Health co-benefits of climate change mitigation – Transport sector

54

Health in the green economy



Health in the green economy

Health co-benefits of climate change mitigation

Transport sector



WHO Library Cataloguing-in-Publication Data

Health in the green economy: health co-benefits of climate change mitigation - transport sector.

1.Climate change. 2.Transportation - standards. 3.Air pollution - prevention and control. 4.Greenhouse effect - prevention and control. 5.Conservation of energy resources. 6.Motor vehicles. 7.Bicycling. 8.Walking. 9.Vehicle emissions. 10.Environmental health. 11.Health promotion. I.World Health Organization.

ISBN 978 92 4 150291 7

(NLM classification: WA 810)

© World Health Organization 2011

All rights reserved. Publications of the World Health Organization are available on the WHO web site (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 noncommercial distribution – should be addressed to WHO Press through the WHO web site (http://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 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.

Design by Inís Communication – www.iniscommunication.com

Cover photo: Walking to school in Atteridgeville, South Africa, near Pretoria. A number of South African cities, supported by national Ministries of Health, Sport and Transport, are developing new pedestrian and bicycle initiatives to generate health, physical activity, energy and climate co-benefits. (Brett Eloff)

Printed by the WHO Document Production Services, Geneva, Switzerland

Acknowledgements

International peer reviewers:

Claudia Adriazola, Benjamin Welle and Nicolae Duduta, EMBARQ, the World Resources Institute Center for Sustainable Transport, Mexico & United States of America

Arnaud Banos, Géographie-Cités and Complex Systems Institute (CNRS), France

Rajiv Bhatia, San Francisco Public Health Department, United States of America

Margaret Douglas, NHS Lothian, Lothian, Scotland, United Kingdom of Great Britain and Northern Ireland

Thomas Götschi, Physical Activity and Health Unit, Institute of Social and Preventive Medicine, University of Zurich, Switzerland **Sonja Kahlmeier**, Physical Activity and Health Unit, Institute of Social and Preventive Medicine, University of Zurich, Switzerland

Todd Litman, Victoria Transport Policy Institute, Canada

Dinesh Mohan, Transportation Research and Injury Prevention Programme, Indian Institute of Technology, India

Peter Newman, Curtin University Sustainability Policy (CUSP) Institute, Australia

James Woodcock, London School of Hygiene and Tropical Medicine, United Kingdom of Great Britain and Northern Ireland

Note: This document draws upon the discussions of a November 2010 informal expert meeting on *Monitoring and Evaluation of Healthy Transport Indicators* hosted by the World Health Organization (WHO) in Geneva, Switzerland. It also draws on themes of a WHO-hosted meeting on *Health Impact Assessment in Cities* in April 2010 in Geneva, Switzerland.

The following World Health Organization staff also provided review and contributions in their fields of expertise:

Heather Adair-Rohani, Department of Public Health and Environment, WHO, Geneva, Switzerland

Timothy Armstrong, Department of Chronic Diseases and Health Promotion, WHO, Geneva, Switzerland

Sophie Bonjour, Department of Public Health and Environment, WHO, Geneva, Switzerland

Nigel Bruce, Department of Public Health and Environment, WHO, Geneva, Switzerland

Diarmid Campbell-Lendrum, Department of Public Health and Environment, WHO, Geneva, Switzerland

Eddy Engelsman, Department of Chronic Diseases and Health Promotion, WHO, Geneva, Switzerland

Enrique Jacoby, Pan-American Health Organization, Washington, DC, United States of America

Meleckidzedeck Khayesi, Department of Violence and Injury Prevention and Disability, WHO, Geneva, Switzerland

Michal Krzyzanowski, WHO Regional Office for Europe, Bonn, Germany

Marina Maiero, Department of Public Health and Environment, WHO, Geneva

Annette Prüss-Ustun, Department of Public Health and Environment, WHO, Geneva

Francesca Racioppi, European Centre for Environment and Health, WHO Regional Office for Europe, Rome, Italy

Suzanna Martinez Schmickrath, Department of Public Health and Environment, WHO, Geneva, Switzerland

Elena Villalobos, Department of Public Health and Environment, WHO, Geneva, Switzerland

WHO Regional Focal Points (Health, Environment and Sustainable Development):

Mohamed Aideed Elmi, WHO Regional Office for the Eastern Mediterranean, Cairo, Egypt

Luiz AC Galvao, WHO Regional Office for the Americas, Washington, DC, United States of America

Lucien A Manga, WHO Regional Office for Africa, Brazzaville, Republic of the Congo

Srdan Matic, WHO Regional Office for Europe, Copenhagen, Denmark

Jai Narain, WHO Regional Office for South-East Asia, New Delhi, India

Hisashi Ogawa, WHO Regional Office for the Western Pacific, Manila, Philippines

Lead author:

Jamie Hosking, Public Health Medicine consultant, University of Auckland, New Zealand

Contributing authors:

Pierpaolo Mudu, European Centre for Environment and Health, WHO Regional Office for Europe, Rome, Italy

Carlos Dora, Department of Public Health and Environment, WHO, Geneva, Switzerland

Contributors:

