

# Protecting health from Climate Change: The Global Response

Public Health and Environment



World Health  
Organization

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# Why do we need a global health response?

# Climate change affects our largest global health problems

- **Each year:**
  - Undernutrition kills 3.5 million
  - Diarrhoea kills 2.2 million
  - Malaria kills 900,000
- Extreme weather events kill 60,000

These, and others, are **highly sensitive to temperature and precipitation.**



# Climate Change and Malaria

## Potential transmission in Zimbabwe

Baseline 2000 2025 2050



### Climate suitability:

red = high; blue/green = low

- 0.01 - 0.05
- 0.05 - 0.1

### Low probability

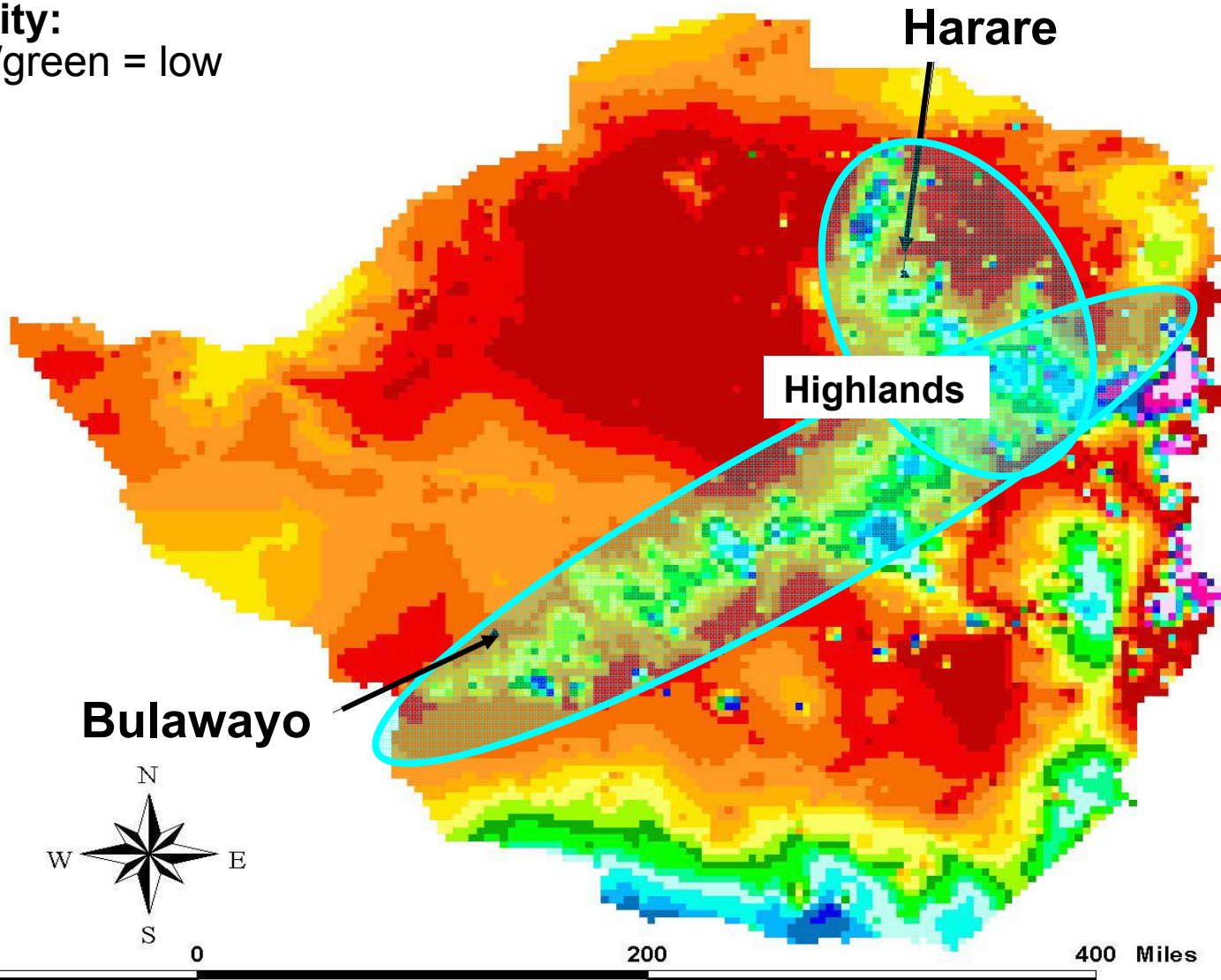
- 0.2 - 0.25
- 0.25 - 0.3
- 0.3 - 0.35
- 0.35 - 0.4
- 0.4 - 0.45

### Medium probability

- 0.55 - 0.6
- 0.6 - 0.65
- 0.65 - 0.7
- 0.7 - 0.75
- 0.75 - 0.8
- 0.8 - 0.85
- 0.85 - 0.9

