Climate and Health Country Profile

India

Demographic estimates			At-risk populations		
Population (2013)[a]	1,252	million	Population under five (2013)[a]	9.7	%
Population growth rate (2013)[a]	1.2	%	Population over 65 (2013)[a]	5.3	%
Population living in urban areas (2013)[b]	32.0	%			
Economic and development indicators			**Health estimates**		
GDP per capita (current US$, 2013)[c]	1484		Life expectancy at birth (2013)[e]	66	years
Total expenditure on health as % of GDP (2013)[d]	4	%	Under-5 mortality per 1000 live births (2013)[f]	52.7	
HDI			% of deaths attributable to the environment (2004)[e]	26	%

(a) World Population Prospects: The 2012 Revision, UNDESA (2012), (b) World Urbanization Prospects: The 2014 Revision, UNDESA (2014), (c) World Development Indicators, World Bank (2013), (d) Global Health Expenditure Database, WHO (2014), (e) World Health Statistics, WHO (2014), (f) Levels & Trends in Child Mortality Report 2013, UNICEF (2013)

Please review draft profile and add text responses to following key headings (200-250 words)

Climate and health status overview*

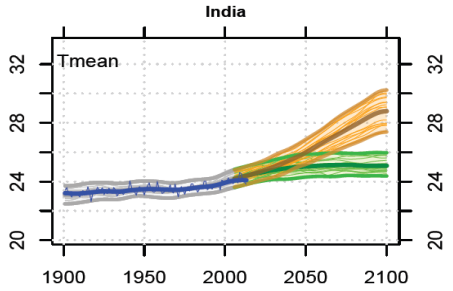
- Country context
- Vulnerabilities
- At-risk populations

Summary of Key Findings

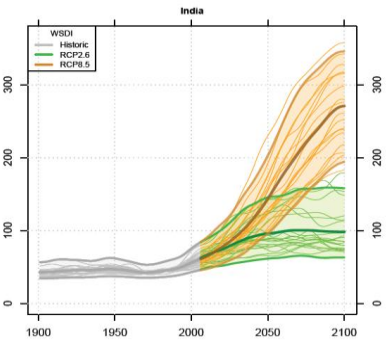
Opportunities for Action

I. Current and future climate hazards

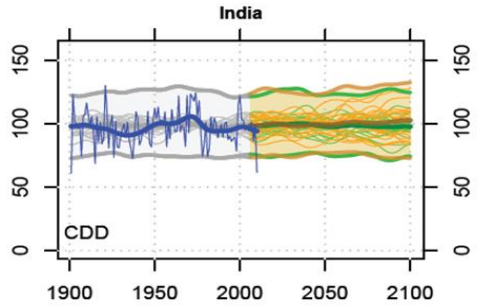
Mean annual temperature



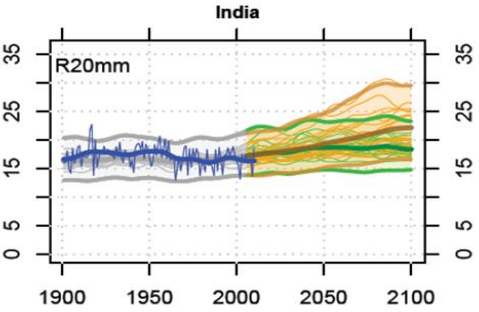
Warm spell duration index ('Heat waves')



Consecutive Dry Days

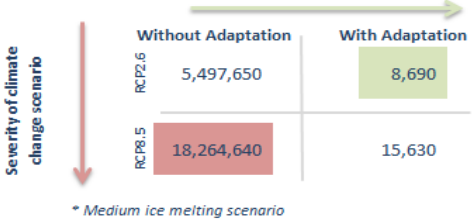


Extreme Rainfall > 20mm



Impact of flooding

Average number of people flooded per year due to sea level rise for the period 2070-2100



Source: Human dynamics of climate change, technical report, Met Office, HM Government, UK, 2014[a]

Key Messages

Under a high emission scenario (RCP8.5), the multi-model mean annual temperature is projected to increase by about 5°C from 1990 to 2100.

This is accompanied by a dramatic increase in the length of the longest heat wave spells from around 50 days in 1990 to about 280 days by the end of the century for the multi-model mean under RCP8.5.

