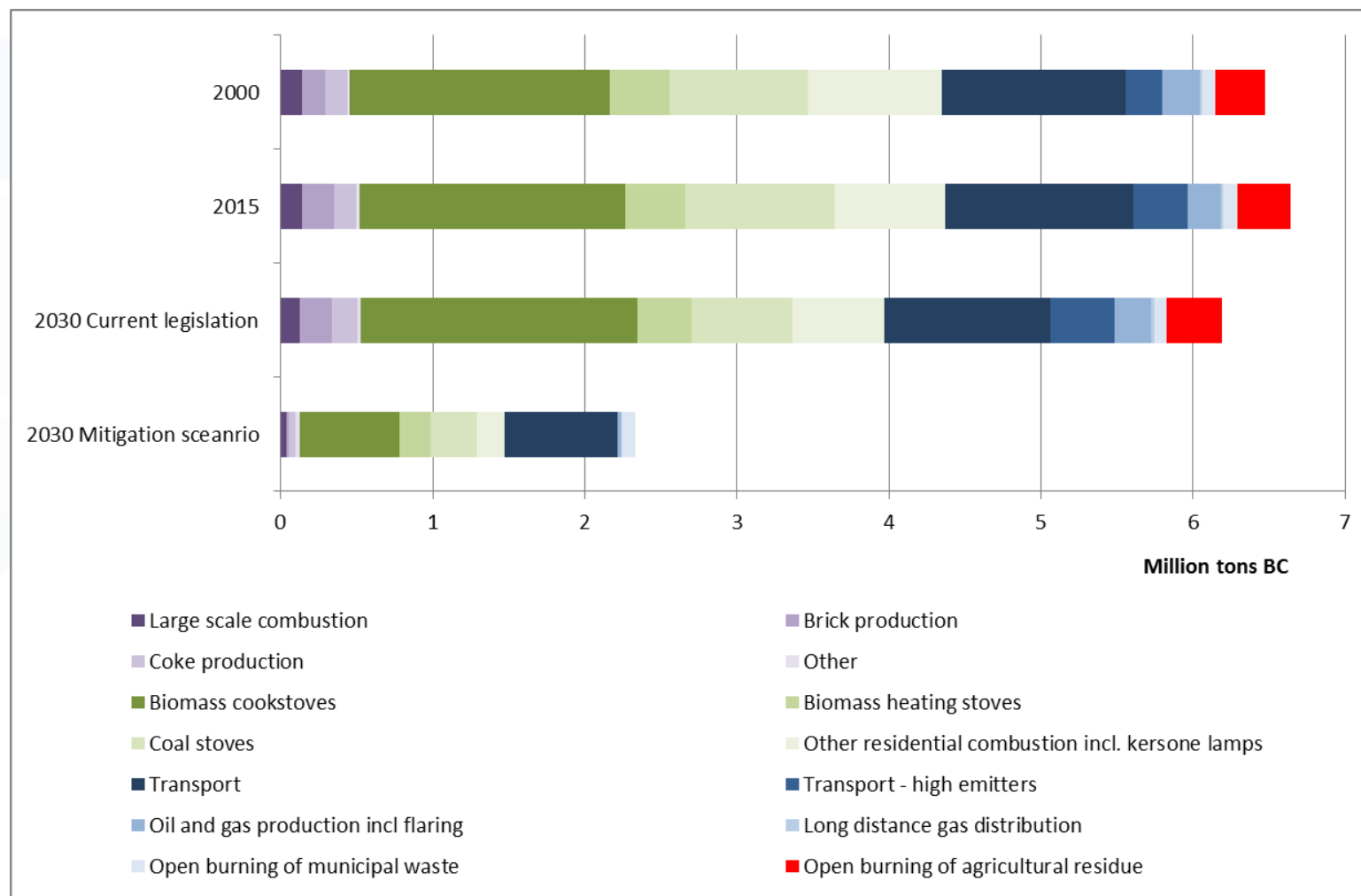
International Institute for Applied Systems Analysis (IIASA)

