

CLIMATE AND HEALTH COUNTRY PROFILES - 2015

A GLOBAL OVERVIEW



United Nations
Framework Convention on
Climate Change



© World Health Organization 2015

All rights reserved. Publications of the World Health Organization are available on the WHO website (www.who.int) or can be purchased from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int).

Requests for permission to reproduce or translate WHO publications –whether for sale or for non-commercial distribution– should be addressed to WHO Press through the WHO website (www.who.int/about/licensing/copyright_form/en/index.html).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

ACKNOWLEDGEMENTS

The Climate and Health Country Profile Project is a joint collaboration of The World Health Organization (WHO) and the Secretariat of the UN Framework Convention on Climate Change (UNFCCC), supported and in-part funded by the Wellcome Trust, working together with CDP, the World Meteorological Organization (WMO) and the World Bank, and with contributions by researchers at the London School of Hygiene and Tropical Medicine (LSHTM), University of East Anglia (UEA), and the University of Wisconsin-Madison (UW-Madison).

Individual Climate and Health Country Profiles and the Climate and Health Global Overview form a complementary package of documents.

The preparation of these documents involved the contribution of numerous individuals and organizations [Annex A: Contributions]. WHO and the UNFCCC would like to express their deep appreciation to all who have supported this project through their generous contribution of expertise, content development, data collection, analysis, design, review, consultation and funding.



EXECUTIVE SUMMARY

To protect health from risks derived from climate change, decision-makers (going from national leaders to individual citizens) need access to the best information possible on the risks and the opportunities for action. This report accompanies a set of country profiles on climate change and health. It provides an overview of the global consequences of collectively acting, or failing to act, to address climate change and its associated health risks.

Emissions of the pollutants that are driving climate change are growing rapidly. If current trends continue, the world could see a 4°C rise in global mean surface temperatures over the course of the current century. This will entail severe disruptions to precipitation patterns and to the frequency and intensity of some extreme weather events.

Such a degree of climate change would trigger a range of health impacts, concentrated on the poorest and most vulnerable populations, both within and between countries. Even considering only a subset of the health risks, and making optimistic assumptions about economic growth, climate change can be expected to cause an additional 250,000 deaths yearly by 2030, by hampering the progress that is being made against important killers such as undernutrition, malaria and diarrhoea. Reducing global carbon emissions may not bring clear reductions in these diseases for several decades, due to the long time lags involved, and changes in other health determinants. However, such reductions remain essential to maintain the conditions for combatting these diseases in the long term, as well as to avoid other uncertain, but potentially severe risks, including extreme weather events overwhelming health systems; breakdown in food systems; large-scale population displacement, and exacerbation of poverty, thereby reversing progress in health and overall development.

There is an additional important health motivation to mitigate climate change. Many of the drivers of carbon emissions to the atmosphere, such as inefficient and polluting energy and transport systems, also directly harm health. The largest and most directly connected of these risks is air pollution, which causes over 7 million deaths each year, or one in eight of all deaths. The close connection between actions that drive climate change, and those that cause local air pollution, call for an integrated approach to address both sets of risks.

Making the changes necessary to avoid the worst of the risks is a very large challenge. To limit global warming, with a 50% probability or more, to the widely agreed target of less than a 2°C increase from preindustrial times, global emissions of greenhouse

gases would need to fall by between 25% to 55% over the 2010-2050 period. Instead, emissions have grown by approximately 2.2% per year during 2000-2010. In addition, although it is estimated that \$70 billion to \$100 billion per year will be needed globally to adapt to climate change by 2050, only a fraction of these funds have been made available to date, and a much smaller proportion directed to health protection.

There is an important opportunity, however, for coordinated action to address climate change and improve health. Strengthening the resilience of health systems would both save lives now, and protect populations from much of the potential health impacts of climate change at least until the middle of the coming century. Promoting more sustainable public policy and individual choices could bring substantial reductions in climate pollution, and bring large, immediate and local health gains. For example, implementing a targeted set of measures specifically to address Short Lived Climate Pollutants (SLCPs) would be expected to save approximately 2.4 million lives a year, and reduce global warming by about 0.5°C by 2050. Placing a price on polluting fuels that reflected their health impacts could be expected to cut outdoor air pollution deaths by approximately half, and reduce greenhouse gas emissions by over 20%. This can also be expected to raise approximately 3% of GDP, or \$3 trillion per year in revenue – over half the total value of health spending by all of the world's governments.

