



MEETING REPORT

First meeting of ECDC Expert Group on Climate Change

Stockholm, 07–08 September 2009

Executive summary

There is increasing awareness that climate change will have important health consequences. Many EU Member States have observed shifts in communicable disease transmissions that may be partially attributable to climate change. Future climatic changes may further influence the transmission of communicable diseases in Europe.

The European Commission's White Paper on Adapting to Climate Change advocates the need for pan-European action. ECDC is developing a toolkit to assist national vulnerability assessments and adaptation strategies. Vulnerability assessments are important for evaluating a nation's key vulnerabilities, and for explaining the risks to those that will be affected. All adaptation strategies should be based upon sound science and ensure health benefits irrespective of the future magnitude of climate change.

1 Introduction

Climate change, largely a consequence of fossil fuel combustion, has led to numerous environmental impacts, including a significant increase in worldwide mean surface temperatures. Many scientists now believe that climatic changes are happening towards the upper boundary of IPCC (Intergovernmental Panel on Climate Change) projections¹. Due to the biogeographic diversity of Europe, different regions have very different vulnerabilities (Figure 1).

There are many potential public health impacts due to climate change, including shifting transmission ranges of communicable diseases: many infectious agents, vector organisms, non-human reservoir species and pathogen replication rates are particularly sensitive to climatic conditions. Numerous theories have been developed in recent years to explain the relationship between climate change and infectious diseases, including higher proliferation rates at higher temperatures, extended transmission season, changes in ecological balances and climate-related

¹ Richardson K, et al. Synthesis Report: Climate Change, Global Risks, Challenges and Decisions. Available at: <http://climatecongress.ku.dk/pdf/synthesisreport/>.

migration of vectors, reservoir hosts or human populations². For example, hotter and longer summers, warmer winters and/or increased annual rainfalls could enable disease-carrying organisms such as ticks or mosquitoes to shift their habitats, potentially introducing diseases to areas previously unfamiliar with them³.

Recognising the importance of addressing climate change, the European Commission published a white paper on Adapting to Climate Change, which outlined a European framework for action, emphasising the need for action at the EU level and the need for collaboration across EU Member States⁴. The European Commission’s Directorate-General for Health and Consumers (DG SANCO) published a staff paper on the health aspects from climate change, noting calls for the development of tools for anticipating, preventing and responding to potential threats from climate change⁵.

ECDC has taken a proactive approach to climate change, launching several comprehensive risk assessments and developing a toolkit to facilitate national assessments of health vulnerabilities to climate change and the development of national adaptation strategies⁶. This meeting was organised to further discuss how ECDC and EU Member States can work together to confront climate change.

Figure 1. Key vulnerabilities of European systems and sectors to climate change during the 21st century for the main biogeographic regions of Europe (EEA, 2004a).



Text and data: EEA, Copenhagen. <http://www.eea.europa.eu>

Graphics: ECDC

² Semenza JC, Menne B. Climate Change and Infectious Diseases in Europe. Lancet ID. 2009;9:365-75.

³ Semenza JC, Menne B. Climate Change and Infectious Diseases in Europe. Lancet ID. 2009;9:365-75.

⁴ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0147:FIN:EN:PDF>

⁵ http://ec.europa.eu/health/ph_threats/climate/docs/com_2009-147_en.pdf

⁶ http://ecdc.europa.eu/en/healthtopics/Pages/Climate_Change.aspx

2 Meeting objectives

In order to coordinate pan-European activities, ECDC established an Expert Group on Climate Change. Each EU Member State, as well as candidate country, was invited to nominate a participant (see Annex for a list of participants).

The First Meeting of the ECDC Expert Group on Climate Change had the following objectives:

- to facilitate dialogue between Member States and ECDC on the consequences of climate change for communicable disease control;
- to communicate the current state of the art regarding climate change and its impact on health and communicable disease spread; and
- to obtain initial feedback on a toolkit for adaptation that ECDC has been developing.

3 Addressing climate change in the EU

a) Climate-sensitive diseases

There is a great variation in the climatic and socio-economic contexts influencing disease transmission across European nations, and thus the threat from climate change is not uniform. An important message from the meeting is that climate change is a threat multiplier: it may generate new threats, but its primary impact will likely be through the ways that it exacerbates existing threats. It will likely alter factors such as the geographical range of disease spread and the seasonality of diseases.

Indeed, much has been written about climate change and its potential impacts on disease transmission^{7,8}. A few examples were discussed in detail during the meeting. In Sweden and the Czech Republic, tick-borne encephalitis was highlighted as a disease that has expanded in past decades. Lyme disease, another tick-borne disease, is likely to be impacted by climatic changes, given the importance of climate in many stages of its life cycle. In Kosovo, it was noted that outbreaks of CCHF (Crimean-Congo haemorrhagic fever) often correlate to an early onset of spring.