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Toronto, Canada

Global Anthropogenic Black Carbon Emissions

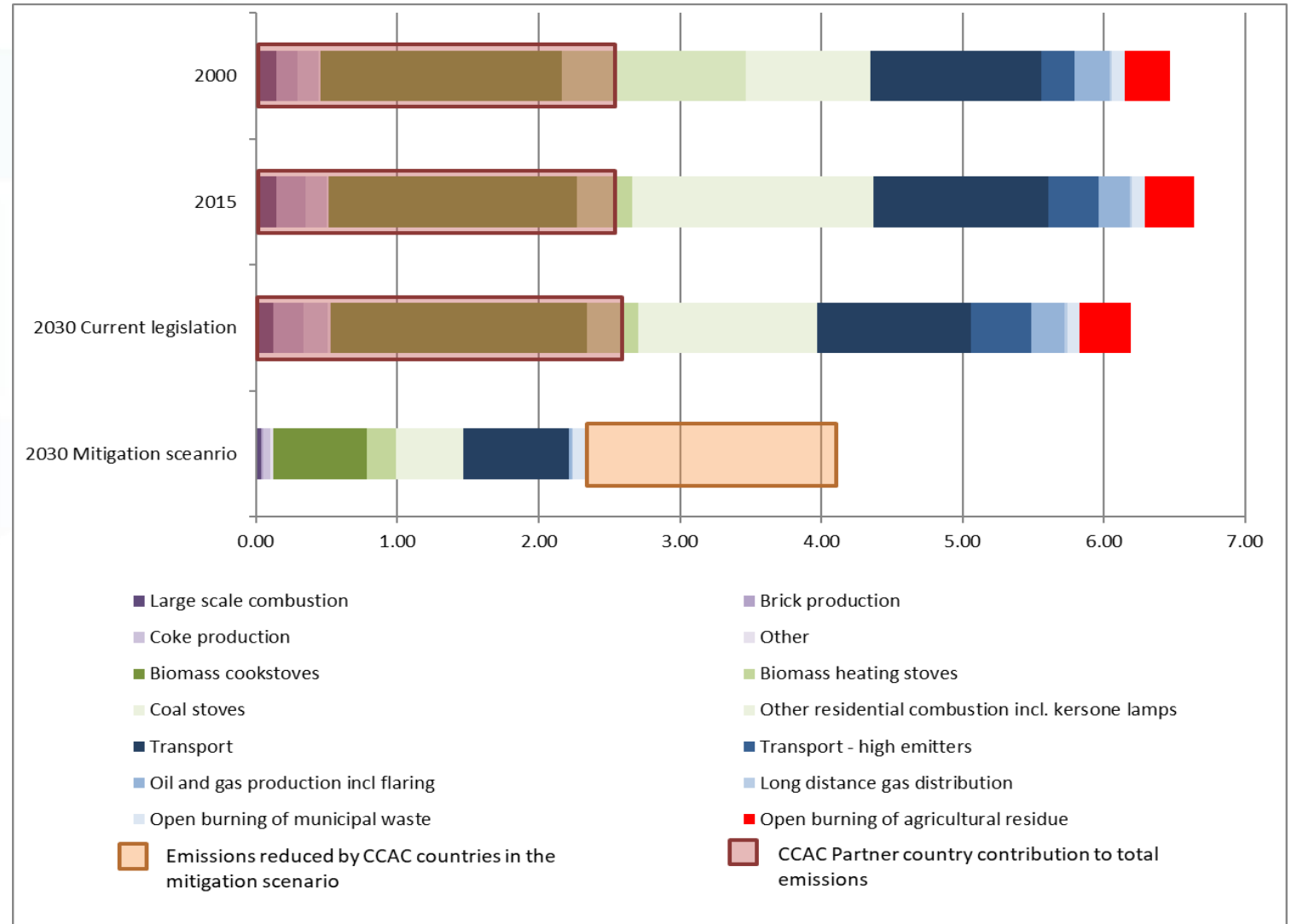
- ▶ Black Carbon emissions are relatively stable and expected to decrease slightly under current policies
- ▶ 60-70% total mitigation potential of Black Carbon by 2030



Source: GAINS model (IIASA); Klimont Z. et al. (2017); Stohl A. et al. (2015)

