Protecting health in Europe from climate change

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Greenhouse gas emissions are warming the earth

- GHG emissions have increased by 70% over the last four decades (IPCC 2007).
- In Europe energy and transport are the biggest emitters. Transport emissions projected to increase of about 50% by 2030 compared to 2000 (EEA 2007).
- The projected temperature increase for Europe by the end of 21st century is 2.3 - 6 °C (IPCC 2007).
Climate change’s impacts are already observed in Europe:

- Heat waves
- Floods
- Droughts
- Worsening air pollution
- Water stress and unsafe food
- Changes in vectors’ distribution

All have influences on human health and well-being.
2. Health impacts

Health systems responses
Small changes in temperature do already affect health

More systematic understanding of the timing of impacts is available. There is high confidence that even small changes in global temperature impact human health. The impacts become more adverse and widespread with increasing temperature.
Increase in heat-waves is one of the most certain consequences of climate change

- Over 70,000 extra deaths reported in Europe in summer 2003 (ROBINE 2008).
- 86,000 extra deaths estimated per year with a global mean temperature increase of 3 °C in 2071-2100 in the EU (PESETA 2008).

Fig. 2: Standardized daily death frequencies (1 means equal to the median death number; 2 means twice the median death number) between 3 and 16 August 2003, in 16 European countries, for 177 NUTS.

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Figure 2: Schematic representation of how an increase in average annual temperature would affect annual total of temperature-related deaths, by lifting distribution of daily temperatures to the right. Additional heat-related deaths in summer would outweigh the extra winter deaths averted (as may happen in some northern European countries). Average temperature range in temperate countries would be about 5–30°C.
Cold weather still affects Europe especially in northern latitudes

- Cold outdoor and indoor thermal conditions can cause cardiovascular and respiratory health effects.
- Deaths and diseases during cold spells may be most serious for poorer households.
- Health risks may arise from the use of solid fossil fuels; these are linked to 13,000 deaths yearly in children (WHO 2004).
- Most European countries suffer from 5-30% excess winter mortality (IPCC 2007).

HOW TO REDUCE HEALTH EFFECTS

- Health service preparedness
- Adapt health care infrastructure
- Advocate access to clean, affordable and reliable energy with other sectors
- Promote energy efficiency
Projected climate-related increases of precipitations will make floods more frequent and severe

- Winter floods are projected to rise in northwest Europe and flash floods throughout Europe.
- Costal flooding is likely to threaten up to 1.6 million additional people per year in the EU (IPCC 2007).

**HOW TO REDUCE HEALTH EFFECTS**
- Shift action from disaster response to risk management
- Strengthen health system preparedness
- Develop infrastructural measures
- Establish links with early warning systems
- Deliver pre-floods awareness raising campaigns
Waterborne Outbreaks and Extreme Events

- 2-fold increase in odds of waterborne disease outbreak if rainfall > 93rd percentile

Thomas et al., 2006
Climate change has an impact on nutrition and food safety

- Food productivity will decrease in the Mediterranean, south-east Europe and central Asia. Crop yields could decrease up to 30% in central Asia by the 21st century (IPCC 2007).

- Higher temperatures favour the growth of bacteria in food, such as *Salmonella* (KOVATS 2006).

**HOW TO REDUCE HEALTH EFFECTS**

*Implement the WHO Food and Nutrition Action Plan by*

- strengthening surveillance and monitoring
- detecting changes and analysing trends in foodborne and nutrition-related diseases
- educating and informing consumers on healthy diets and food safety practices

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Climate is changing infectious disease transmission by altering vectors’ geographical distribution

- Climate change will challenge the progress made towards eliminating malaria in Europe and central Asia and increase the risk of local outbreaks (WHO 2004).
- Lyme disease is shifting to higher latitudes and altitudes, following movement of ticks (WHO 2005).
- Leishmaniasis, a skin disease transmitted by sand flies, is travelling north (WHO 2005).
- In the 2007 Chikungunya outbreak in Italy the presence of a suitable vector allowed sustained local transmission (ECDC 2007).

**HOW TO REDUCE HEALTH EFFECTS**
(in collaboration with veterinary services):

- Provide vaccination, where needed
- Strengthen vector surveillance and control
- Ensure rapid diagnostic
- Raise awareness on protective behaviour

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Example Albopictus


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Water stress is projected to affect between 16 and 44 million additional people by 2080

- Reduced summer water flows up to 80% will result in loss of freshwater and increased potential for contamination (IPCC 2007).
- The quality of coastal waters is endangered, thus putting bathers and seafood eaters at risk of infection.
- This may worsen access to safe water and sanitation, which is already unequal in Europe.

HOW TO REDUCE HEALTH EFFECTS

Ensure water safety through the Protocol on Water and Health by

- providing access to safe drinking-water and sanitation
- enhancing risk assessment and management
- strengthening disease surveillance and outbreak detection
Relationship Between Water Availability at the Household Level in Jordan and Diarrheal Disease

![Graph showing the relationship between water consumption and incidence of diarrheal disease.](image)

- First scenario: "Business as usual Cases at 0.41 (2004)
- Second scenario: "reduce incidence to 0.27" (2010)
- Third scenario: "reduce incidence to 0.21" (2015)

Health and Environment Linkages Initiative, Jordan Country Project, 2005
Respiratory diseases are affected by changes in air quality, more heat-waves and earlier pollen season.