Numerous food- and waterborne diseases (FWD) are also affected by climate; it is well observed that salmonella incidence rates increase with increasing temperature, for example⁹. Preliminary data from an ECDC risk assessment of the impact of climate change on FWD suggest that climate has an impact on several aspects of disease transmission. The full assessment is scheduled for publication in 2010.

b) Vulnerability assessments & adaptation strategies

Health systems can avoid, prepare for, or respond to the impacts of climate change by reducing climate change-related vulnerabilities through a wide range of preventive measures, including health behaviours, clinical procedures, or technical/structural measures.

ECDC aims to assist Member States in this process through the development of a standardised adaptation toolkit with objective indicators, which should facilitate adaptation assessments as well as the prioritisation of adaptation options. Such a tool could then be used by a team of experts to provide a status report of the adaptation capacity in the country.

There is demand for these toolkits to facilitate vulnerability assessments and adaptation strategies. Many participants of the meeting stated that they will be planning vulnerability assessments in the coming years. Important considerations emerging from discussions during this meeting include that a variety of key stakeholders should be included in the processes, that multidisciplinary teams need to be assembled, and that baseline data

⁷ Semenza JC, Menne B. Climate Change and Infectious Diseases in Europe. *Lancet Infect Dis*. 2009;9:365-75.

⁸ Confalonieri U, et al. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Parry ML et al. (eds.). Cambridge: Cambridge University Press; 2007.

⁹ Kovats RS, Edwards SJ, Hajat S, Armstrong BG, Ebi KL and Menne B. The effect of temperature on food poisoning: a time-series analysis of salmonellosis in ten European countries. *Epidemiol Infect* 2004; 132:443-453.

needs to be obtained from a variety of sources. Many different adaptation options are possible, but any adaptation strategy should be predicated on the premise that any implemented measures should involve 'no regrets' decisions that ensure health benefits irrespective of the ultimate magnitude of climate change. Furthermore, regional and cultural contexts must be considered and accounted for in any adaptation strategy.

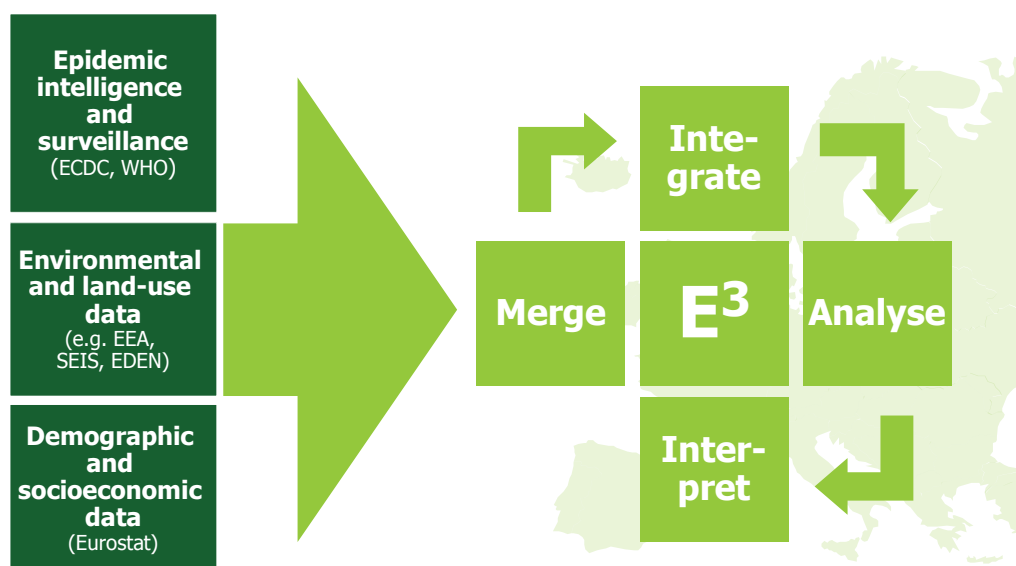
It is imperative that efforts to assess and adapt to the threat posed by climate change are not duplicated, but iterative. Much can be learned from previous assessments, such as exhaustive assessments conducted by Sweden¹⁰ and Canada¹¹, or more streamlined but nonetheless highly effective assessments such as one conducted by Portugal¹².

c) Knowledge gaps

Participants at the workshop discussed at length the issue of attribution: can increased incidence of communicable disease be attributed to climate change? This is an extremely difficult question to resolve. It is clear that climate is but one of many drivers of communicable disease spread, and it is difficult to disentangle the impact of climate vis-à-vis other factors. However, most projected climate changes have yet to occur, meaning that the relative importance of climate change as a disease driver may currently be underestimated.