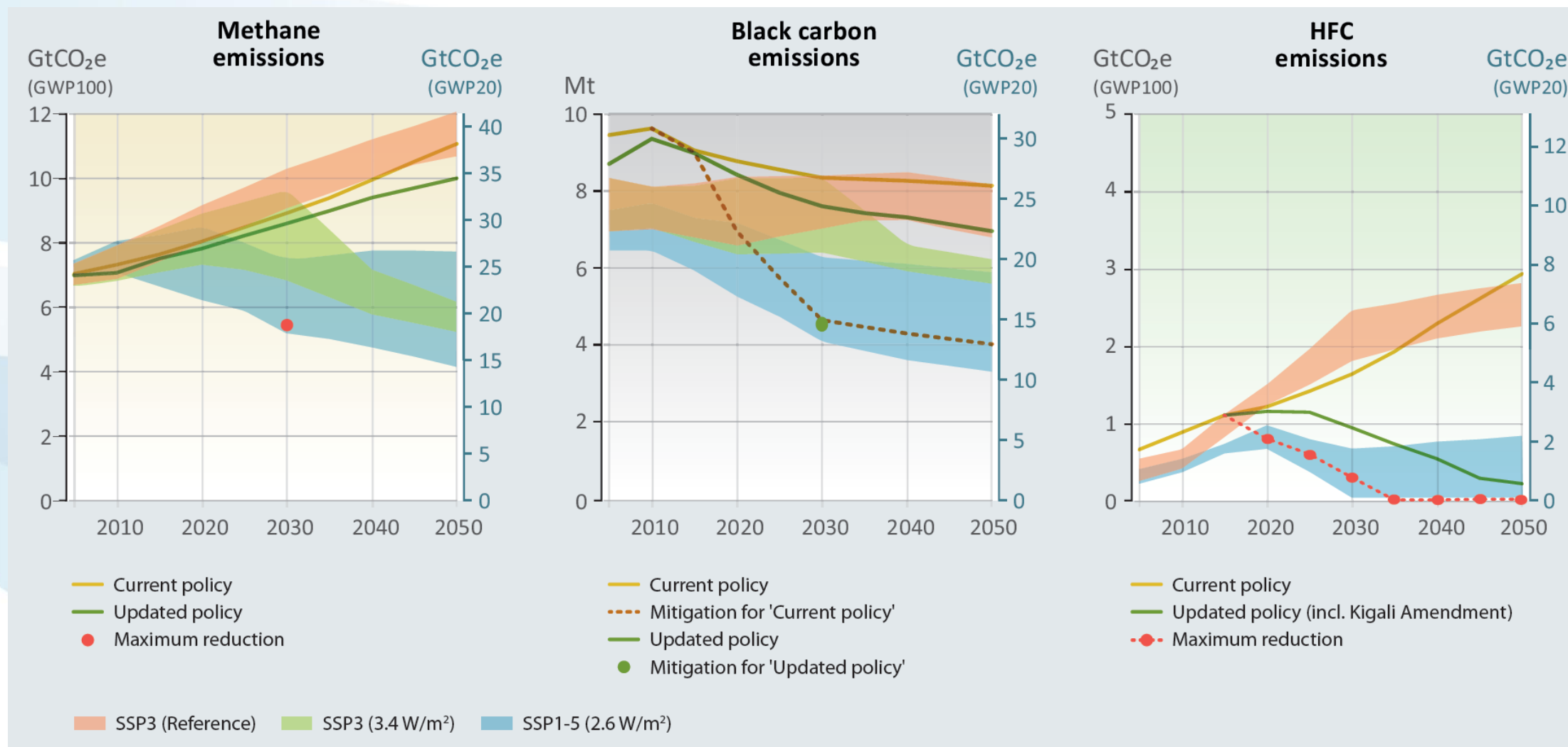
CCAC Contribution to Global Black Carbon Emissions & Mitigation Potential

- ▶ CCAC countries contribute ~40% of total global emissions in 2015
- ▶ Expected to increase slightly by 2030
- ▶ CCAC countries could contribute nearly 50% of total mitigation by 2030