### High probability

- 0.99 - 1
- No Data



# Climate Change and Malaria

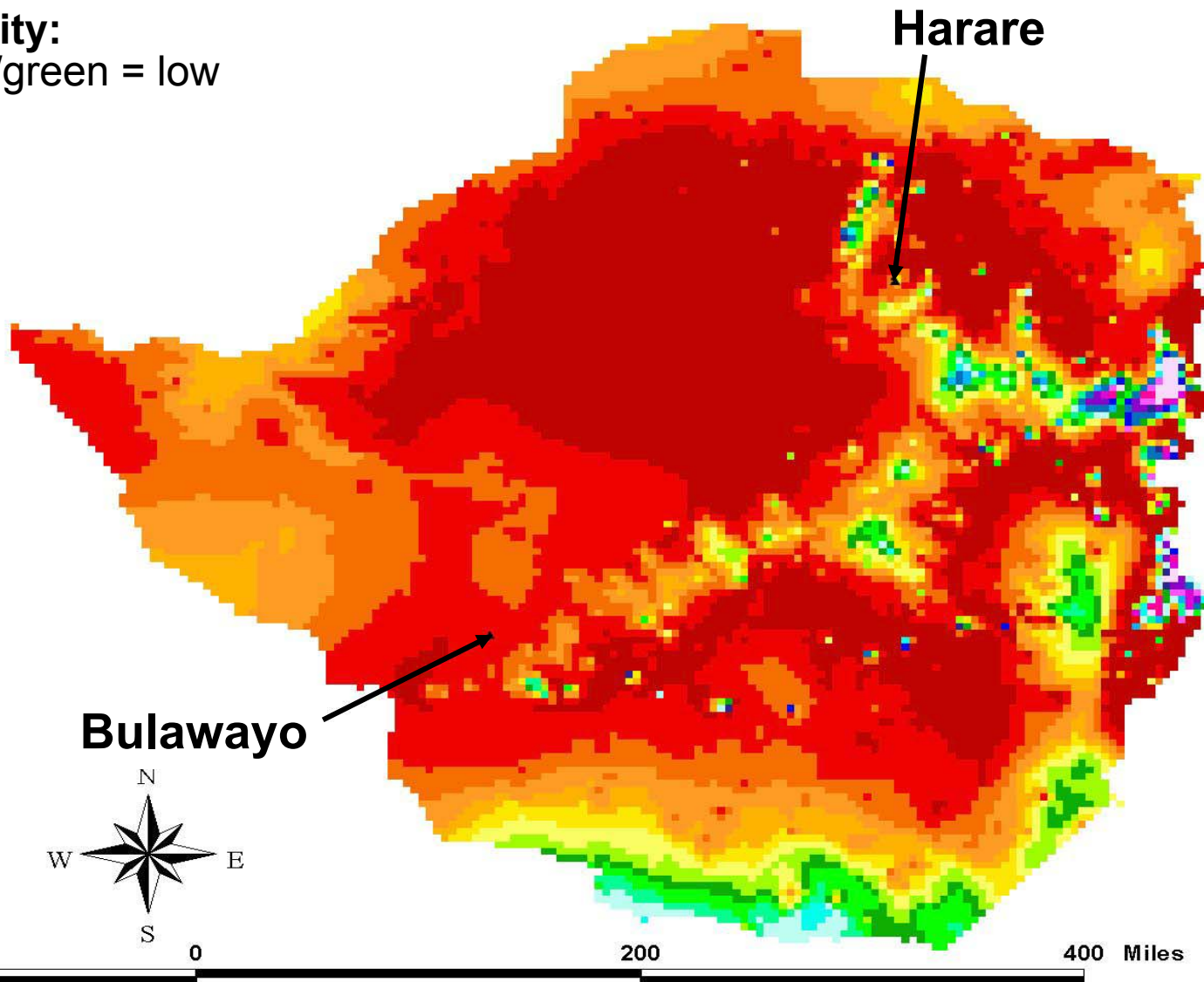
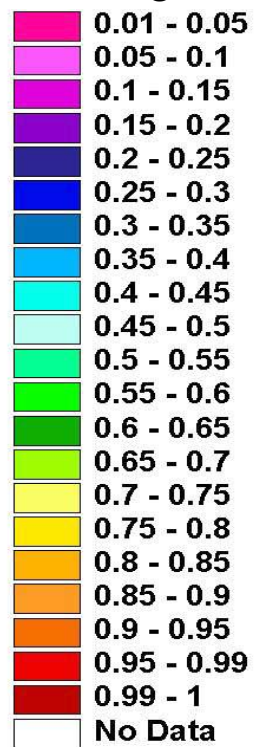
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# Climate Change and Malaria