Finally, there remains a paucity of data to work with. One potential way of overcoming the data gap is to link epidemiologic data with the extensive climatic data that exists in the European Union. ECDC has proposed the European Environment and Epidemiologic (E3) network as one solution to this idea (Figure 2).

Figure 2. The European Environment and Epidemiology (E3) network.



Source: Semenza JC, Menne B. *Lancet* ID 2009;9:365-375.

¹⁰ <http://www.sweden.gov.se/sb/d/574/a/96002>

¹¹ <http://www.hc-sc.gc.ca/ewh-semt/climat/eval/index-eng.php#guide>

¹² Casimiro et al. National Assessment of Human Health Effects of Climate Change in Portugal: Approach and Key Findings. December 2006; 114(12):1950–1956.

4. Conclusions

Climate change is a multidimensional issue and addressing it requires expertise from many disciplines. Moreover, it is an issue complicated by great uncertainty. Consequently, communicating climate change and its impact on health is highly difficult. However, it is well established that certain degrees of climate change will be unavoidable. Given the sensitivity that many diseases have to climatic factors, it is widely anticipated that climate change will lead to shifts in the transmission ranges of communicable diseases.

Public health organisations and institutions need to begin to address climate change. In the near term, the key barriers to doing so will relate to lack of awareness, lack of funding, and lack of data. The ECDC toolkit for conducting vulnerability assessments and adaptation strategies is being designed to help overcome these barriers and facilitate the development of strategies that offer numerous co-benefits to public health.

Annex 1. Workshop agenda

Monday, September 7, 2009

08:30–9:00 Registration and Introduction

- 08:30–09:00 Registration and coffee
- 09:00–09:10 Opening
Zsuzsanna Jakab, Director, ECDC
- 09:10–09:20 Introduction to the workshop
Johan Giesecke, Scientific Advice Unit, ECDC

09:20–12:00 Session 1: Climate change and health Chair: Jan Semenza Scientific Advice Unit, ECDC

- 09:20–9:50 Health threats from climate change
Tony McMichael, Australian National University
- 9:50–10:20 Public health response to climate change
Howard Frumkin, NCEH and ATSDR, CDC

10:20–10:50 Coffee break

- 10:50–11:20 IPCC Perspective on climate change and communicable diseases
Kristie L. Ebi, IPCC WGII Technical Support Unit
- 11:20–11:40 The EC White Paper on climate change
Per Kulling, European Commission, Health Threats Unit -SANCO C/3
- 11:40–12:00 Plenary discussion

12:00–13:00 Lunch

13:00–17:30 Session 2: Climate-sensitive diseases Chair: Elisabet Lindgren, Karolinska Institutet

- 13:00–13:30 Vector-borne diseases: EDEN Project
Guy Hendricks, Avia-GIS
- 13:30–14:00 Vector-borne diseases: Lyme disease in Europe
Agustin Estrada-Pena, Universidad de Zaragoza
- 14:00–14:40 Impact of climate change on food- and waterborne diseases: ECDC risk assessment
Thomas Kistemann, University of Bonn
Ana Maria de Roda Husman, RIVM
- 14:40–15:10 Panel discussion on climate-sensitive diseases
- 15:10–15:15 Intro to group work
Jan Semenza

15:15–15:30 Coffee Break

15:30–17:30 Group Discussion: Perspectives

- Group A – Chair: *Bohumir Kriz*
- Group B – Chair: *Johanna Takkinen*
- Group C – Chair: *Thomas Kistemann*

Tuesday, September 8, 2009

- 09:00–12:00 Session 3: Vulnerability Assessments**
Chair: Kristie L. Ebi, IPCC WGII Technical Support Unit
- 09:00–09:30 Assessing vulnerabilities: Canadian experience
Peter Berry, Health Canada
- 09:30–10:00 Assessing vulnerabilities: Portuguese experience
Elsa Casimiro, Portugal
- 10:00–10:30 Introducing the ECDC Vulnerability Assessment Tool-kit
Elisabet Lindgren, Karolinska Institutet
- 10:30–11:00 Coffee break**
- 11:00–12:00 Group Discussion: Applying Vulnerability Assessments**
Group A – Chair: *Elisabet Lindgren*
Group B – Chair: *Kristie L. Ebi*
- 12:00–13:00 Lunch**
- 13:00–15:30 Session 4: Adaptation Assessments and Strategies**
- 13:00–13:30 The European Environment and Epidemiology Network
Jan Semenza, ECDC
- 13:30–14:00 Introducing the ECDC Adaptation Tool-Kit
Kristie L. Ebi, IPCC WGII Technical Support Unit
- 14:00–15:00 Group Discussion: Developing Adaptation Strategies
Group A – Chair: *Elisabet Lindgren*
Group B – Chair: *Kristie L. Ebi*
- 15:00–15:30 Plenary Discussion: Conclusions from Group Discussions
- 15:30–15:45 Conclusions and Next Steps
Jonathan Suk, Jan Semenza, ECDC
- 15:45 Coffee Break and Adjournment**