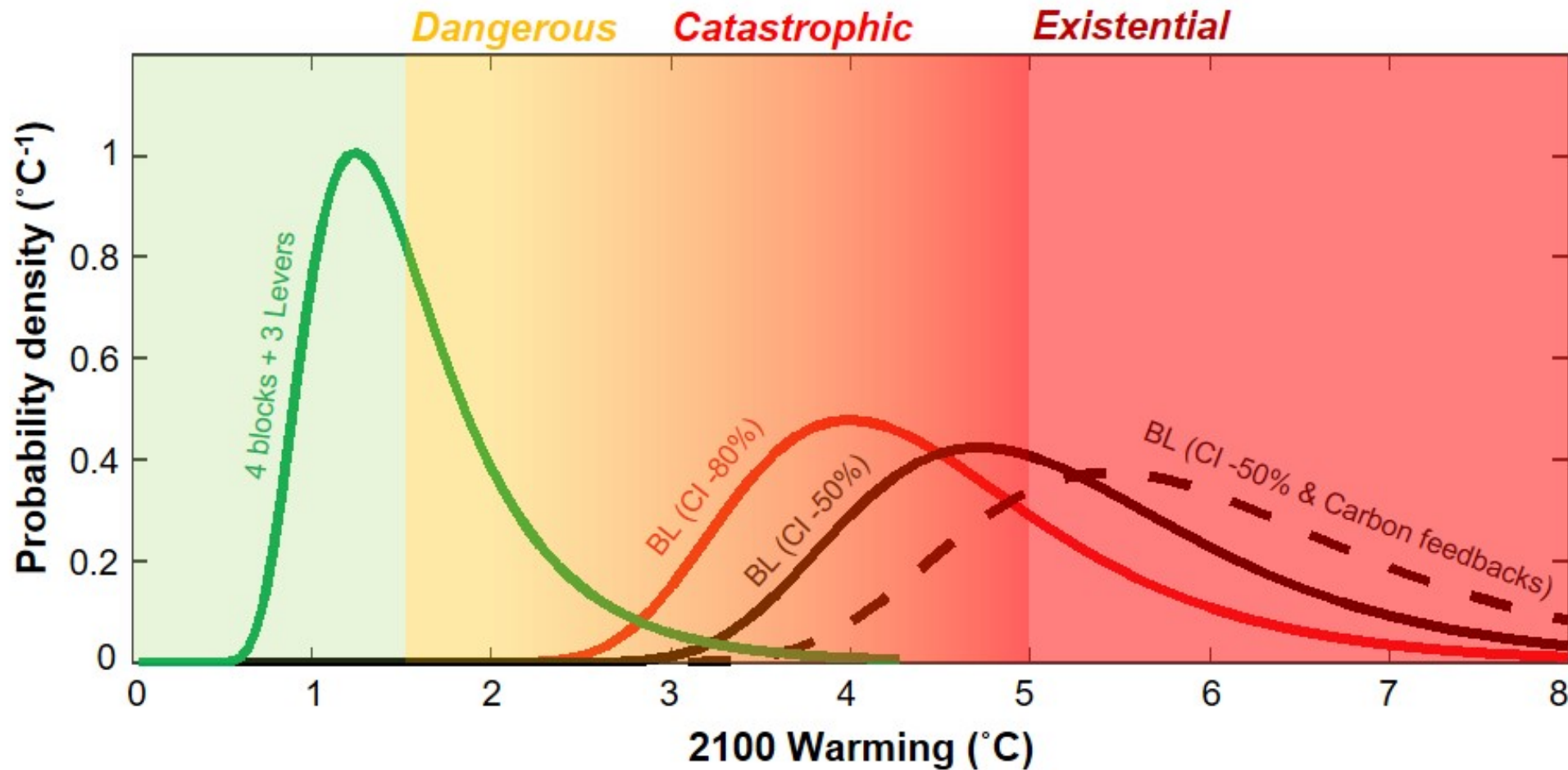
Source: GAINS model (IIASA); Klimont Z. et al. (2017); Stohl A. et al. (2015)

UN Environment 2017 Emissions Gap Report



Source: UNEP Gap report (2017)