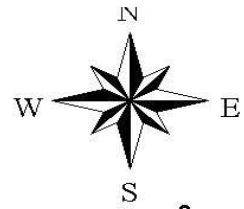
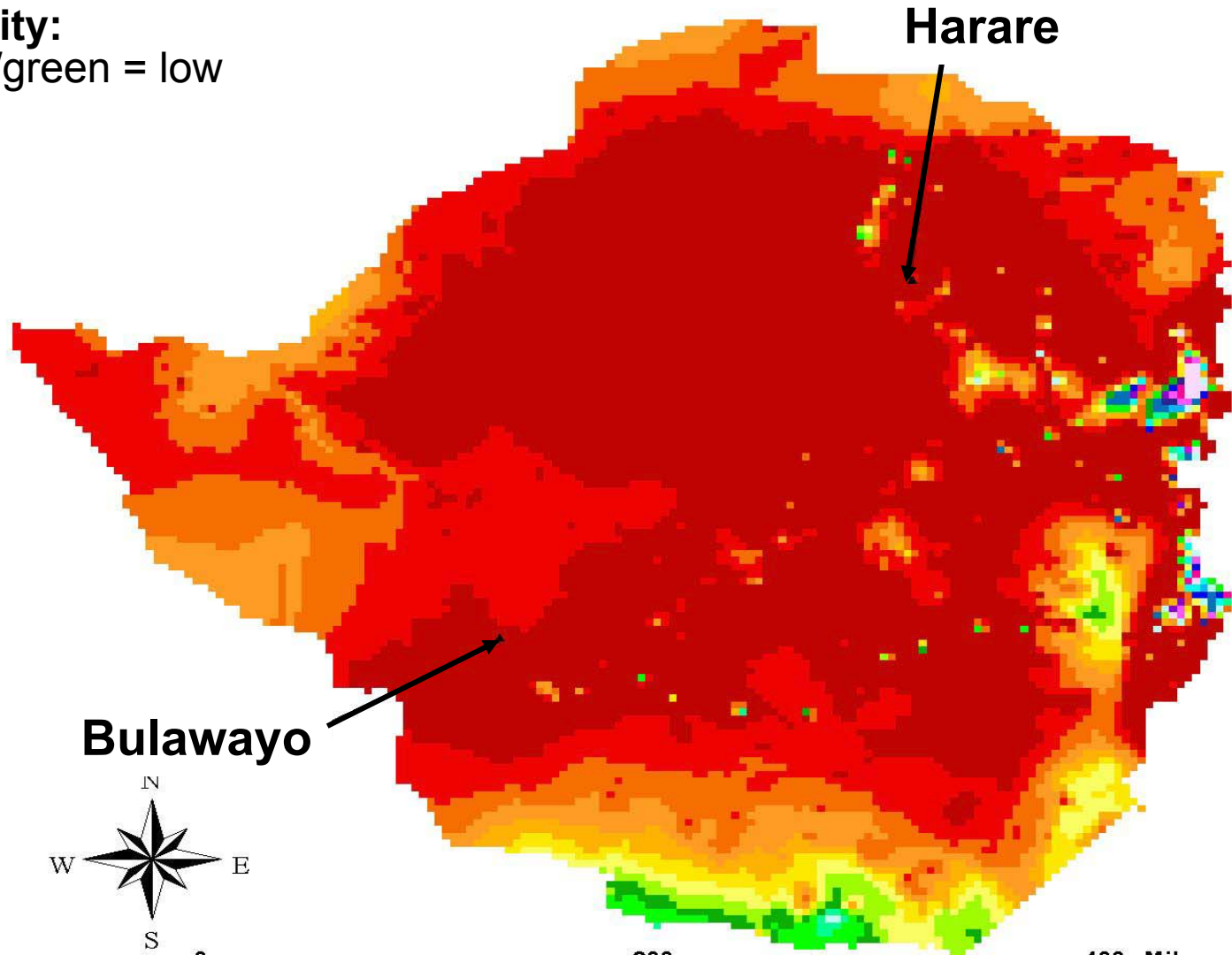
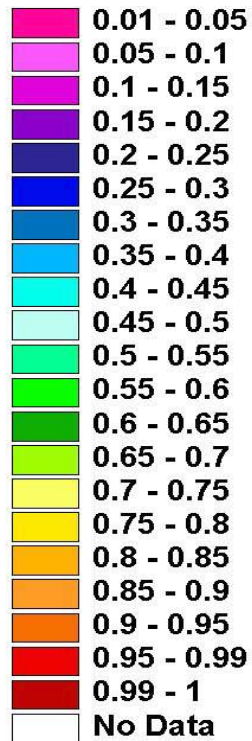
## Potential transmission in Zimbabwe

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### Climate suitability:

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# Those most vulnerable did not cause the problem



Cumulative emissions of greenhouse gases, to 2000



WHO estimates of *per capita* mortality from climate change, 2000

projections from Patz et al 2007; WHO 2008

WHO Comparative Risk Assessment estimated that by 2000, climate change that had occurred since the 1970s was causing over 150,000 additional deaths per year (WHO, 2002, McMichael et



World Health Organization

# Loading burdens on the backs of the poor is unfair

*With impoverished populations in the developing world the first and hardest hit, climate change is very likely to increase the number of preventable deaths. The gaps in health outcomes we are trying so hard to address right now may grow even greater.  
This is unacceptable.*

*Climate change and health: preparing for unprecedented challenges.*

**WHO Director General Margaret Chan.  
December, 2007**



# Climate change is rising on the global health agenda

In last two years:

- 193 countries endorse World Health Assembly resolution in 2008, and WHO workplan in 2009
- Statements by the major global health associations and Journals: World Medical Association, International Council of Nurses, Lancet etc.
- New initiatives on health cobenefits of mitigation, piloting adaptation, applied research, capacity building, awareness raising



# Climate change and health

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What can health bring to the climate change table?

