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Introduction

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Since early 2020, due to COVID-19, the world has faced its most serious health crisis for a century with an enormous toll on human life together with severe effects on the health of the population and strains on health systems as well as on socio-economic well-being. More than 2 years since the first cases, the risks of the pandemic are still high. This health crisis has been a stark reminder of the dangers of insufficient preparation as most countries throughout the world were clearly not ready to face such a crisis and much of the response, certainly at the early stage, was ad hoc. At the same time, COVID-19 is a 'simple' crisis compared to the climate crisis, which is the most complex and intractable problem facing humankind. While recovery from Covid is a major challenge for the whole world and will take years, there are clear solutions, in particular through vaccination of a very large share of the population. These solutions are backed by a strong consensus at both policy and scientific levels which, however, is not the case for climate change. Meanwhile, the health threats due to climate change are increasing. The last decade was the hottest on record, with eight of the hottest years ever recorded. The health consequences of these increased temperatures include death and injury from extreme precipitation, tropical cyclones, heatwaves, floods, forest fires, as well as storm surges. The world can also expect the emergence and spread of infectious diseases and allergens linked to geographical shifts in vectors and pathogens. There will be additional challenges for the capacities of health systems due, for example, to the spread of previously unknown diseases from the Southern Hemisphere to the Northern Hemisphere.

This book is a timely publication to contribute to science and policy debates as we emerge from the Covid crisis and also as scientific input to underpin the upcoming COP26 deliberations and decisions.

2021 saw a new worldwide political impetus to reinforce climate action in support of health post-Covid building on the strong health provisions of the 2015 Paris agreement on climate change, as well as the 2015 Sendai Framework for Disaster Risk Reduction. The COP26 in Glasgow November 2021 was a major milestone for agreement on increased action. Already in April 2021 at the high-level summit to prepare COP26, a number of countries made renewed and updated pledges. Health and security also

featured at the summit – countries aim to scale up locally led solutions to climate vulnerability. Furthermore, in Europe, new policy developments in the EU aim to reinforce action to address the health challenge brought by climate change: a new Climate Adaptation Strategy launched in February 2021 proposes reinforced action to better understand climate-related risks to health and to increase capacity to reduce these risks. In addition, the revised Union Civil Protection Mechanism of May 2021 reinforces civil protection actions to help address climate change as well as health emergencies.

Over the past decade, a considerable body of scientific and policy literature has been developed analysing the impact of weather events on health but much less on long-term weather–climatic impacts. This publication aims to also contribute to the latter growing debate.

The book analyses and summarises the state of knowledge of climate change and certain specific extreme weather events for health, including the question of the health costs of extreme events and secondly addresses the international efforts since the early years of the century and particularly the agreements of 2015 to integrate health and climate action together.

Most of the extreme events mentioned above that cause health impacts are linked to precipitation and temperature, which are the subjects of Chapter 2. Based on assessments prepared using General Circulation Models, their performance in assessing potential health impact results for three periods is analysed: 1996–2014, 1996–2005 and forecasts for 2061–2100. It discusses the advances in modelling as well as the inaccuracies.

Chapter 3 focuses on the state of scientific knowledge about climate change and health, starting with the most recent IPCC assessment report from 2014 completed by summaries of more recent studies.

Flooding is the most frequent disaster worldwide and the health consequences are the subject of Chapter 4, looking at both the short- and long-term impact both on population well-being as well as the potential impact on health systems.

Chapter 5 includes a comparative analysis of the three 2015 international agreements – the Paris climate agreement, the Agenda 2030 agreement on Sustainable Development and the Sendai Framework for Disaster Risk Reduction – both their new and reinforced actions to address human health and well-being and the links between the three agreements. According to the World Health Organization (WHO), the Paris climate agreement is potentially the strongest international health agreement of this century. Building on this comparison, Chapter 6 analyses the international health agreements developed by WHO and how these have evolved in recent times to address more specifically climate and extreme weather impacts. The second part of Chapter 6 outlines specific diseases associated with the impacts of extreme hydrometeorological events. Finally, Chapter 7 presents the results of a wide body of academic work estimating health costs of extreme weather events, a subject neglected in most economic impact assessments of such events. Finally, the book identifies gaps and areas for additional study and calls for more attention in decision-making to account for the significant health costs.