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Findings from the Recent UNEP Assessment on 'Air Pollution in Asia: Science-based Solutions'

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IIASA Japan Committee Annual Workshop:

How Can Asia Manage Air Pollution and Climate Change?

From Understanding Impacts to Implementing Solutions

Tokyo, February 19, 2019



IIASA, International Institute for Applied Systems Analysis

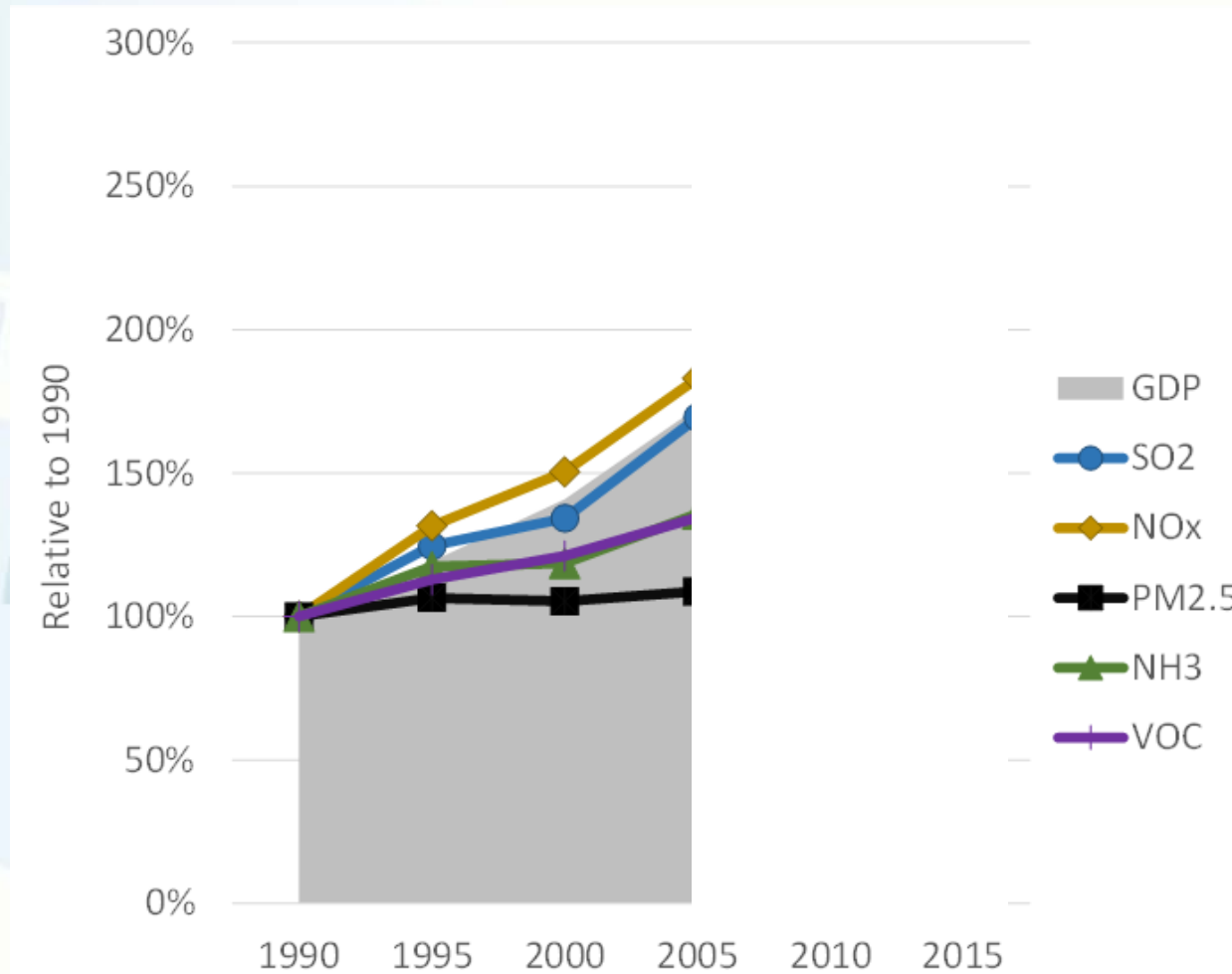
- The physical features of air pollutants cause strong interconnections between urban and rural pollution
- Urban response strategies cannot not deliver clean air, integrated solutions are required
- This increases complexity, but also offers opportunities for development
- Developing countries are already taking action but will this be enough to counteract economic growth?