# State of global climate change negotiations

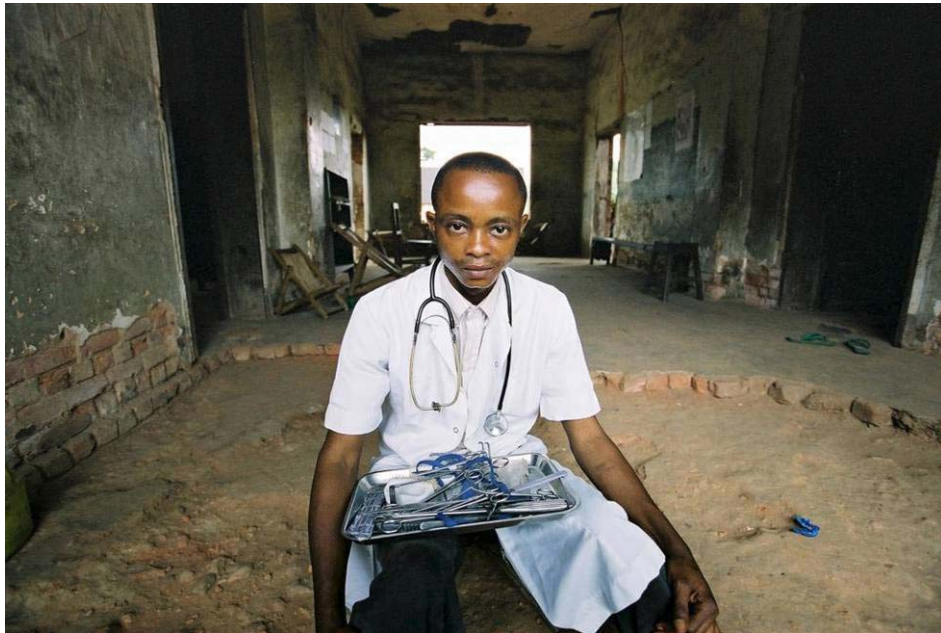
- Science broadly settled, all nations agree that we need to respond
- BUT: The benefits of reducing climate change are dispersed globally, and accrue over many decades
- Reluctance to take action and pay the costs, if others do not do their share



UN summit on Climate Change, September 2009

# What does health bring?

## (1) A large, active, well-respected, global community



Doctor in Democratic Republic of Congo. WHO 2009

### The health profession is:

- **Big:** Over 59 million health workers globally.
- **Uniquely well-respected:** Present in almost every community in the world, united by a set of common values.
- **An important GHG emitter:** 8% of US emissions are from healthcare

# What does health bring?

## (2) A range of effective "adaptation" measures

**Improved surveillance and response:** E.g. heatwave warnings, compliance with International Health Regulations to prevent international spread of disease



WHO/SEARO 2008

**Strengthened action on diseases of poverty:** Including wider and more flexible coverage with vector control and vaccination programmes

**Better management of environmental health determinants : e.g.**  
Provision of safe water and sanitation, control of air pollution

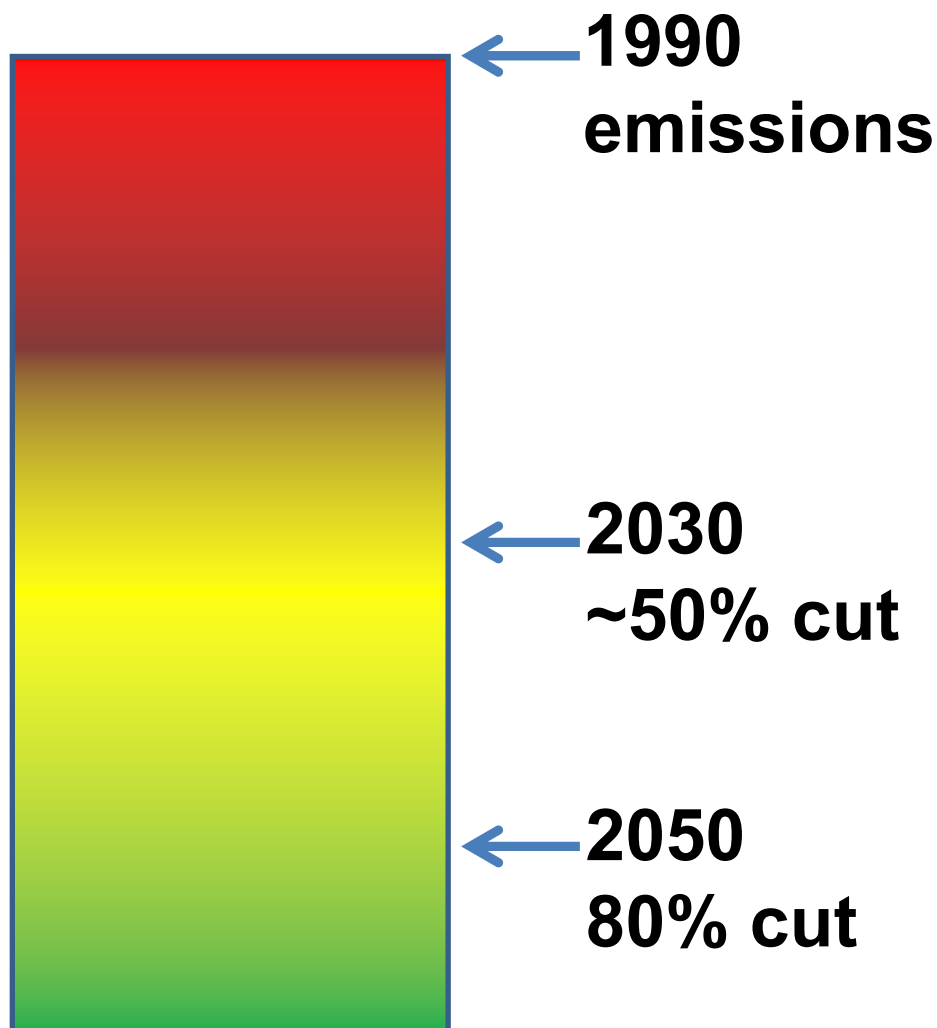
**-Already high benefit/cost ratios- likely higher under climate change**