The international community has made important progress in recent years. Global climate and health agreements now provide clear mandates for stronger action to protect health from climate risks, and to promote the health benefits of cleaner development choices. A range of policy and technical support is now being made available to support countries in their efforts to include health in adaptation and mitigation policies. What is needed now is a more systematic, evidence-based and scaled-up implementation. The country profiles both provide a summary of information to support national actions, and lay the basis for sustained tracking of progress in this critical endeavour.

INTRODUCTION

There is now a very large body of evidence that human actions, mainly the burning of fossil fuels, have caused significant changes in the climate system. The effects will persist for centuries or longer, with profound implications for human health and well-being.

The implications of climate change for health - and the opportunities to reduce greenhouse gas emissions - vary greatly between and even within countries. The World Health Organization, in partnership with the United Nations Framework Convention on Climate Change and working with a range of experts and researchers, is therefore producing country profiles to provide evidence on the links between climate change and health as well as the effects on health of policies to reduce greenhouse gas emissions within individual nations.

In addition, as a global society, we have a choice. The actions taken by countries, and their citizens, add up. If we take strong actions to address climate change, while also choosing paths that protect and promote health, we have the opportunity to collectively bring about a planet that is not only more environmentally intact, but also has cleaner air, more abundant and safer freshwater and food, more effective and fairer

health and social protection systems - and as a consequence, healthier people. In contrast, if we continue on our current path of high levels of greenhouse gas emissions, we are choosing a planet that is more environmentally degraded, inequitable, and hostile to human life. If we fail to adapt to climate change, the most vulnerable populations will be exposed to increasing health risks.

This document is to accompany the country profiles. It follows the same structure to provide an overview of the global trends in climate change and health that we can expect to experience, depending on our collective level of ambition and effectiveness.

The health community has a unique contribution to make in supporting reductions in greenhouse gas emissions, and in implementing the preventive public health measures that will protect populations from the worst consequences of global warming.

The level and rate of future climate change will depend on amounts of emitted greenhouse gases and other climate pollutants, such as black carbon. The Intergovernmental Panel on Climate Change (IPCC) has defined four alternative pathways of future emissions. The country profiles, and this report, use the highest (RCP 8.5) and lowest (RCP 2.6) of the emissions pathways to illustrate the choice between inhabiting a planet with unabated climate change, and that in which the extent of climate disruption is limited.

Current emissions of greenhouse gases are tracking along the higher end of the range of IPCC pathways (i.e. closer to RCP 8.5). By the end of the century, such high emissions are projected to lead to concentrations of greenhouse gases in the atmosphere that are almost four times preindustrial levels. This would be expected to bring a 3.7°C rise in global mean surface temperatures (with a likely range of 2.6°C to 4.8°C)

by the 2090s compared to 1986–2005 temperatures, in addition to the warming of 0.6°C which has already occurred since preindustrial times. Such warming would cause severe disruptions to precipitation patterns, as well as to the frequency and intensity of some extreme weather events such as heat waves, extreme precipitation, and storm surge in coastal areas [1].

Phenomenon and direction of trend	Assessment that changes occurred [typically since 1950 unless otherwise indicated]	Assessment of a human contribution to observed changes	Likelihood of further changes [Early 21 st Century]	Likelihood of further changes [Late 21 st Century]
Warmer and/or fewer cold days and nights over most land areas	Very likely	Very likely	Likely	Virtually certain
Warmer and/or more frequent hot days and nights over most land areas	Very likely	Very likely	Likely	Virtually certain
Warm spells/heat waves. Frequency and/or duration increases over most land areas	Medium confidence on a global scale - Likely in large parts of Europe, Asia and Australia	Likely	Not formally assessed	Very likely
Heavy precipitation events. Increase in the frequency, intensity, and/or amount of heavy precipitation	Likely more land areas with increases than decreases	Medium confidence	Likely over many land areas	Very likely over most of the mid-latitude land masses and over wet tropical regions
Increases in intensity and/or duration of drought	Low confidence on a global scale - Likely changes in some regions	Low confidence	Low confidence	Likely (medium confidence) on a regional to global scale
Increases in intense tropical cyclone activity	Low confidence in long term (centennial) changes - Virtually certain in North Atlantic since 1970	Low confidence	Low confidence	More likely than not in the Western North Pacific and North Atlantic
Increased incidence and/or magnitude of extreme high sea level	Likely [since 1970]	Likely	Likely	Very likely

Table 1.1. **Extreme weather and climate events:** Global-scale assessment of recent observed changes, human contribution to the changes, and projected further changes for the early [2016–2035] and late [2081–2100] 21st century: Adapted from [1].