Claudia Adriazola, Benjamin Welle, Salvador Herrera and Alejandra Costa, EMBARQ, the WRI Center for Sustainable Transport, Washington, DC, United States of America and Mexico (Arequipa and Aguascalientes case studies)

Rajiv Bhatia, San Francisco Department of Public Health, California, United States of America (on "win-win" strategies)

Jürg Grütter, Grütter Consulting, Bolivia (advice on the Clean Development Mechanism)

Gail Jennings, Policy Research Consultant, Cape Town, South Africa (South Africa case study) **Lisa Kane**, University of Cape Town, South Africa (South Africa case study)

Todd Litman, Victoria Transport Policy Institute, Canada (on "win-win" strategies and cost-benefit assessment)

Hisashi Ogawa, WHO Regional Office for the Western Pacific, Manila, Philippines (Asia Case Study)

Cristina Tirado, UCLA School of Public Health, California, United States of America (on biofuels)

Project coordinator:

Carlos Dora, Department of Public Health and Environment, WHO, Geneva, Switzerland

Editor:

Elaine Ruth Fletcher, Department of Public Health and Environment, WHO, Geneva, Switzerland

Administrative support:

Pablo Perenzin, Saydy Karbaj, Eileen Tawffik, and Terri Mealiff, Department of Public Health and Environment, WHO, Geneva, Switzerland

Graphic design: Aaron Andrade, Inís Communication

Foreword

The threat climate change poses to health, equity, and development has been rigorously documented.^{i,ii,iii,iii,iv} However, in an era marked by economic crisis, regional conflicts, natural disasters and growing disparities between rich and poor, the joint global actions required to address climate change have been vigorously debated – and critical decisions postponed.

This document, part of WHO's *Health in the Green Economy* series, describes how many climate change measures can be "win-wins" for people and the planet.

These policies yield large, immediate public health benefits while reducing the upward trajectory of greenhouse gas emissions. Many of these policies can improve the health and equity of people in poor countries and assist developing countries in adapting to climate change that is already occurring, as evidenced by more extreme storms, flooding, drought and heatwaves.

WHO's Department of Public Health and Environment launched the *Health in the Green Economy* initiative in 2010 to review potential health and equity "cobenefits" of proposed climate change measures – as well as relevant risks.

This review examines mitigation strategies discussed in the *Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Working Group III)*,^v which constitutes the most broad-based global review of mitigation options by scientific experts.

The IPCC review covers transport, agriculture, commercial and residential buildings and energy, among other topics. Policies considered in the IPCC review of each sector are thus the primary focus of health-oriented review in this *Health in Green Economy* series. Each report in the series considers the likely health co-benefits of mitigation measures in a particular sector; this review addresses the *Transport Sector*.

WHO has undertaken considerable work on "healthy transport" measures such as active transport (walking and cycling) and better urban planning based upon low-emissions public transport systems. This document looks at how such healthy strategies can be implemented through mitigation policies. Mitigation strategies could not only reduce the



Walking to school: Important to child health and to climate change mitigation. Here, pupils from Banareng Primary School, Atteridgeville, South Africa, stand on scholar patrol duty: Boitumelo Phalane (foreground). (Photo: Brett Eloff)

ⁱ Chan M. Cutting carbon, improving health. *Lancet*, 2009, 374(9705):1870–1871 (http://www.thelancet. com/journals/lancet/article/PIIS0140–6736(09)61993–0/fulltext).

ⁱⁱ *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva, 2007.*

ⁱⁱⁱ Climate variability and change and their health effects in small island states: information for adaptation planning in the health sector. World Health Organization. Geneva, 2006 (http://www.ncbi.nlm.nih.gov/ pmc/articles/PMC1764155/).

^{iv} *Protecting health from climate change: connecting science, policy and people.* World Health Organization, Geneva, 2009 (http://extranet.who.int/iris/handle/123456789/866).

^v Metz B et al. eds. Climate Change 2007: Mitigation of Climate Change. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge & New York, Cambridge University Press, 2007.

risks of transport, but also promote health-enhancing environments that, for example, could facilitate healthy physical activity. Many such strategies can save considerably in health care costs, particularly in the costs of soaring noncommunicable diseases, including cardiovascular disease, hypertension, cancers and a range of obesity-related diseases.

Healthier lower-carbon transport strategies also are cost-efficient investments for individuals and societies. The infrastructure costs of better networks for walking and cycling, or of siting schools nearer to residential areas, are very modest compared with the costs of developing new vehicle technologies, however vital such technologies still may be. For households, and particularly the poor, more effective public transport and safer walking/ cycling routes can yield significant savings in travel time and expense as well as preventing disease and promoting better health.

As the preamble to WHO's 1948 constitution states: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

Mitigation measures that can produce better health outcomes are of vital interest to the health sector and health policy-makers. Local, national and international policies can protect the natural environment while also improving public health and health care services. Such policies serve WHO's goal of "attainment of the highest level of health for all." This document and this series outline opportunities where, for a minimal investment of health sector resources, big gains for public health can be leveraged.

Dr Maria Neira Director of Public Health and Environment World Health Organization





https://www.yunbaogao.cn/report/index/report?reportId=5 28303