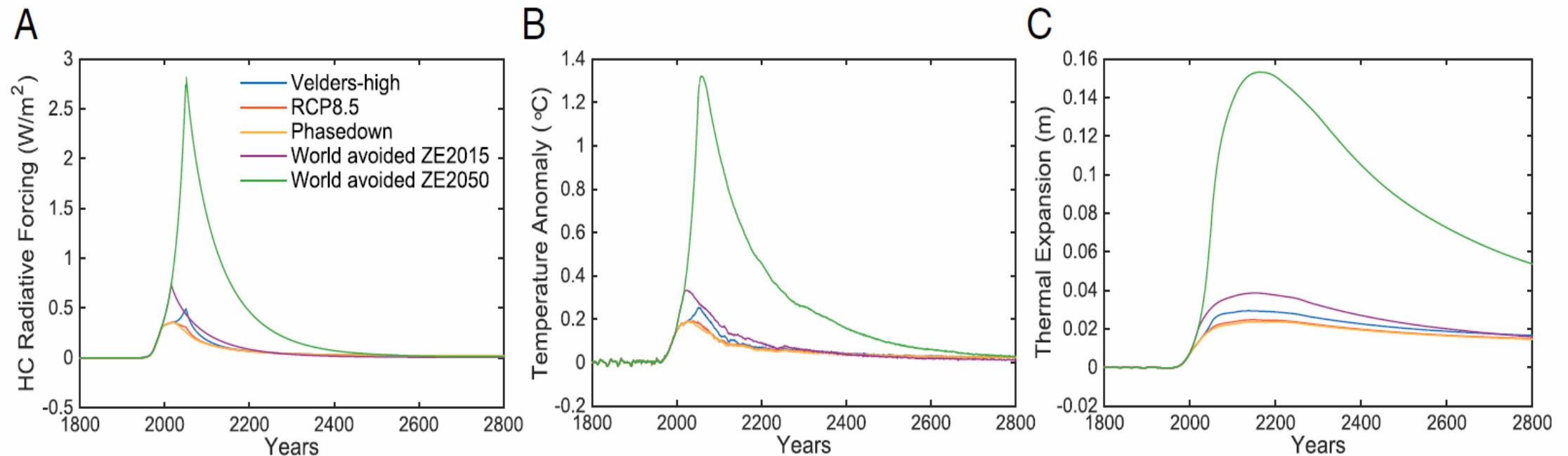
Well Below 2C: Mitigation Strategies for Avoiding Dangerous to Catastrophic Climate Changes



Source: Xu & Ramanathan (2017), PNAS

Centuries of thermal sea-level rise due to SLCPs

- Ocean thermal expansion from short-lived climate pollutants persists centuries after they've left the atmosphere
- 40% of thermal expansion persists 500 years after methane emissions cease
- Without Montreal Protocol sea level rise could have been up to 13.8 cm higher by 2100



Source: Zickfeld et al. (2017) PNAS

SDG 7 (Energy) & Other Sustainable Development Goals

Sustainable Development Goals

- 1 – No Poverty
- 2 – Zero Hunger
- 3 – Good Health and Well-being
- 4 – Quality Education
- 5 – Gender Equality
- 6 – Clean Water and Sanitation
- 7 – Affordable and Clean Energy
- 8 – Decent Work and Economic Growth
- 9 – Industry, Innovation and Infrastructure
- 10 – Reduced Inequalities
- 11 – Sustainable Cities and Communities
- 12 – Responsible Consumption and Production
- 13 – Climate Action
- 14 – Life below Water
- 15 – Life on Land
- 16 – Peace, Justice and Strong Institutions
- 17 – Partnerships for the Goals



Source: McCollum et al. (2018) Environ. Res. Lttrs.

