



Methods of assessing human health vulnerability and public health adaptation to climate change



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Lead authors:

Sari Kovats,
Kristie L. Ebi
and Bettina Menne

Contributing authors:

Diarmid Campbell-Lendrum,
Osvaldo F. Canziani,
Andrew Githeko,
Katrin Kuhn,
David Le Sueur,
Pim Martens,
Anthony J. McMichael,
Anna Rosa Moreno,
Jonathan Patz,
Dieter Riedel,
Joel Scheraga,
Elisabeth Seymour,
Michael Sharpe
and Roger Street

Steering Committee:

Carlos Corvalan,
Hiremagalur Gopalan,
Buruhani Nyenzi
and Jacinthe Seguin



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Abstract

The fact that climate is changing has become increasingly clear over the past decade. Recent evidence suggests that the associated changes in temperature and precipitation are already adversely affecting population health. The future burden of disease attributable to climate change will depend in part on the timeliness and effectiveness of the interventions implemented. In response to these changing risks, the Third Ministerial Conference on Environment and Health in London in 1999 recommended developing the capacity to undertake national assessments of the potential health effects of climate variability and change, with the goal of identifying: 1) vulnerable populations and subgroups and 2) interventions that could be implemented to reduce the current and future burden of disease. The need to facilitate the transfer of expertise among countries was recognized. This publication is designed to address this need by providing practical information to governments, health agencies and environmental and meteorological institutions in both industrialized and developing countries on quantitative and qualitative methods of assessing human health vulnerability and public health adaptation to climate change. An integrated approach to assessment is encouraged because the impact of climate is likely to transcend traditional sector and regional boundaries, with effects in one sector affecting the coping capacity of another sector or region. Part I describes the objectives and the steps for assessing vulnerability and adaptation and Part II discusses the following issues for a range of health outcomes: the evidence that climate change could affect mortality and morbidity; methods of projecting future effects; and identifying adaptation strategies, policies and measures to reduce current and future negative effects. The health outcomes considered are: morbidity and mortality from heat and heat-waves, air pollution, floods and windstorms and food insecurity; vector-borne diseases; waterborne and foodborne diarrhoeal diseases; and adverse health outcomes associated with stratospheric ozone depletion.

Keywords

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Contents

FOREWORD	4
PREFACE	6
ACKNOWLEDGEMENTS	7
PART I. CONTEXT	9
1. Introduction	10
2. Vulnerability and adaptation to climate change: key concepts	16
3. The framework for the assessment	29
PART II. METHODS AND TOOLS	37
4. Quantitative health impact assessment	40
5. Direct effects of heat and heat-waves	54
6. Air pollution	59
7. Disasters: floods and windstorms	63
8. Vector-borne diseases	68
9. Waterborne and foodborne diarrhoeal diseases	85
10. Stratospheric ozone depletion	88
11. Food security	91
12. Vulnerable populations	94
REFERENCES	96
ANNEX 1. KEY TERMS USED IN THIS REPORT	105
ANNEX 2. SOURCES OF DATA AND INFORMATION	106

Foreword


Climate change is one of several unprecedented, large-scale, environmental changes that are affecting our planet. These changes reflect the overload of several of the Earth's biophysical and ecological systems caused by the combined impact of growing human population and economic activities. Environmental changes are now affecting the whole planet and disrupting earth's life-supporting mechanisms, but the extent to which this affects human well-being and health varies substantially in different parts of the world.

Many research activities have been carried out in recent years to improve understanding of climate change patterns as well as their effects on human health. Thanks to this extensive effort, these changes can now be better understood and scenarios for the future developed that allow the policy community to identify adequate strategies for response and adaptation.

In general, climate change does not and will not cause novel environmental exposure, but global warming and the increasing variability of weather patterns will tend to intensify the effects of climate-related environmental determinants of health. For instance, as Europe has experienced during the floods in 2002 and the heat-waves in 2003, climate change will increase the number and intensity of extreme weather events. This will cause excess death, injury, disability and disease. It is now time to identify these health effects on the population and to plan and take appropriate measures to prevent the effects, especially among the most vulnerable groups.

At the WHO Third Ministerial Conference on Environment and Health in London in 1999, countries recommended developing the necessary capacity to undertake national health assessment of vulnerability and adaptation to climate change with the aims of identifying the vulnerability of populations and subgroups and ensuring the necessary transfer of expertise among countries.

This publication is a response to this call. It is a result of an extensive consultation process involving many institutions. It provides an overview of the methods available to assess vulnerability to climate change and includes practical, real-life information for governments, health agencies and environmental and meteorological institutions in both industrialized and developing countries. We hope that the world community will take the necessary steps to address the causes of climate change. In the mean time, we are confident that this work will help public authorities at all levels to identify and implement measures that will facilitate adaptation to climate change and protect human populations from the most serious and preventable health effects in each context.



Roberto Bertollini

*Director
Division of Technical Support Health Determinants
WHO Regional Office for Europe*

Foreword

There is growing evidence that global climate is changing and will have profound effects on the health and well-being of citizens in countries throughout the world. As the climate changes in Canada, we may experience more extreme weather events, an increase in contamination of our air, water and food and a greater number of emerging infectious diseases. Other countries may find themselves to be anticipating even greater risks than this. As a result, Health Canada, together with departments of health in other countries, will need to have a better understanding of the health effects expected from climate change and of those who may be the most vulnerable in our respective societies in order to be able to manage the risks.

For many countries, adapting to the effects of climate change will necessitate strengthening existing capacity and applying new approaches to examining the risks associated with a changing climate and increased climate variability. For health departments, this also means an increasing need to collaborate with other sectors of society that can play a critical role in managing the risks to health and well-being. Expanding national and international partnerships, particularly cross-sectoral ones, needs to be supported by a solid base of evidence and knowledge of the health effects and vulnerability resulting from a changing environment.

Health Canada is pleased to contribute to ongoing efforts aimed at adapting to climate change by providing a report that outlines the tools and methods available to conduct vulnerability and adaptation assessments in a manner that is adaptable to all levels of development. We hope that countries will find the content useful in their efforts to identify the health concerns that will require their attention in the coming years.

My Department looks forward to using the publication as we examine more closely the climate change related health effects which are of concern in Canada. Health Canada has appreciated the opportunity to work closely with WHO and other international experts in developing this publication and would like to thank all collaborators for their dedication over the past 2 years.



Paul Glover

*Director General
Safe Environments Programme
Health Canada*

Preface

This publication provides practical information to governments, health agencies and environmental and meteorological institutions in both industrialized and developing countries on how to assess vulnerability and adaptation to climate variability and change at the regional, national and local levels. Flexible methods and tools are described to achieve better understanding of the current and future vulnerability of specific populations. This will help institutions and agencies to identify appropriate and effective adaptation strategies, policies and measures.

The proposed methods and tools are designed to fit into current international frameworks for assessing the potential impact of environmental change on sectors other than health. This includes the guidance provided by the Intergovernmental Panel on Climate Change (IPCC) for assessing the impact of and adaptation to climate change, developing scenarios and dealing with uncertainty.

In presenting this publication, WHO, Health Canada, UNEP and WMO offer governments and their health agencies an opportunity to join a wider collaborative effort to identify and develop strategies for reducing the potential health impact of an emerging worldwide environmental problem that will profoundly affect all of us.

Finally, we dedicate this publication to the memory of David Le Sueur.

Carlos Corvalan, Hiremagalur Gopalan, Buruhani Nyenzi and Jacinthe Seguin

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