### (3) A positive, immediate and local argument for cutting greenhouse gas emission

**"Health benefits from reduced air pollution as a result of actions to reduce greenhouse gas emissions... may offset a substantial fraction of mitigation costs"  
– IPCC, 2007**



# 2009 International project on health effects of climate mitigation



- Evaluated health effects in 2030 of GHG reductions consistent with 80% reduction in industrialised countries (50% global reduction) by 2050
- Sectors examined: household energy, electricity production, transport, food and agriculture
- Case studies to illustrate health effects in 2010 population under different future scenarios in high and low income settings

Slide adapted from Andy Hair



**World Health Organization**

# Best Studied Example: Electricity Generation and Air Pollution

2030 business as usual (**BAU**)



Vs

2030 with **global mitigation target**  
(carbon trading)

More renewables

More nuclear

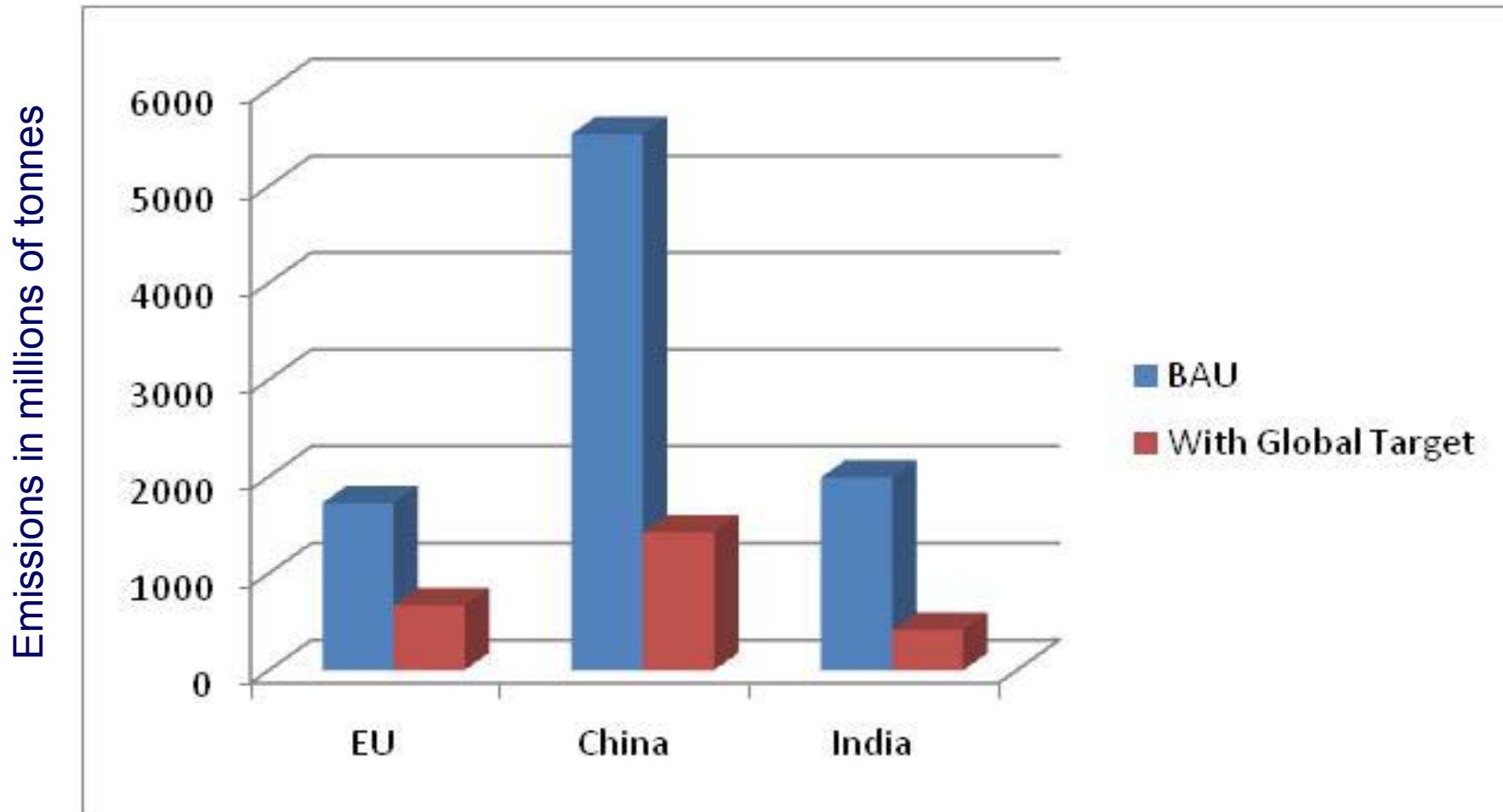
Some coal with carbon capture and  
storage

Less coal otherwise

Comparison calculated: **Deaths** due to  
particulate air pollution from electricity  
generation, and **costs**, in **EU, India and China**.