Summary

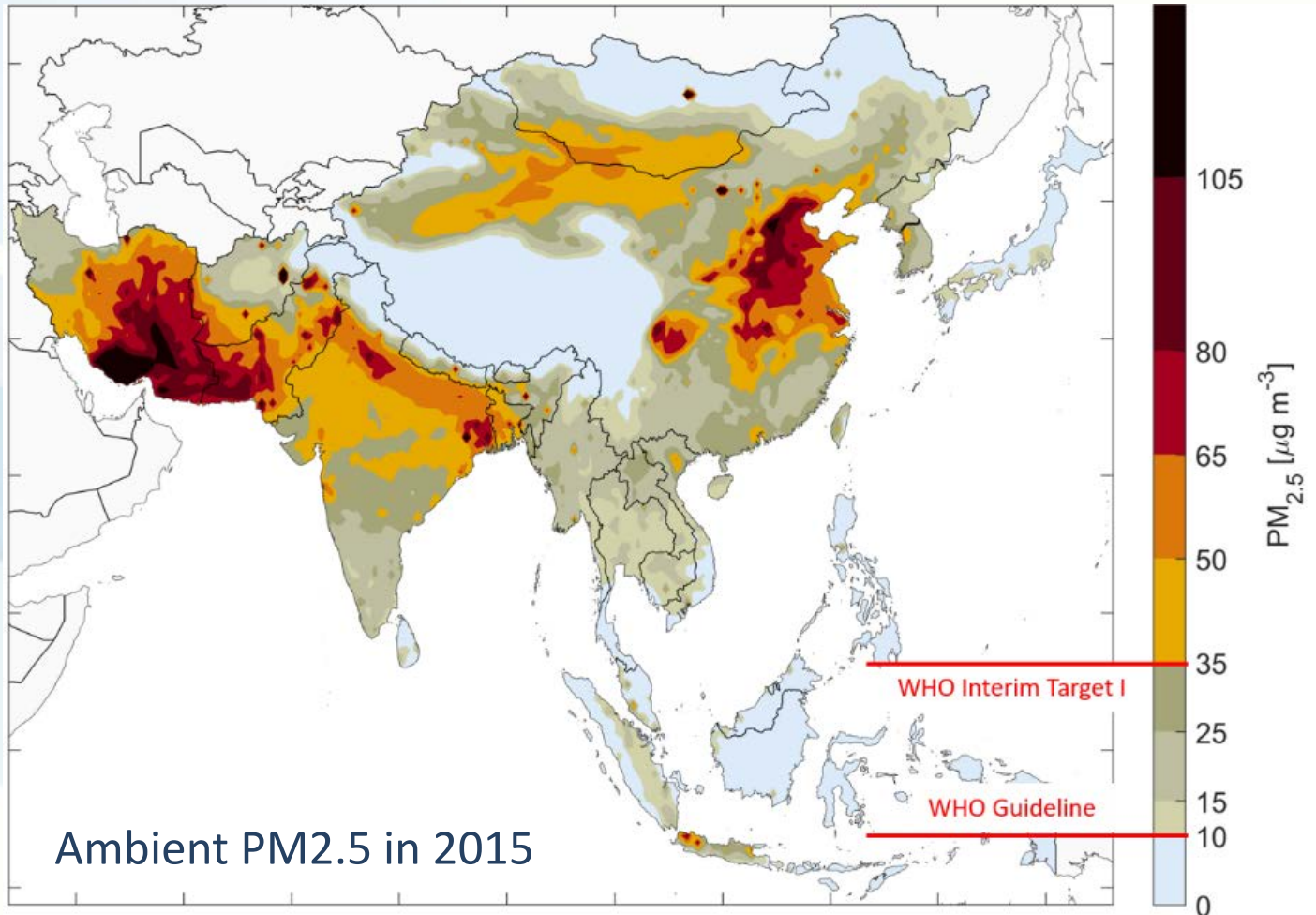
AIR POLLUTION IN ASIA AND THE PACIFIC: SCIENCE-BASED SOLUTIONS

Policy interventions helped to break the historic linkage between economic growth and emissions in Asia



Source: IIASA, GAINS

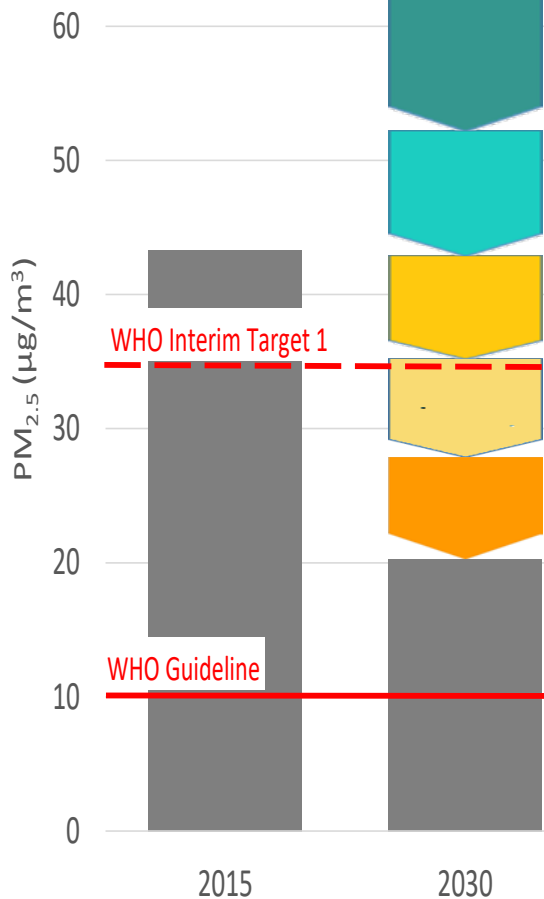
In 2015, air quality standards were exceeded over large areas in Asia



Source: IIASA, GAINS

Further air quality improvements in Asia require a re-orientation of current policies