Short-lived Climate Pollutants (SLCP) & Sustainable Development Goals (SDG)



Indirect benefits to job creation, increased crop yield, and reduced ill-health



Prevent loss of 52 million tons of four staple crops – maize, rice, soybean and wheat



Prevent 2.4 million premature deaths each year



Reduce burdens, support girls education and providing women greater opportunities



Regulate the hydrological cycle and address water availability



Ensure universal access to modern energy and improve energy efficiency



Support decoupling economic growth from environmental degradation

or eliminating biomass costs by reducing fuel



Upgrading infrastructure and retrofitting industries

innovation as company



Better air quality and safe, accessible travel in cities



Environmentally sound management and minimize adverse impacts on human health

and treatment of biodiversity through prevention, re



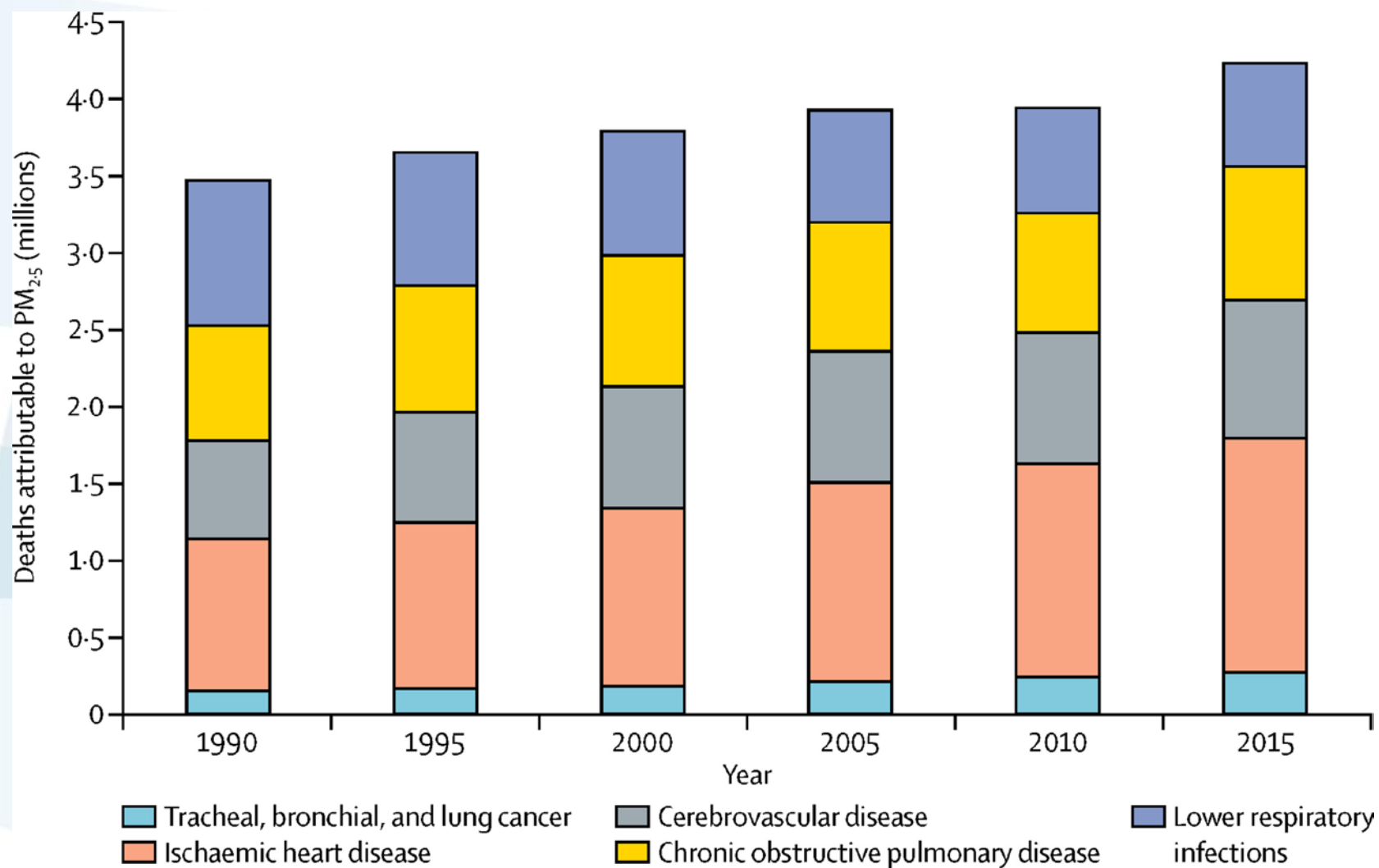
Slow down the rate of global warming in the near-term