Annex 2. List of participants

Name	Organisation	Country
Dr Gazmend Bejtja	Ministry of Health	Albania
Prof Anthony J. McMichael	Australia National University National Centre for Epidemiology and Population Health	Australia
Prof Michael Kunze	Medical University Vienna Institute of Social Medicine, Centre of Public Health	Austria
Dr Sophie Quoilin	Institute of Public Health	Belgium
Dr Guy Hendrickx	AVIA GIS	Belgium
Dr Aida Vilić-Švraka	Public Health Institute of Federation of Bosnia and Herzegovina	Bosnia and Herzegovina
Dr Nina Rodić Vukmir	Public Health Institute of Republic of Srpska	Bosnia and Herzegovina
Ms Tamara Lazarova	National Centre of Infectious and Parasitic Diseases	Bulgaria
Dr Peter Berry	Climate Change and Health Office Health Canada	Canada
Dr Aleraj Borislav	Croatian National Institute of Public Health	Croatia
Dr Bohumir Križ	National Institute of Public Health	Czech Republic
Dr Dorota Jarosinska	Environment and Health European Environment Agency	Denmark
Dr Vigre Håkan	Dept.of Microbiology and Risk Assessment Danish Technology Univesrity National Food Institute	Denmark
Dr Irina Dontsenko	Health Protection Inspectorate	Estonia
Dr Markku Kuusi	National Institute for Health and Welfare	Finland
Dr Andreas Jansen	Robert Koch Institute	Germany
Dr Rechenberg Andrea	University of Bonn Institute for Hygiene and Public Health	Germany
Dr Susanne Herbst	University of Bonn Institute for Hygiene and Public Health	Germany
Prof Thomas Kistemann	University of Bonn Institute for Hygiene and Public Health	Germany
Dr Thomas Krafft	IHDP Advisory Group on Human Health United Nations University	Germany
Dr Assimoula Economopoulou	Hellenic Center for Disease Control and Prevention	Greece
Mr Viktor Zöldi	National Centre for Epidemiology Dept. of Vector and Public Health Pest Control	Hungary
Dr Agnès Rortais	European Food Safety Authority Emerging Risks Unit	Italy
Dr Susanna Conti	National Health Institute National Center of Epidemiology, Surveillance and Health Promotion	Italy
Dr Lul Raka	Ministry of Health National Institute for Public Health	Kosovo
Dr Antra Bormane	State Agency Infectology Centre of Latvia	Latvia
Ms Zana Milisiunaite	Centre for Communicable Diseases Prevention and Control	Lithuania
Dr Per Kulling	European Commission Health Threats Unit – SANCO C/3	Luxembourg
Dr Roberto DeBono	Office of the Director General Health Care Services	Malta
Dr Sanja Medenica	Institute for Public Health Centre for Control and Prevention Disease	Montenegro
Dr Ana Maria de Roda Husman	National Institute for Public Health and the Environment Centre for Infectious Disease Control	Netherlands
Dr Preben Ottesen	Norwegian Institute of Public Health	Norway
Dr Daniel Rabczenko	Centre of Monitoring and Analysis of Population Health Status National Institute of Public Health National Institute of Hygiene	Poland
Dr Elsa Casimiro	Climate Change Impacts Adaptation and Mitigation Research Group University of Lisbon	Portugal
Dr Svetlana Ceianu Cornelia	Reference Laboratory for Fungal Infections	Romania
Dr Lukáš Murajda	Comenius University Jessenius Faculty of Medicine	Slovak Republic

Dr Ana Hojs	National Institute of Public Health Department for Environmental Health	Slovenia
Prof Agustín Estrada-Peña	Dept. of Parasitology Veterinary Faculty University of Zaragoza	Spain
Dr. Fernando Simón Soria	Health Institute Carlos III	Spain
Ms Cecilia Davelid	National Board of Health and Welfare	Sweden
Dr Elisabet Lindgren	Karolinska Institute Division of Global Health/IHCAR	Sweden
Prof Jan C Semenza	European Centre for Disease Prevention and Control Scientific Advice Unit Future Threats and Determinants Section	Sweden
Mr Jonathan Suk	European Centre for Disease Prevention and Control Scientific Advice Unit Future Threats and Determinants Section	Sweden
Prof Paul Hunter	University of East Anglia	United Kingdom
Prof Howard Frumkin	National Centre for Environmental Health CDC	United States of America
Dr Kristie L. Ebi	ESS, LLC	United States of America

Participants of the meeting at ECDC, September 2009.