Mean population exposure to PM_{2.5}



Already implemented measures

- Vehicle emission standards
- TSP(+SO₂+NO_x) controls at large plants

Compliance with post-2015 legislation

- SO₂+NO_x controls at stationary sources

Conventional PM controls - Asia-wide

'Next-stage' air quality measures

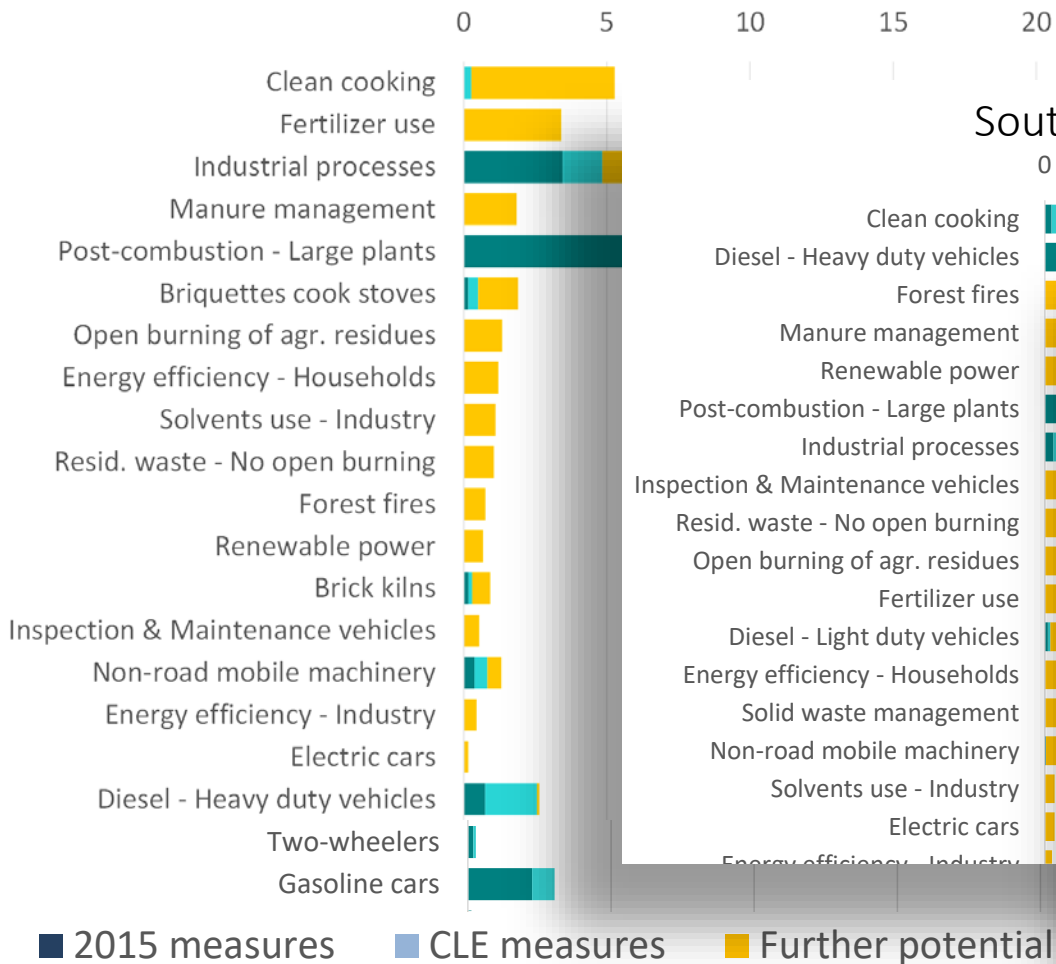
- Fertilizer use, manure management
- Open burning of waste and biomass
- Forest fires, I&M of vehicles

Development priority measures

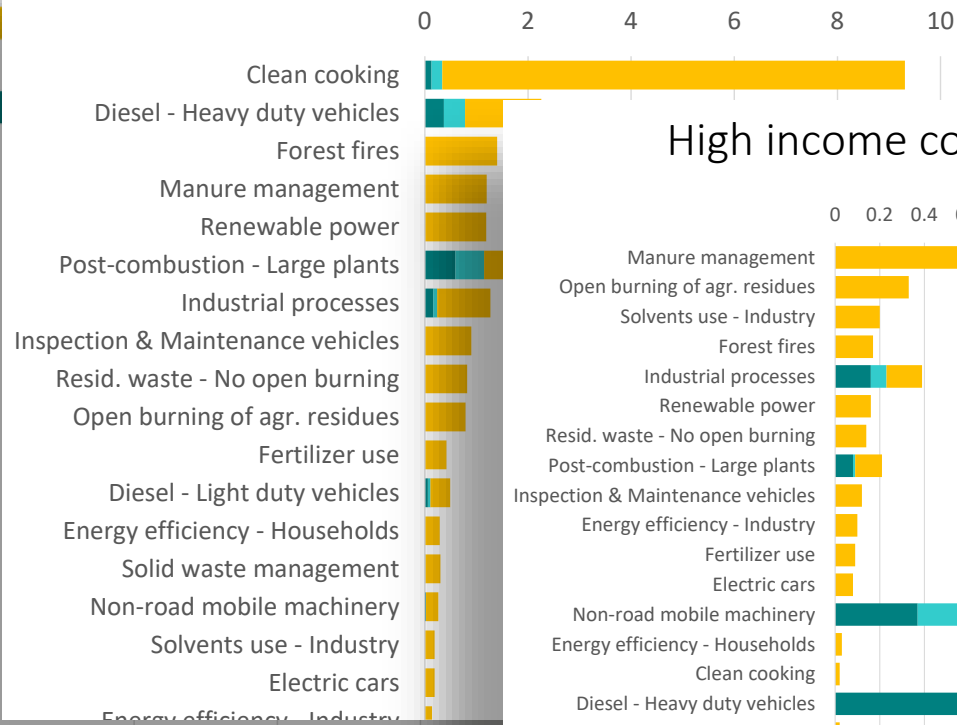
- Clean cooking fuels, renewable energy
- Energy efficiency, waste management
- Public transport and electric vehicles