CCAC acts as a catalyst to implement and share immediate solutions

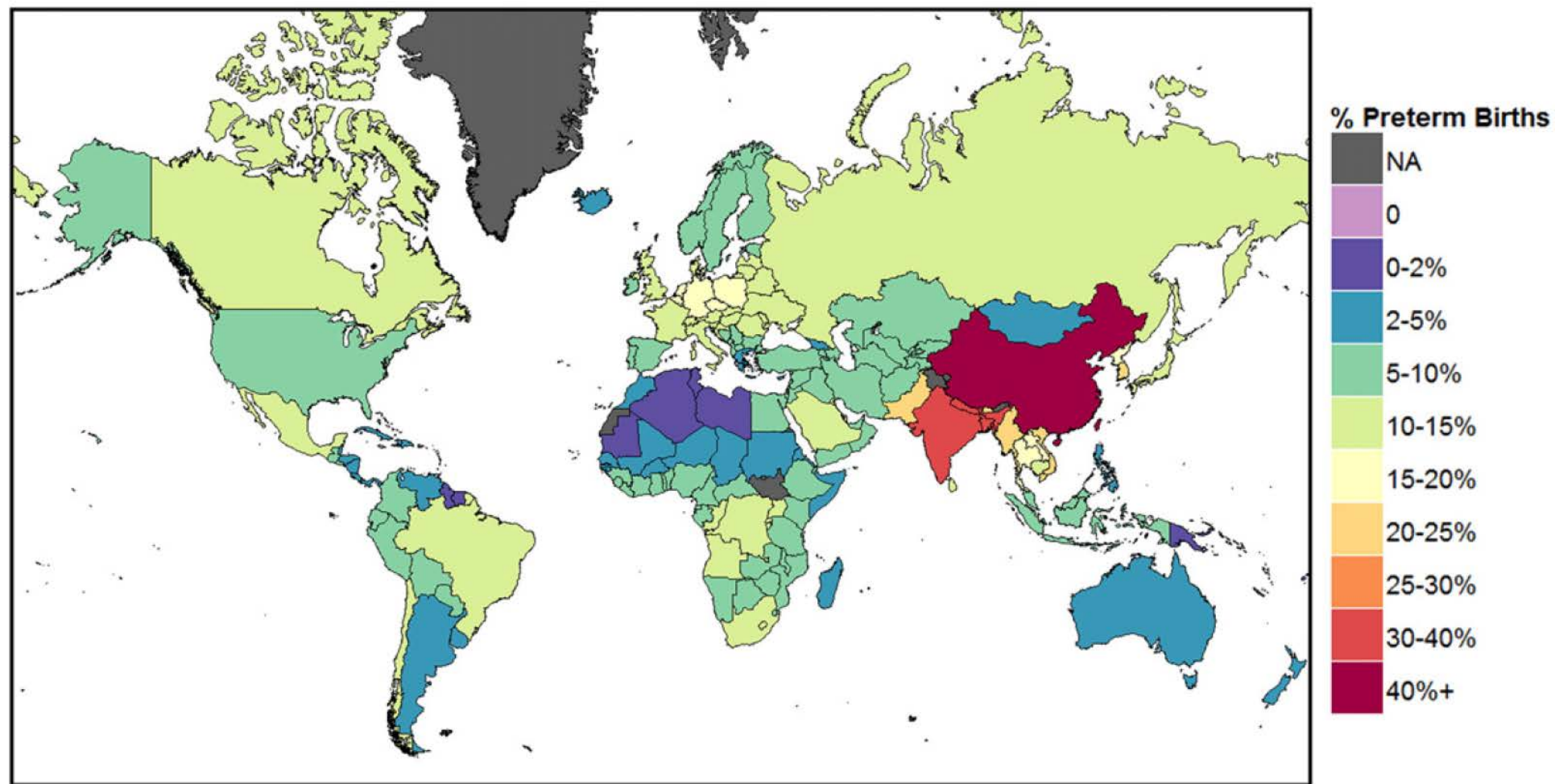
Source: Haines et al. (2017) Nat. Climate Chg.