The average length of the longest dry spell, about 100 days, is not indicated to change much suggesting persistence of drought spells but with large year-to-year variability.

At the same time, there is an indication that the number of days with very heavy precipitation may increase by around 5 days from 1990 to 2100 on average for RCP8.5. Some of the models indicate substantially larger increases - outside the range of observed variability, which implies an increase in fluvial flood risk.

Technical Explanation

The time series plots for climate indices are produced by first interpolating all observed and simulated data to a half degree grid and then aggregating from this to individual countries. The model projections are based on CMIP5 runs with multiple global climate models for RCP2.6 (green) and RCP8.5 (orange). As well as showing the multi-model (ensemble) mean (based on about 20 different models), the 5% and 95% ranges are shown to indicate the range of uncertainty across the ensemble. For more information on RCP2.6 and RCP8.5 climate scenarios please see the methods page.
For the indices of extremes, observations are taken from the HadEX2 dataset (www.metoffice.gov.uk/hadobs), whilst observed mean temperature (Tmean) is based on CRU TS (www.cru.uea.ac.uk/cru/data/hrg/).

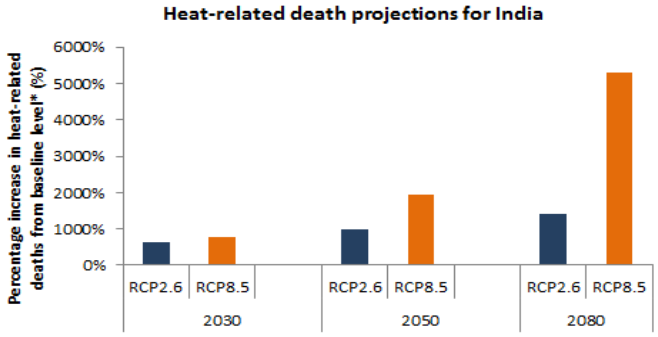
Source: Climatic Research Unit and Tyndall Centre for Climate Change Research, University of East Anglia, 2015

Key messages

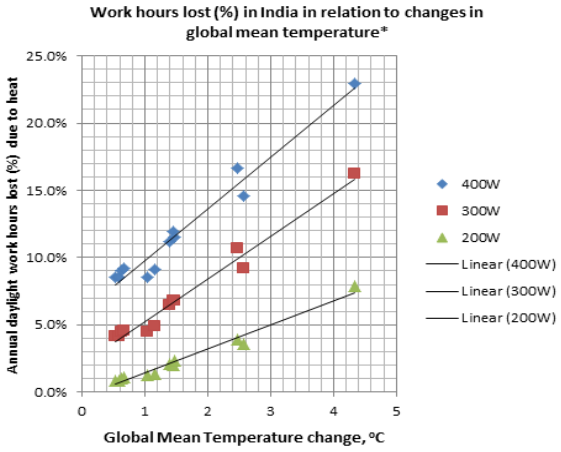
- Without action on climate change, over 18 million people will be affected by flooding due to sea level rise every year between 2070 – 2100 in India[a].
- Owing in part to its size, India is currently ranked as the country with the highest population exposed to river flood risk annually[b].
- Whilst these risks can be reduced with adaptation, interventions will be most effective when they prioritize mitigation and adaptation[b].

Source: World Resources Institute, http://www.wri.org[b]

II. Current and future health risks due to climate change and the causes of climate change



Source: Honda, Y. 2015



Source: Kjellstrom, T. et al. 2015; *see references & methods

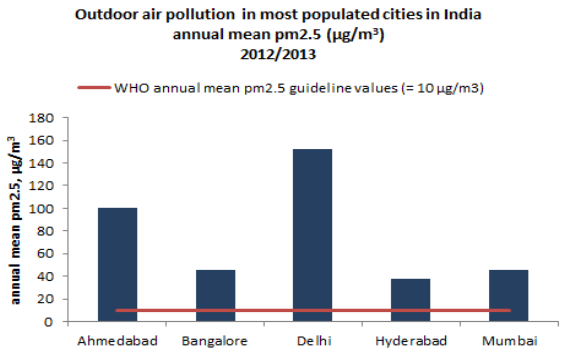
Key messages

Under a high emission scenario (RCP8.5) heat-related deaths will increase to over 200,000 by 2080 compared to the estimated baseline of just over 4,000 deaths per year between 1961 and 1990. It should be noted, that the methods account for the high population growth rate in India.