Impacts of measures on population exposure by region

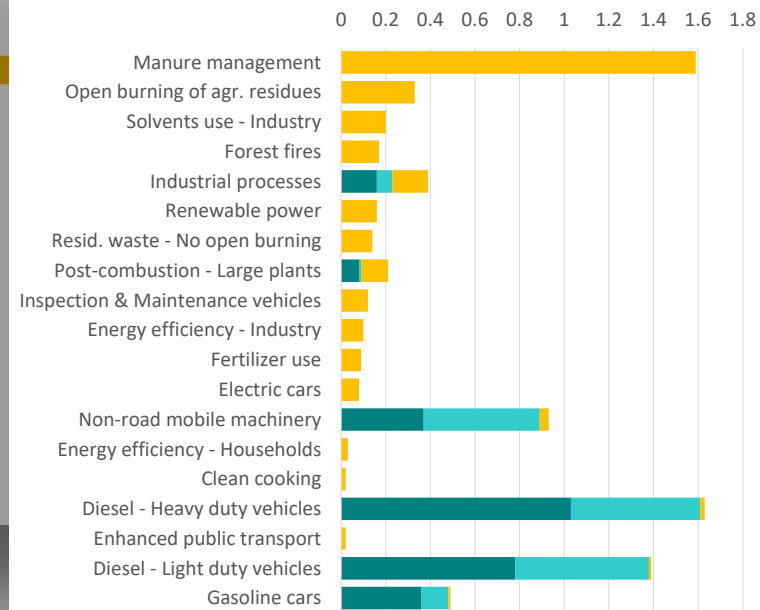
East Asia - Exposure reduction potential ($\mu\text{g}/\text{m}^3$)



