

Technical series on Adapting to Climate Sensitive Health Impacts Undernutrition



World Health
Organization

Adapting to climate sensitive health impacts: undernutrition

ISBN 978-92-4-151556-6

© World Health Organization 2019

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

Suggested citation. Adapting to climate sensitive health impacts: undernutrition. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

Sales, rights and licensing. To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <http://www.who.int/about/licensing>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. 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 WHO 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 WHO 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 WHO 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 WHO be liable for damages arising from its use.

Printed in Switzerland

Cover photo (from left to right): Department for International Development/Pippa Ranger, Sanofi Pasteur/Norbert Domy, EC/ECHO/Martin Karimi
Editing and design by Inis Communication – www.iniscommunication.com

Technical series on Adapting to Climate Sensitive Health Impacts Undernutrition



**World Health
Organization**

Acknowledgments

This document was prepared by Joy Shumake-Guillemot, Elena Villalobos Prats, Amy Savage and Diarmid Campbell-Lendrum of the WHO Department of Public Health, Environmental and Social Determinants of Health. WHO also wishes to extend its gratitude to the following reviewers and contributors within WHO: Adam Bradshaw, Francesco Branca, Lina Mahy, Marina Maiero, Tara Neville, Kim Petersen and Angelika Maria Tritscher.

Lastly, WHO acknowledges the contributions provided by Dominik Dietler, Michael Benusic and Benedetta Rossi while they were interning or consulting with WHO.

Series introduction

A vulnerability and adaptation (V&A) assessment is a vital first step in adapting to climate change. This technical guide on V&A assessment for undernutrition and climate change is part of a series of World Health Organization (WHO) guidance aiming to inform the management of priority climate-sensitive health impacts to climate change. Specifically, this document is intended for use in conjunction with the general WHO guidance on conducting health vulnerability and adaptation assessments “*Protecting health from climate change: vulnerability and adaptation assessment*” (available from: http://www.who.int/entity/globalchange/publications/Final_Climate_Change.pdf, accessed 12 November 2018).

This technical series was created with a two-fold purpose: (i) to help clarify the relationships and casual links that exist between climate change and priority health outcomes; and (ii) to offer specific direction and resources for assessing these associations and designing adaptation options for protecting health in a changing climate.

Each guide follows the same structure of the V&A assessment process and provides specific resources and information on the priority theme as follows:

- Section1. **Conducting a thematic study within a V&A assessment** describes how to use this guide in conjunction with the main V&A assessment guidance, and includes additional considerations for setting up a thematic assessment.
- Section2. **Overview** comprises a general introduction on the targeted topic, including definitions, the scope and scale of its global burden and causal mechanisms.
- Section3. **Climate change and the priority health issue** explains how a specific health outcome is influenced by climate variability and climate change.
- Section4. **Identifying vulnerable populations** provides suggestions on how to determine populations and regions that are vulnerable to the health impacts of climate variability and change.
- Section5. **Establishing baselines** suggests relevant dimensions and metrics that can be used to understand current health and risk conditions, and form the basis of a study that can also be monitored over time.
- Section6. **Assessing sensitivity** provides guidance on different options and variables that can be used to understand and measure the degree to which climate variability and change influences the distribution and occurrence of the health outcome of interest.
- Section7. **Anticipating future risks and impacts** explains ways to understand how changing climatic conditions may influence future health status for priority populations and regions.
- Section8. **Identifying adaptation options** provides suggestions and resources on how to identify weaknesses in current and planned interventions, and prioritize relevant responses to prevent and adequately manage climate-related health risks.
- Section9. **Monitoring adaptation progress** presents considerations for informing decisions and monitoring relevant changes in population health status, exposure to climate hazards, relevant risk factors, as well as the effectiveness of protective measures in place.
- Section10. **Conclusions**

References, terminology and available resources and tools are provided throughout or as annexes.



Contents

ACKNOWLEDGMENTS	II
SERIES INTRODUCTION	III
ABBREVIATIONS	VI
SECTION 1: CONDUCTING A THEMATIC VULNERABILITY AND ADAPTATION (V&A) STUDY ON UNDERNUTRITION	1
SECTION 2: OVERVIEW OF MALNUTRITION AND SCOPE	3
SECTION 3: CLIMATE CHANGE AND UNDERNUTRITION	7
SECTION 4: IDENTIFYING VULNERABLE POPULATIONS	16
SECTION 5: ESTABLISHING BASELINES	18
SECTION 6: ASSESSING THE SENSITIVITY OF NUTRITION TO CLIMATE	26
SECTION 7: ANTICIPATING FUTURE RISKS AND IMPACTS	29
SECTION 8: IDENTIFYING ADAPTATION OPTIONS	32
SECTION 9: MONITORING ADAPTATION PROGRESS	37
SECTION 10: CONCLUSIONS	38
ANNEX 1. RESOURCES	39
ANNEX 2. GLOSSARY	49
ANNEX 3. REFERENCES	54

Table of Tables

Table 1: Global distribution of malnutrition among children under five years of age in 2016, by region	5
Table 2: Impacts of climate change on food security, and resulting consequences for human health and nutrition	11
Table 3: Impacts of climate change on care and feeding practices, and resulting consequences for human health and nutrition . . .	13
Table 4: Impacts of climate change on underlying health status, access to quality health services, drinking water, safe food and hygienic environments, and resulting consequences for undernutrition . .	14
Table 5: Populations vulnerable to undernutrition and climate change . .	17
Table 6: Useful metrics for understanding and monitoring the effects of climate change on nutrition	21
Table 7: Sensitivity of nutritional risk factors to climate	27
Table 8: Projected number of undernourished children under five years of age (in millions) in 2000 and 2050 with climate change.. . .	31
Table 9: Climate change adaptation options for nutrition.	34
Table 10: Sources of national and regional scale climate data	43
Table 11. Existing futures studies of food security and malnutrition, associated with climate	44
Table 12. Datasets and tools for creating climate-based projections of food security and malnutrition	46



Table of Figures

Figure 1: Conceptual framework: climate and nutrition security	7
Figure 2: Key information categories to include in the climate and nutrition baseline	19
Figure 3: Framework for actions to achieve optimum child nutrition and development	33

Abbreviations

AIDS	acquired immune deficiency syndrome
BMI	body mass index
CO ₂	carbon dioxide
DALY	disability adjusted life years
DHS	demographic and health surveys
ENSO	El Niño–Southern Oscillation
FAO	Food and Agriculture Organization
FEWS	Famine Early Warning System
GINA	Global database on the Implementation of Nutrition Action
HIV	human immunodeficiency virus
ICN ₂	Second International Conference on Nutrition
IMPACT	International Model for Policy Analysis of Agricultural Commodities and Trade
IPC	Integrated Food Security Phase Classification
IPCC	Intergovernmental Panel on Climate Change
IYCF	infant and young child feeding
JMP	WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene
LMIC	low- and middle-income countries
MICS	multiple indicator cluster surveys
NAPs	national adaptation plans
NLIS	Nutrition Landscape Information System
RUTF	ready-to-use therapeutic food
UN	United Nations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	UN International Children's Emergency Fund
UNSCN	UN System Standing Committee on Nutrition
V&A	vulnerability and adaptation
WASH	water, sanitation and hygiene
WB	World Bank

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_25206