Slide adapted from Andy Hair

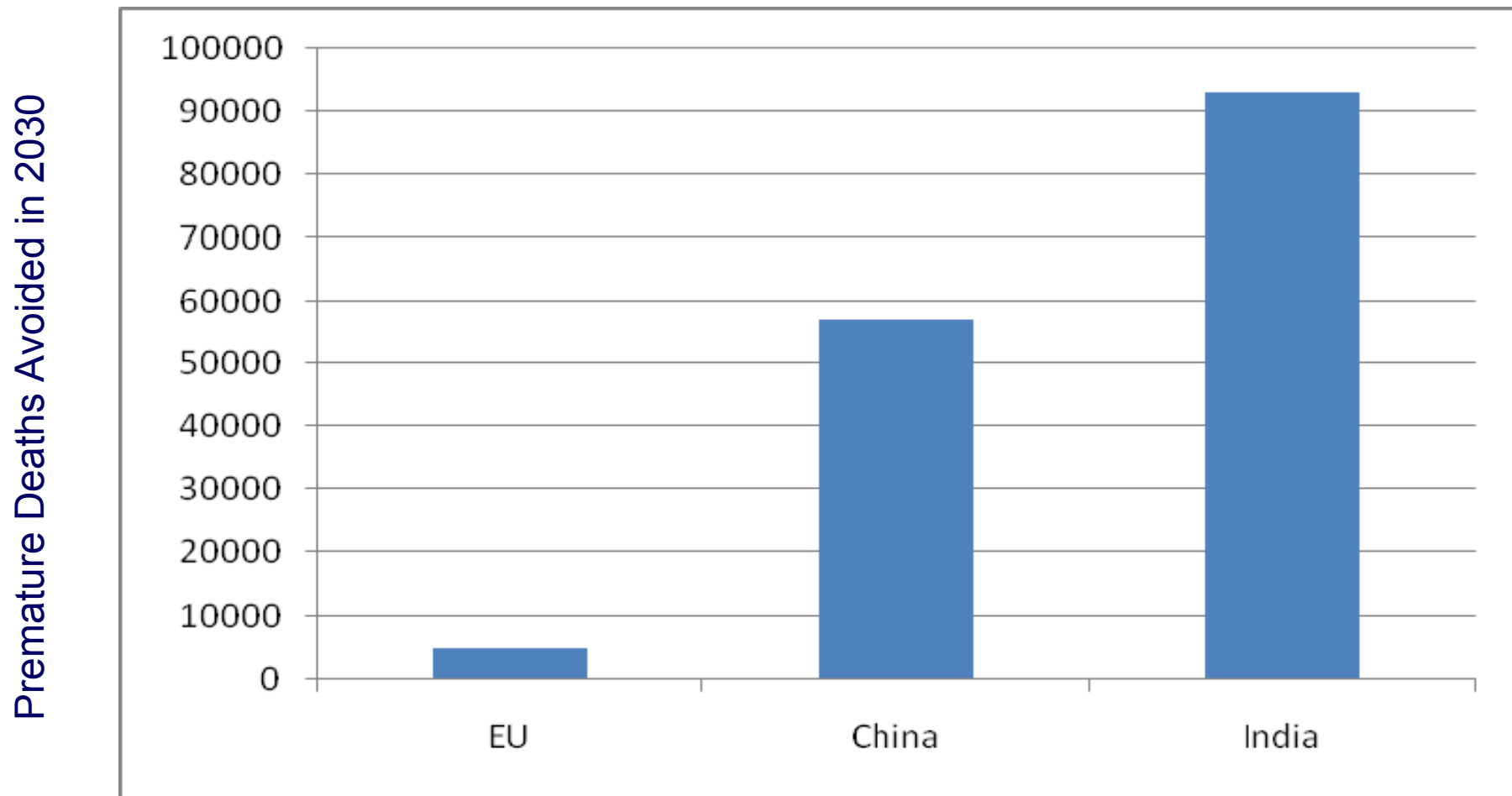
# Global mitigation targets and full emissions trading could significantly reduce CO<sub>2</sub> from electricity in 2030