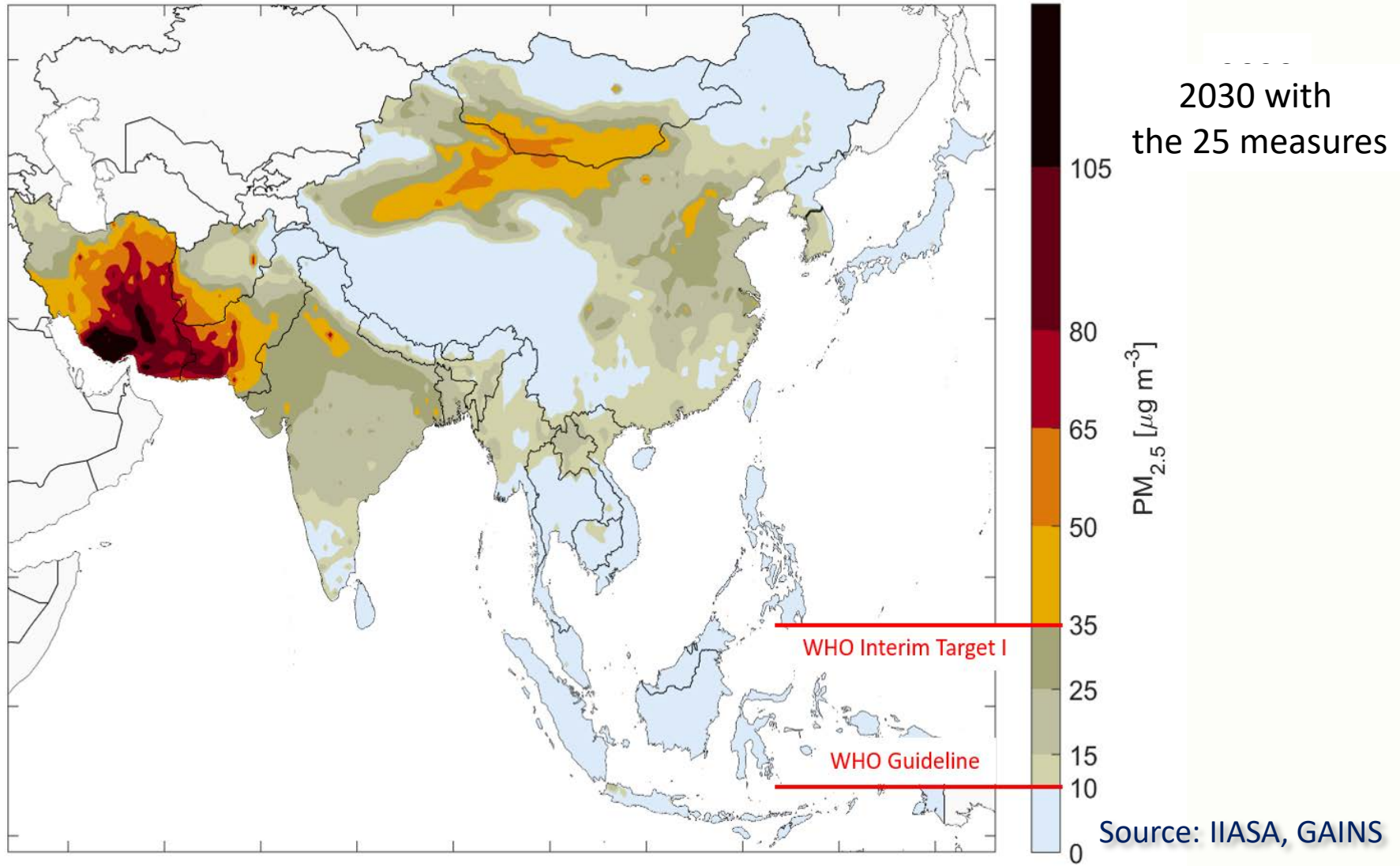
South-East Asia



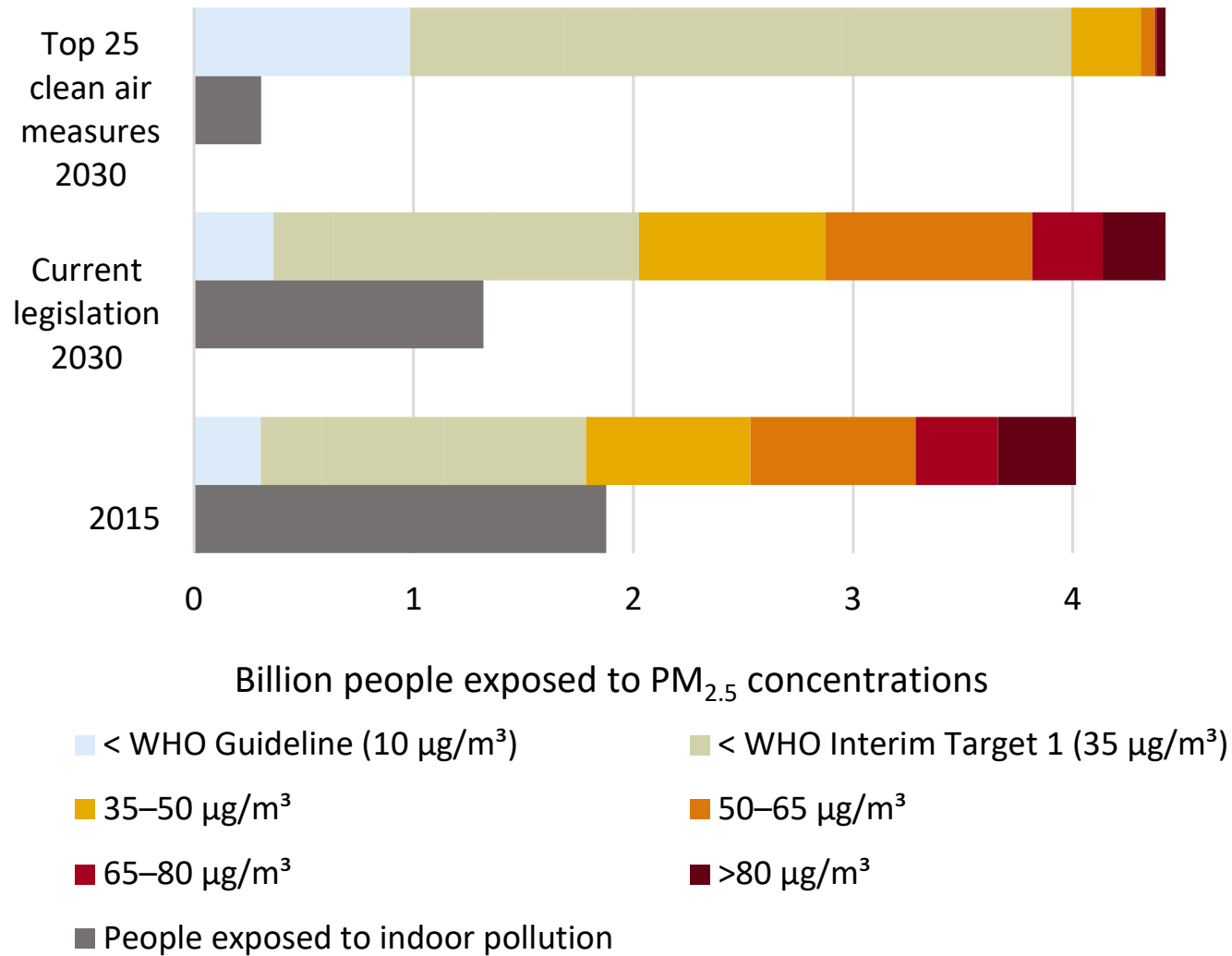
High income countries