If global mean temperature rises 2 degrees Celcius approximately 14% annual daylight work hours would be lost by workers carrying out heavy labour, 400W (i.e. agricultural and industrial workers) this loss increases to over 20% with a 4 degree Celcius increase in global mean temperature.

Climate variability and climate change influence diseases such as diarrhoea, malaria, dengue and malnutrition. Data on the current impact of these diseases and the future impact associated with climate change will be included in future drafts for review.

Outdoor Air Pollution Exposure



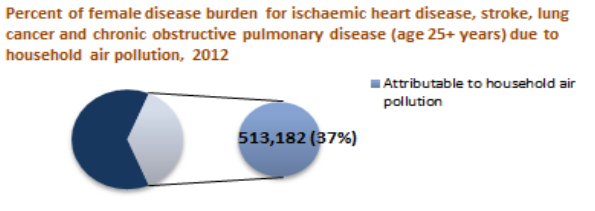
Source: Ambient Air Pollution Database, WHO, May 2014.

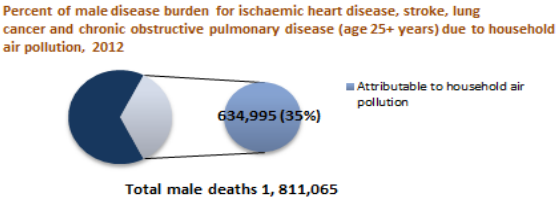
Outdoor air pollution consists of many pollutants, among other particulate matter. These particles are able to penetrate deeply into the respiratory tract and therefore constitute a risk for health by increasing mortality from respiratory infections and diseases, lung cancer, and selected cardiovascular diseases.

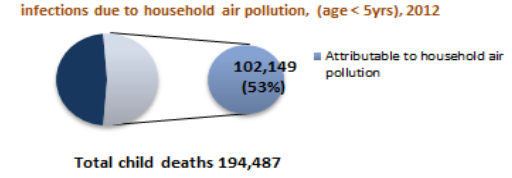
Women and children are at a greater risk for disease from household air pollution. Consequently, household air pollution is responsible for a larger proportion of the of total number of deaths from ischaemic heart disease, stroke, lung cancer and COPD compared to men.

Household air pollution

India		
Percentage of population using solid fuels (%), 2013		
Rural Areas	Urban Areas	National Total
81	26	64





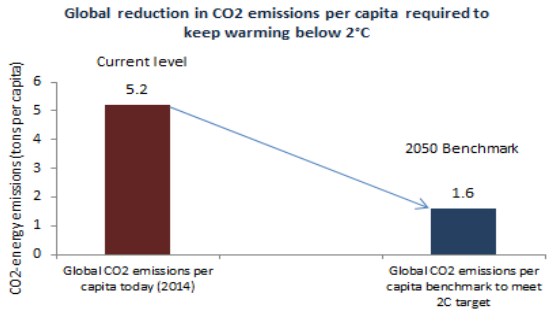


Source: GHO data repository, World Health Organization, 2012.

III. Emissions and commitments

Global Perspective

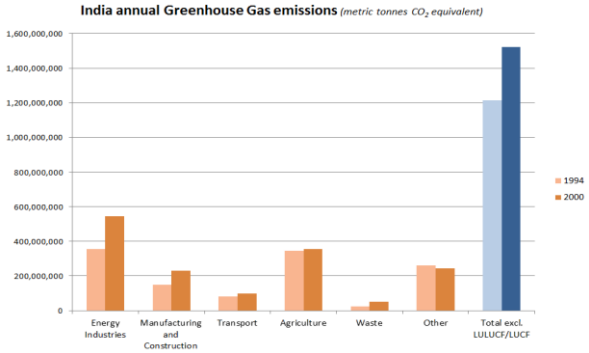
In 2010 all governments committed to the UNFCCC objective to keep the rise in mean global surface temperature below 2°Celcius - A critical target to minimize the impact of climate change on human health.