Slide adapted from Andy Hair



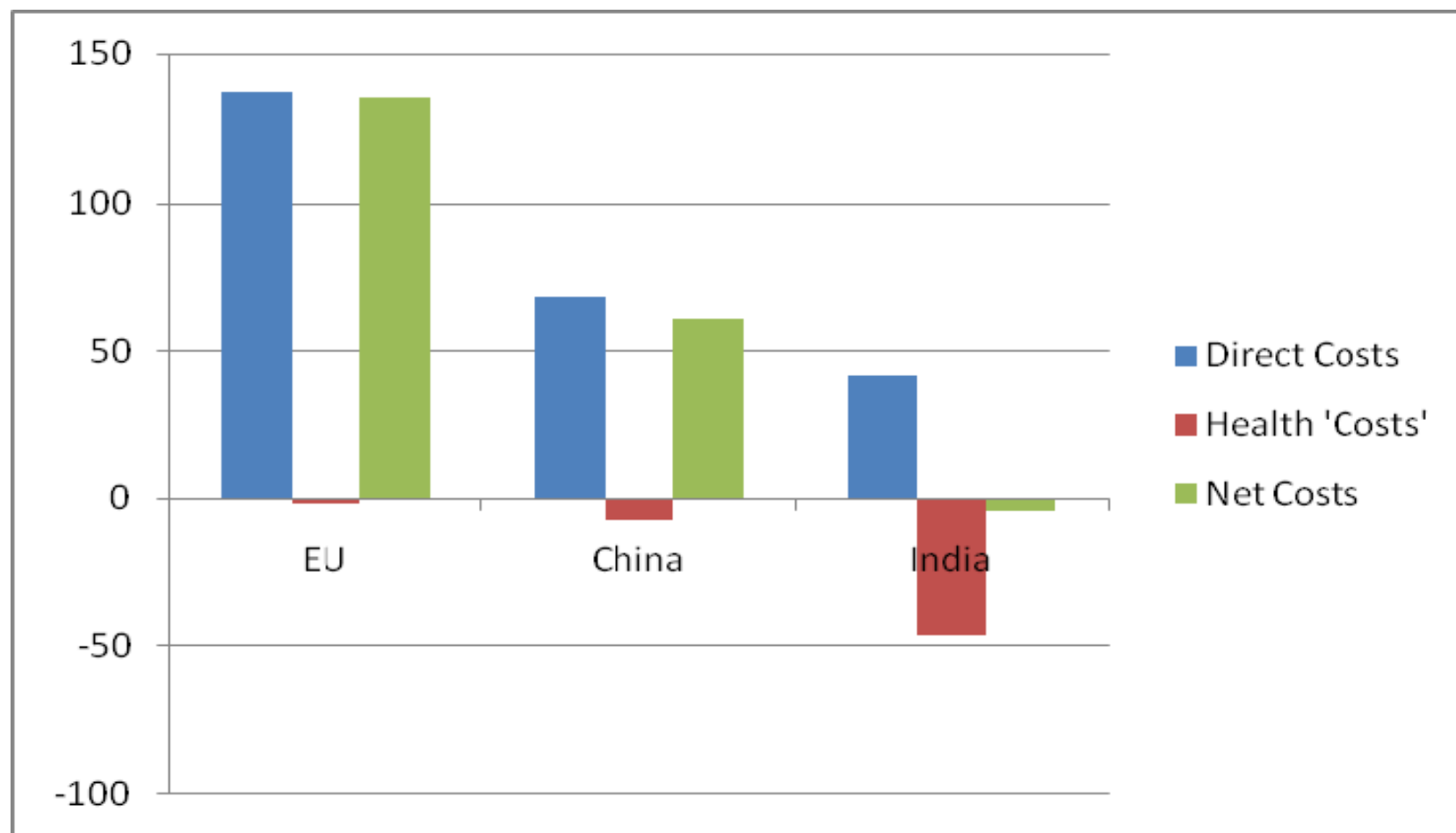
# Expected major health benefits of reduced air pollution, especially in rapidly developing economies



Slide adapted from Andy Hair



# Health benefits of greener electricity should partly offset costs: completely in some developing countries

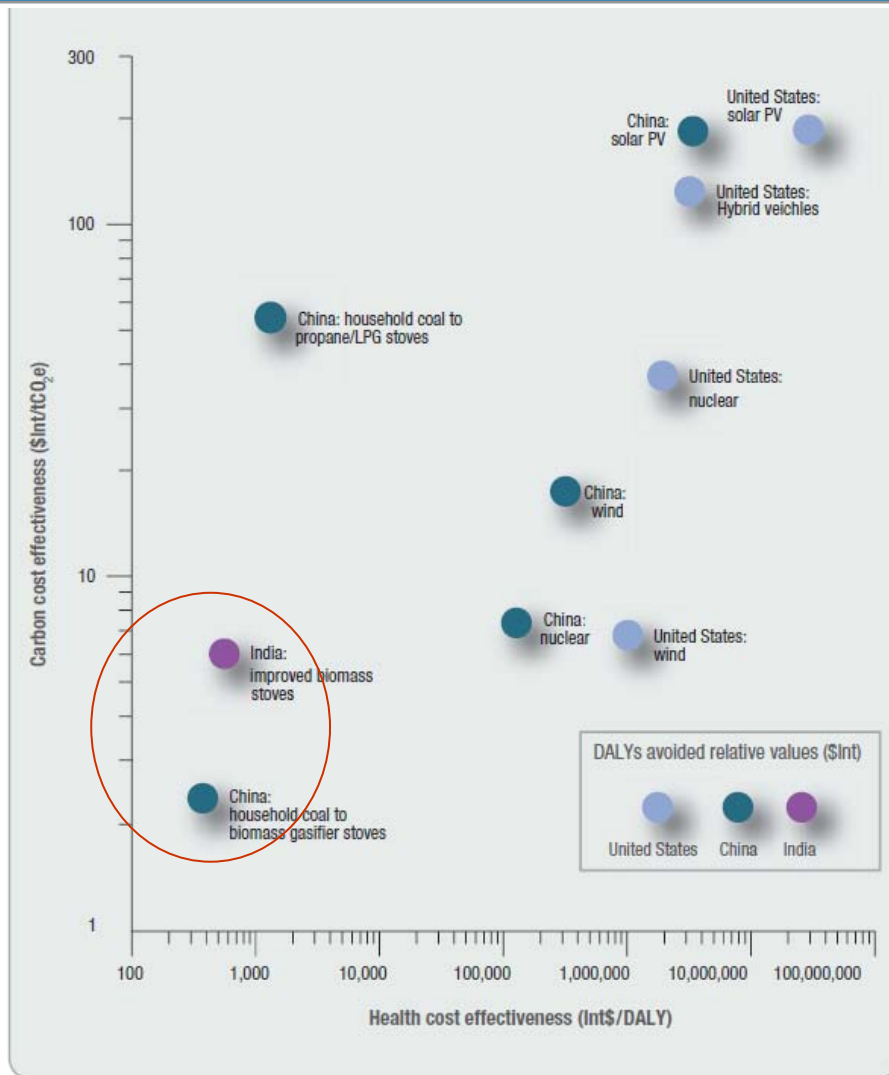


Costs of Mitigation US\$/Tonne CO2

Slide adapted from Andy Hair



# Other interventions could bring even larger benefits



## Benefits of 150 million more improved stoves in India

- Reductions in black carbon, methane, ozone precursors could amount to the equivalent of 0.5-1.0 billion tonnes of CO<sub>2</sub> eq over the decade
- Cost <\$50 per household every 5 years