In contrast, effective national action, supported by international cooperation, could limit carbon emissions to a lower pathway such as RCP2.6. This would be expected to lead to considerably lower increases in global temperature, in the order of 1.0°C [likely range 0.3-1.7°C] by the end of the century compared to 1986-2005 temperatures [i.e. 1.6°C since the preindustrial era] [1].

While climate projections are often presented for the course of the 21st century, the trends will continue beyond that time, in some cases for many centuries to come. For example, it is virtually certain that global mean sea level rise will continue for many centuries beyond 2100. It is expected that if we continue to follow the RCP 8.5 emissions pathway, global mean sea level rise will be 1 to more than 3 meters by 2300 [2].

Our current greenhouse gas emission trajectory is committing the planet to significant climate change, including warming, and increase in the frequency and intensity of some extreme weather events. It is still possible for concerted action by individuals, communities and nations to make the transition to a lower-carbon pathway, that would slow and eventually halt further human disruption of the climate.

GLOBAL AVERAGE SURFACE TEMPERATURE CHANGE

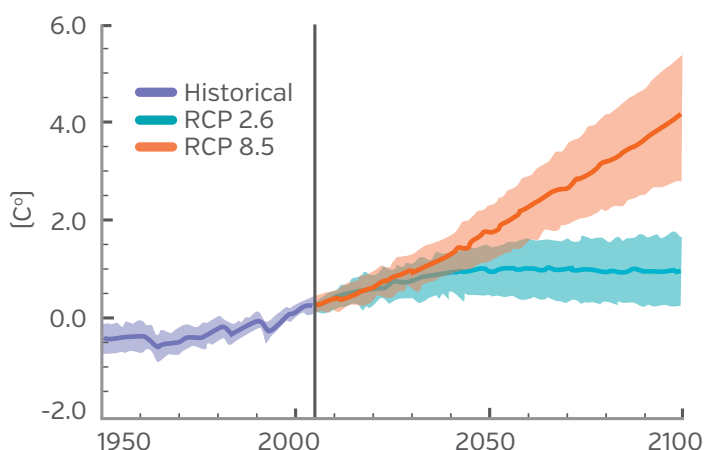


Figure 1.1. Projected global average surface temperature change during 1950-2100 under two emissions pathways described by IPCC, ranging from the results of weak action to reduce greenhouse gas emissions [RCP 8.5], to the expected effects of more ambitious and effective interventions [RCP 2.6] [1].