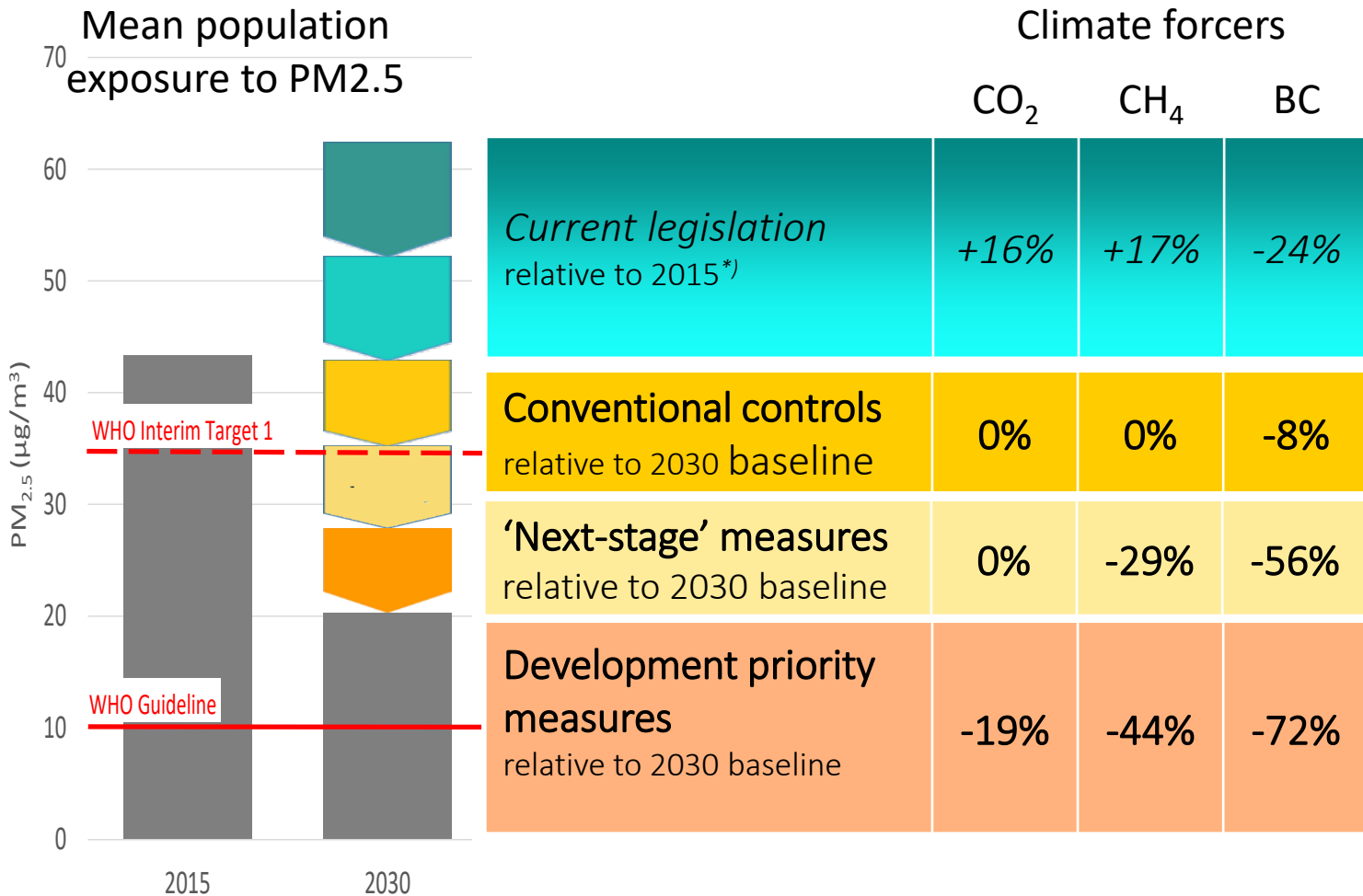
The top 25 measures will significantly improve air quality in Asia