Slide adapted from Kirk Smith, Andy Hair

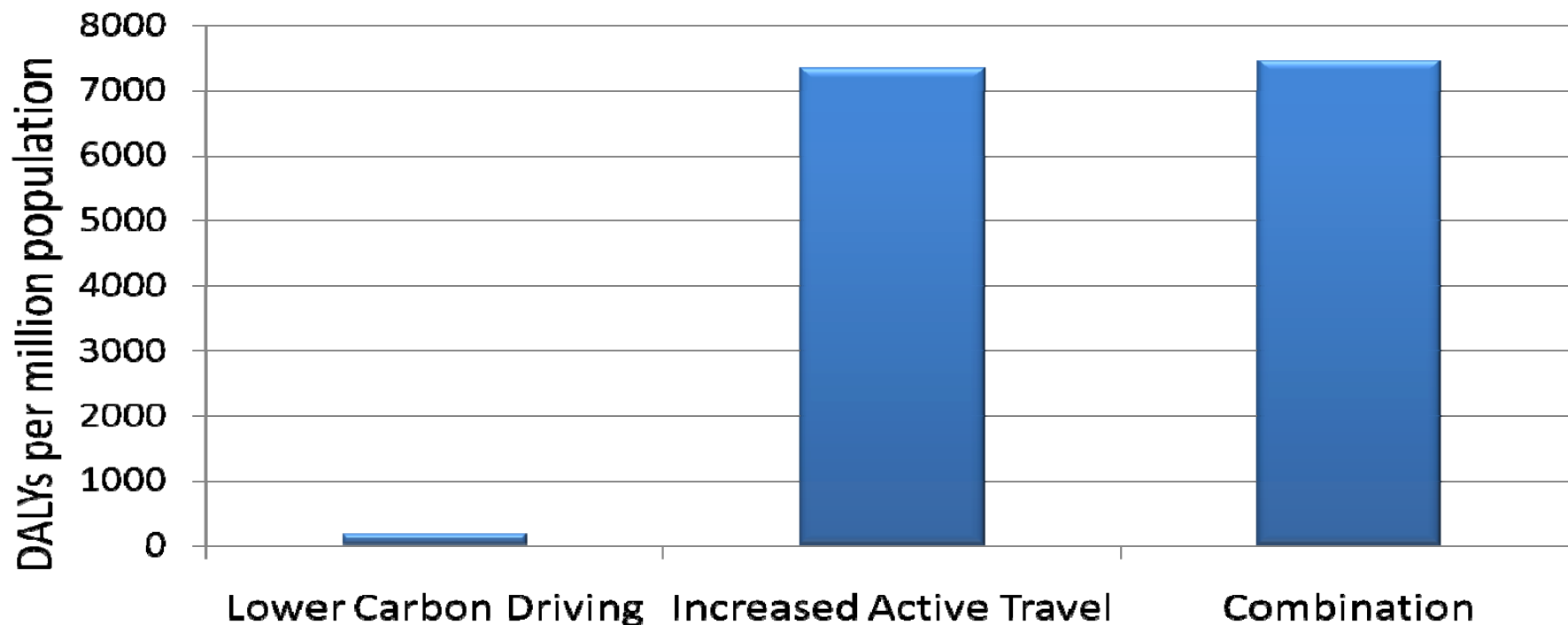
# Expected health benefits of improved stoves in India are equivalent to halving the national cancer burden

	Deaths from ALRI	Deaths from COPD	Deaths from IHD
Avoided in 2020 (%)	30.2%	28.2%	5.8%
Total avoided 2010-20	240,000	1.27 million	560,000

ALRI=acute lower respiratory infections. COPD=chronic obstructive pulmonary disease.  
IHD=ischaemic heart disease.

Slide adapted from Andy Hair

# Benefits accrue in developed countries as well: Lower carbon transport in London



**Some paths to GHG reduction are much healthier than others**

Slide adapted from Andy Hair

# More sustainable transport would address some of our fastest growing disease burdens

	Change in disease burden	Change in premature deaths
<b>Ischaemic heart disease</b>	<b>10-19%</b>	<b>1950-4240</b>
<b>Cerebrovascular disease</b>	<b>10-18%</b>	<b>1190-2580</b>
<b>Dementia</b>	<b>7-8%</b>	<b>200-240</b>
<b>Breast cancer</b>	<b>12-13%</b>	<b>200-210</b>
<b>Road traffic crashes</b>	<b>19-39%</b>	<b>50-80</b>

Slide adapted from Andy Hair

# Conclusions: How can health help?

- Health provides an accessible and resonant argument for fair and effective global climate change policy
- The health community is a fresh, engaged, and trusted voice now advocating for action on climate change
- Health has a portfolio of cost-effective "win-win" adaptation interventions (but needs more support)
- Health cobenefits represent an immediate, socially and politically attractive pay-off from mitigation policies (but only if we prioritize the most health-promoting ones)

# More information:

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**World Health Organization**

**<http://www.who.int/>**

**Public Health and Environment**

**<http://www.who.int/phe/en/>**

**Global Environmental Change**

**<http://www.who.int/globalchange/>**

**Climate Change**

**<http://www.who.int/globalchange/climate/>**