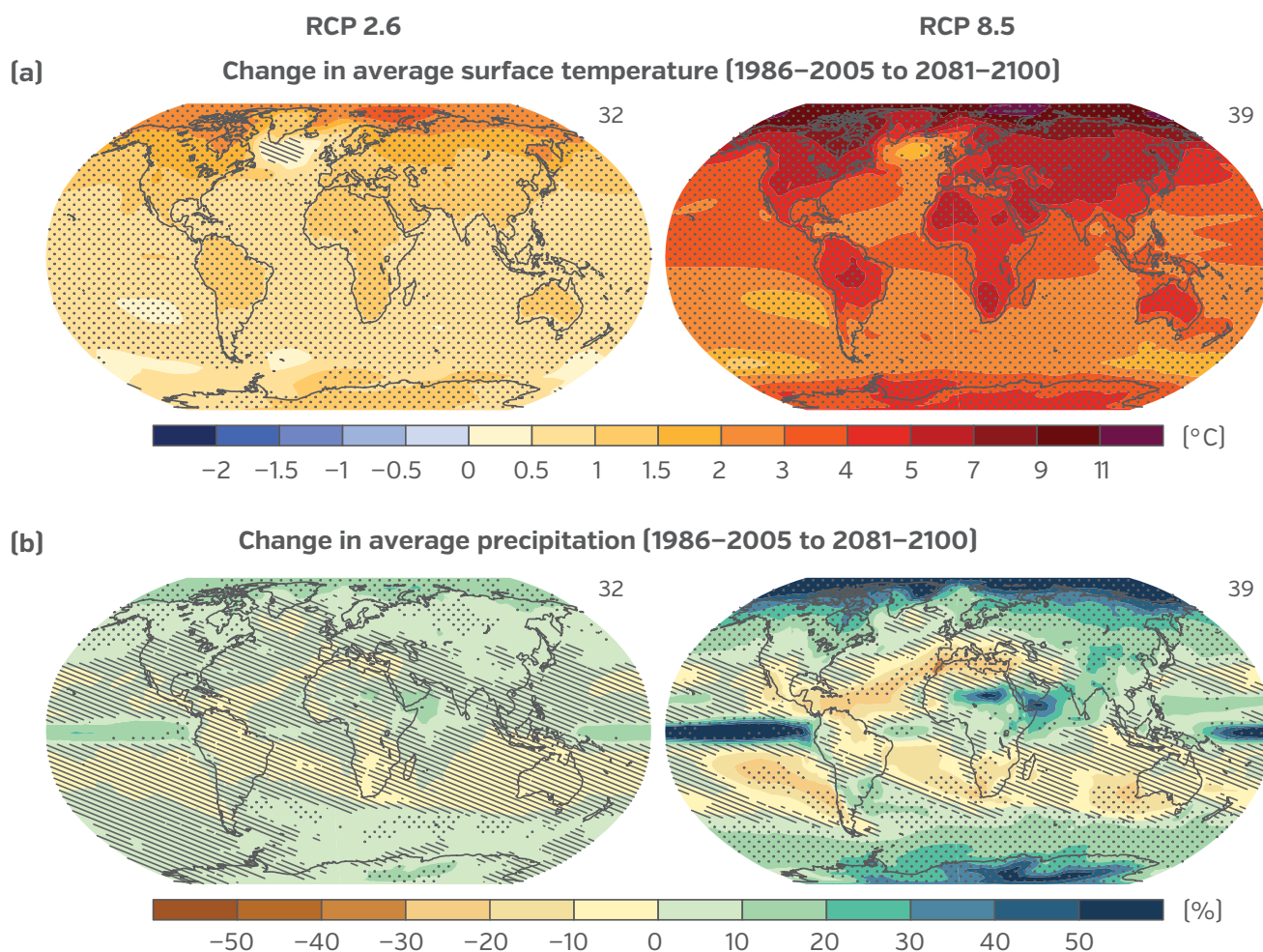


Figure 1.2. Maps of projected changes in average temperature and precipitation by the end of the current century, under the lower [RCP 2.6] and higher [RCP 8.5] of the pathways of greenhouse gas emissions assessed by IPCC [1].

CURRENT AND FUTURE HEALTH RISKS DUE TO CLIMATE CHANGE

There is strong evidence that climate and human health are tightly connected. Assessments by the IPCC, WHO and others have concluded that health is already affected both by climate variability and by climate change, and that the overall impact for most populations, and for the world as a whole, is negative. The impacts are expected to grow as climate change continues, exacerbating existing threats and undermining progress in development and global health.

In recent years, evidence has built up that increasing temperatures, changing precipitation patterns, more extreme weather, and sea level rise, will bring a range

of health effects [3-5]. Table 2 summarizes some of the most important expected impacts of climate change by the middle of the current century.

	Exposures affected by climate change	Health risks	Health impacts	Confidence rating
Direct effects	Increased numbers of warm days and nights; increase in frequency and intensity of heat waves; increased fire risk in low rainfall conditions	Excess heat-related mortality; increased incidence of heat exhaustion and heat stroke, particularly for outdoor labourers, athletes, elderly; exacerbated circulatory, cardio-vascular, respiratory, and kidney diseases; increased premature mortality related to ozone, and air pollution produced by fires, particularly during heat waves	Greater risk of injury, disease, and death due to more intense heat waves and fires	Very high
	Decreased numbers of cold days and nights	Lower cold-related mortality, reduced cardiovascular, and respiratory disease, particularly for the elderly in cold and temperate climates	Modest improvements in cold-related mortality and morbidity	Low
Effects mediated through natural systems	Higher temperatures and humidity, changing and increasingly variable precipitation, higher sea surface and freshwater temperatures	Accelerated microbial growth, survival, persistence, transmission, virulence of pathogens; shifting geographic and seasonal distributions of e.g. cholera, schistosomiasis, and harmful algal blooms; lack of water for hygiene; flood damage to water and sanitation infrastructure, and contamination of water sources through overflow	Increased risks of food- and water-borne diseases	Very high
	Higher temperatures and humidity, changing and increasingly variable precipitation	Accelerated parasite replication and increased biting rates; prolonged transmission seasons; re-emergence of formerly prevalent diseases; changing distribution and abundance of disease vectors; reduced effectiveness of vector	Increased risks of vector-borne diseases	Medium

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_27315