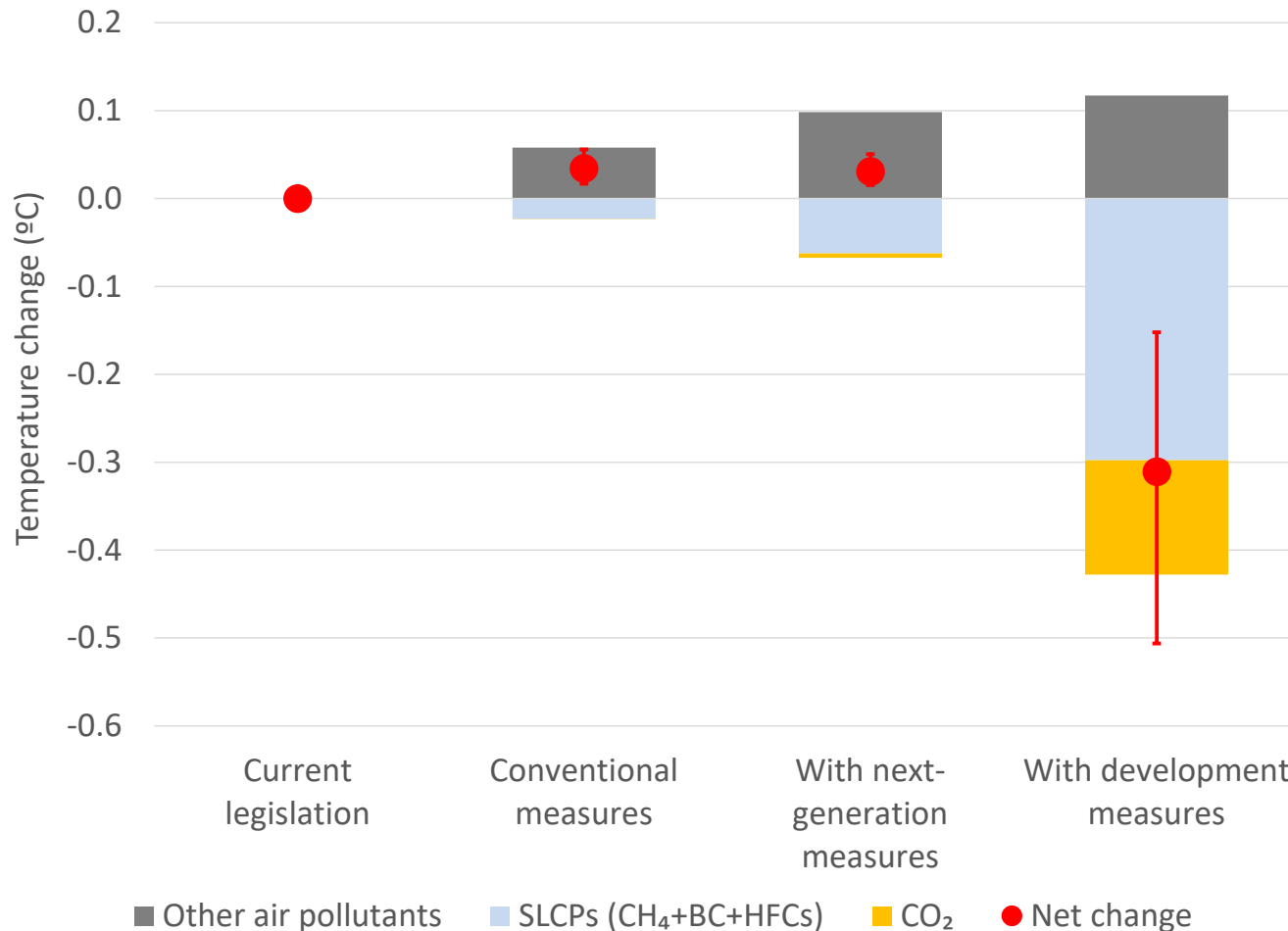
These measures can provide clean air to one billion people



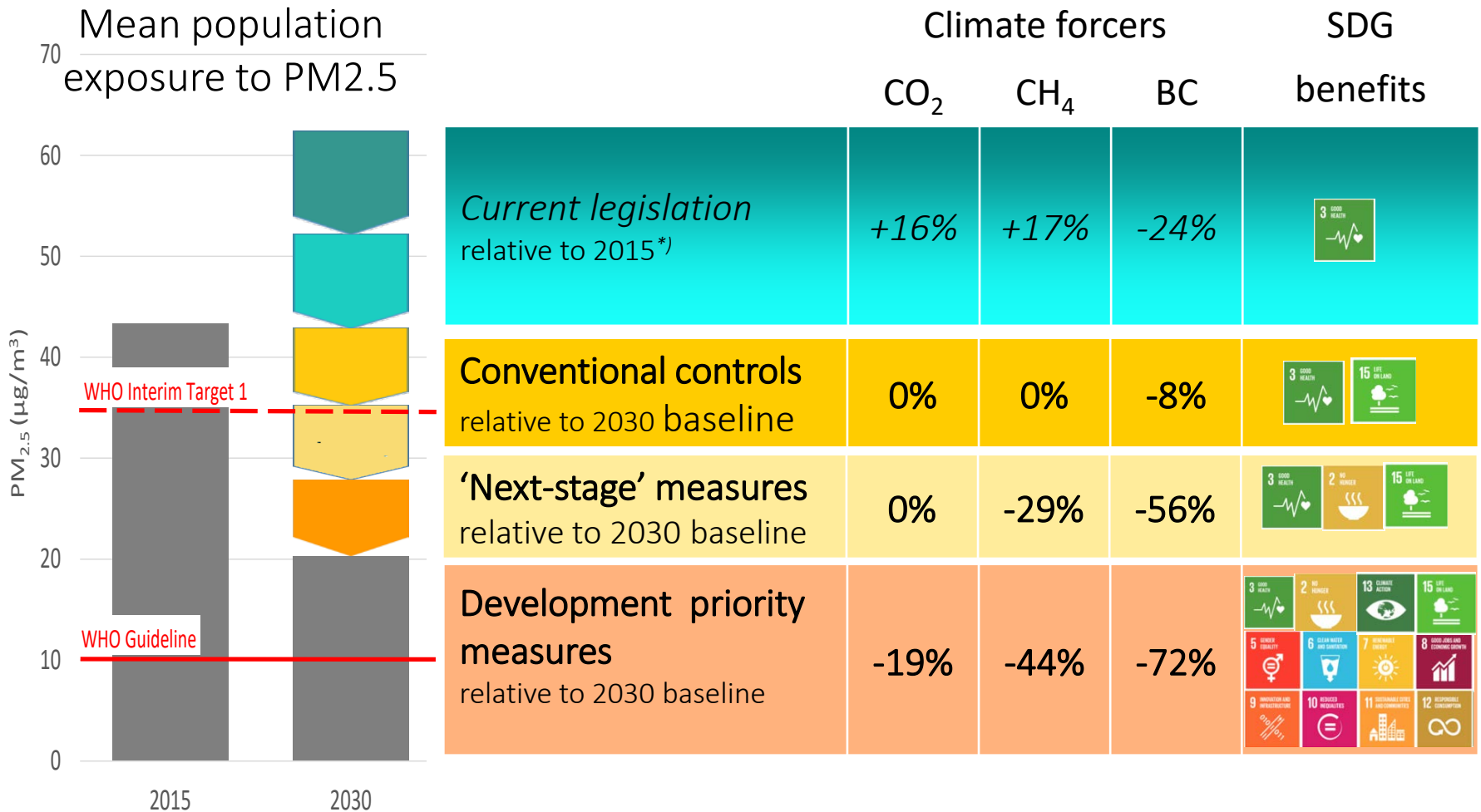
The top 25 clean air measures have important co-benefits on climate