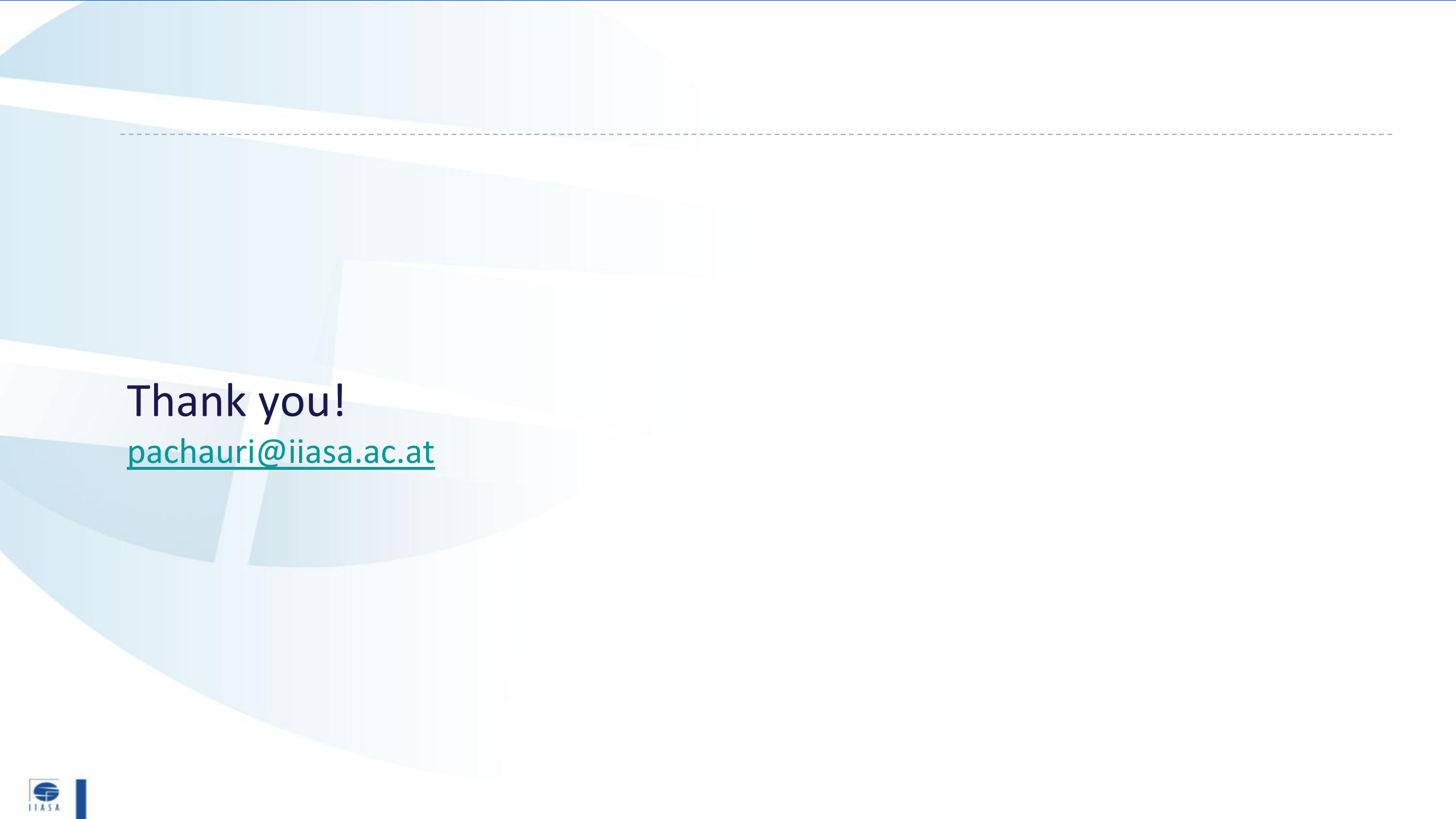
Deaths Attributable To Ambient Particulate Matter Pollution



Source: Cohen et al. (2017) Lancet

Preterm Births Associated with PM2.5 Pollution in 2010





Thank you!

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