Source: Pathways to deep decarbonization, Report, Sept. 2014. see ref

National Perspective

India has not yet submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC



Source: UNFCCC Greenhouse Gas Data Inventory, UNFCCC (2015)

IV. Co-benefits to health from climate change mitigation

Global Perspective

Transport

The transport sector is responsible for some 14 % (7.0 $GtCO_2e$) of global emissions, however the IPCC has noted significant opportunities to reduce end-use energy demand in the sector, with a corresponding 15%-40% reduction in CO_2 emissions.

This brings with it substantial opportunities for health:

- A modal shift towards walking and cycling will see reductions in obesity-related illnesses, reduced outdoor air pollution and noise exposure, and improve mental health.
- Integrated urban planning can encourage physical activity, provide more green spaces, and improve health equity by making urban services more accessible to the elderly and poor

Energy

Energy sources such as coal are particularly damaging for human health, contributing heavily to poor local air quality and directly harming cardiovascular and respiratory disease. Outdoor air pollution is responsible for 3.7 million premature deaths annually. 88% of these deaths occur in low and middle income countries.

The health benefits of transitioning from coal to renewable energy sources are clear:

- Reduced rates of cardiovascular and respiratory disease such as stroke, lung cancer, coronary artery disease, and COPD
- Cost-savings for often already over-burdened health systems
- Improved economic productivity from a healthier and more productive workforce

Household Heating, Cooking and Lighting

Indoor air pollution causes over 4.3 million premature deaths annually, predominantly due to stroke, ischaemic heart disease, chronic airways disease, and childhood pneumonia.

A range of interventions can both improve public health and reduce emissions from such sources:

- Shifting from open fires or rudimentary stoves to clean and efficient cookstoves saves lives by reducing indoor levels of black carbon and particulate matter
- Complementing this, a transition away from solid fuels like biomass and charcoal, towards LPG, biogas, and electricity will have similar health benefits for respiratory and heart health
- Women and children are disproportionately affected by indoor air pollution, meaning that actions to address this will yield important gains in health equity

Low-Carbon Electricity and Healthcare

Reliable electricity generation is an essential pre-requisite for economic growth, with 1.4 billion people living without access to electricity. In 11 countries in Sub-Saharan Africa, 26% of health facilities had no energy at all, and only 33% of hospitals had 'reliable electricity provision '.

There is an unprecedented opportunity to use sustainable electricity generation to power healthcare facilities around the world. This will:

- Provide affordable power to healthcare facilities otherwise detached from a national power grid, greatly improving quality of care
- Allow the local clinic or hospital to act as an anchor for community resilience and electricity
- Avoid the negative health effects of other alternatives such as diesel generators

Source: See references

National Response

The national strategy for climate change mitigation includes consideration of the health implications (health risks or co-benefits) of climate change mitigation actions	✓

Health implications considered in mitigation actions in the following sectors:

Energy in buildings	Energy industries	Water and waste-management

Country has conducted valuation of co-benefits of health implications of climate mitigation policies	x

Source: Supporting monitoring efforts on health adaptation and mitigation of climate change: a systematic approach for tracking progress at the global level. WHO survey, 2015.

VI. Policy Responses

		Policy Responses - India	
Governance and Policy	1	Country has identified a national focal point for climate change in the Ministry of Health	x
	2	Country has a National health adaptation strategy approved by relevant Government body	✓
	3	The National Communication submitted to UNFCCC includes health implications of climate change mitigation policies	✓
Health Adaptation Implementation	4	Country currently implementing projects or programmes on health adaptation to climate change	✓
	5	Country has implemented actions to build institutional and technical capacities to work on climate change and health	✓
	6	Conducted a national assessment of climate change impacts, vulnerability and adaptation for health	✓
	7	Country with climate information included in Integrated Disease Surveillance and Response (IDSR) system	✓
	8	Country has implemented activities to increase climate resilience of health infrastructure	✓
Financing and costing mechanisms	9	Estimated costs to implement Health Resilience to climate change included in planned allocations from domestic funds in the last financial biennium	✓
	10	Estimated costs to implement Health Resilience to climate change included in planned allocations from international funds in the last financial biennium	x

Key messages:

Please review policy response table and provide brief text, quote or case study.

Source: Supporting monitoring efforts on health adaptation and mitigation of climate change: a systematic approach for tracking progress at the global level. WHO survey, 2015.