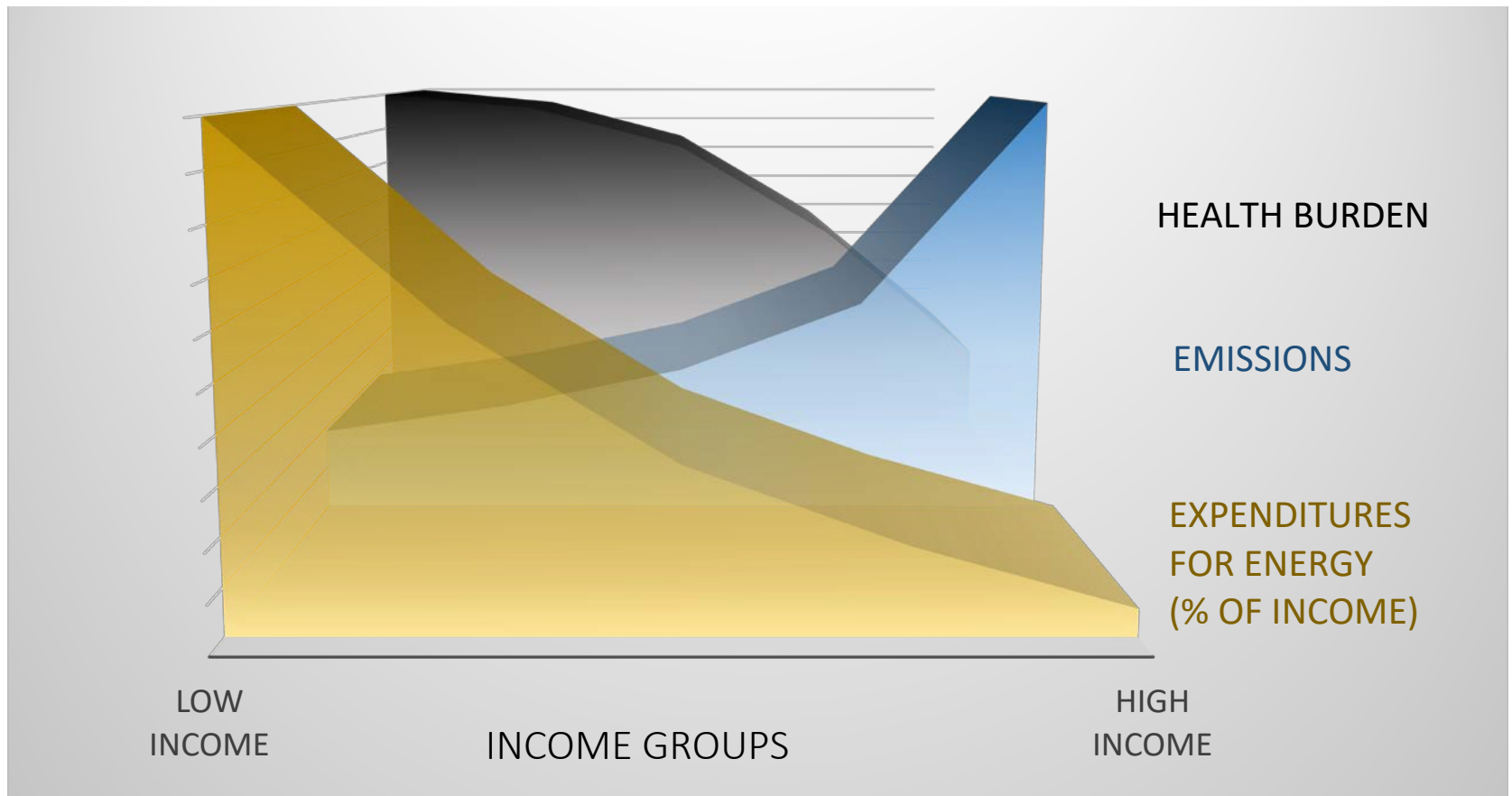
The development measures could reduce global temperature increase in 2050 by one third degree



The top 25 clean air measures have important co-benefits on SDGs



Inequalities of pollution India - 2010



Key messages

- While current policies limit a further increase of emissions in Asia, they will not be sufficient to significantly improve air quality.
- To move towards the WHO Air Quality Standards, measures that involve other sectors (agriculture, energy, waste management, etc.) will be indispensable.
- These measures will deliver a wide range of health- and other development benefits and reduce pollutants that influence temperature increase and climate.
- New opportunities for analyzing the political economy:
Who wins and loses; and losers be made winners?