- Climate change may affect concentrations and dispersion of air pollutants.
- Changes in wind patterns favour long-range transport of air pollutants.
- Heat-waves’ health effects are stronger when air pollution is high.
- Ozone and particulate matter (PM) are of greatest health concern.
- Climate change is responsible for an earlier onset of the spring pollen season.

**HOW TO REDUCE HEALTH EFFECTS**

- Enforce air quality standards, avoiding health damaging measures.
- Promote energy efficiency and reduced motorized transport.
- Educate people to avoid outdoor exercise when ozone levels are high and roads polluted.
- Be vigilant on allergies and inform the public about preventive actions and treatments.
3. Vulnerable groups

Inequalities
Climate change will affect everybody but not everybody in the same way

Populations differ in vulnerability

- As developing and long-term exposed organisms, children are most at risk from the effects of climate change.

- Heat primarily affects old people: chronic diseases and drugs can decrease their ability to cope with extreme hot weather.

- Emergency services providers and labourers in outdoor environments are especially affected by extreme weather events.
Climate change will have adverse effects on economic growth

More than 60 million people are living in absolute poverty in eastern Europe.

- Climate change can significantly worsen health inequities within and among countries and put additional stress on poorer groups.

- Climate change is estimated to cost up to 5% of the gross domestic product (GDP) globally by the end of this century (IPCC 2007).

- Climate change threatens to undermine progress made towards the Millennium Development Goals (MDGs) (IPCC 2007).
4. The role of health systems

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The Resolution of the World Health Assembly

- Urges Member States, to
  - Develop health measures
  - Build capacity
  - Strengthen capacity of health systems
  - Promote the engagement of the health sector
  - Express commitment to meeting the challenges posed by climate change

- Requests the DG
  - Develop a workplan to scale up response
There are common actions that all health systems can take to strengthen preparedness and response:

1. Identify problems; most vulnerable populations; training, communication and supplies needs;

2. Reinforce health services to adapt to climate change
   (i.e. ensuring clean water and sanitation, safe and adequate food, immunization, disease surveillance and response, vector control, and disaster preparedness);

3. Train health professionals on climate-related health issues
   (i.e. new transmission patterns of infectious diseases and symptoms and treatments of diseases linked to extreme weather events);
Common actions that all health systems can take (continued…)

4. deliver accurate and timely information and communication to decision-makers, the general public, other stakeholders for proper action to protect health from climate change;

5. strengthen health security e.g. facilitate collaboration between countries to respond to climate-related health crises when health security calls to enforce the International Health Regulations;

6. advocate health in other sectors where reduction of emissions can benefit health (energy, transport, housing, land use, water management);

5. set the example in tackling the root causes of climate change by taking actions to reduce health systems’ “carbon footprint”.

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5. Regions

Protect Europe’s health from climate change
What can be done?

- Be leaders
- Develop adaptation/mitigation plans
- Include health in any development
- The vulnerable
- Intersectorial
- Solidarity
7. Solidarity

Protect Europe’s health from climate change
Deaths from climate change

CC deaths/million

- 0 - 2
- 2 - 20
- 20 - 60
- 60 - 100
- No data

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## Direction and Magnitude of Climate Change
### Health Impacts

<table>
<thead>
<tr>
<th>Category</th>
<th>Negative Impact</th>
<th>Positive Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High Confidence</td>
<td><em>Malaria: Contraction and expansion, changes in transmission season</em></td>
<td></td>
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<tr>
<td>High Confidence</td>
<td><em>Increase in malnutrition</em></td>
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<td></td>
<td><em>Increase in the number of people suffering from deaths, disease and injuries</em></td>
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<td></td>
<td><em>from extreme weather events</em></td>
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<td></td>
<td><em>Increase in the frequency of cardio-respiratory diseases from changes in air quality</em></td>
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<td></td>
<td><em>Change in the range of infectious disease vectors</em></td>
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<td></td>
<td><em>Reduction of cold-related deaths</em></td>
<td></td>
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<tr>
<td>Medium Confidence</td>
<td><em>Increase in the burden of diarrheal diseases</em></td>
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</tbody>
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8. Action by WHO/Europe

Support to countries
Global change and health programme functions

- Providing tools and expertise
- Shaping the research agenda
- Articulating ethical and evidence based policy options
- Sharing experiences and lessons learnt
- Monitoring health situation and assess trends over time
Public health action: Heat health action plans for Europe
A new WHO tool for European decision-makers on World Health Day 2008

Protecting health in Europe from climate change

Protecting health in Europe from climate change presents the current and projected health effects related to climate change and provides practical guidance on specific actions that countries and people can take now to protect their health.
Elements of an action plan for Europe (5-6-5)?

1. **5 Key principles**
   - synergies with existing policies and legal structures,
   - coherent approaches across sectors and
   - effective collaboration,
   - flexible approach that both respects the subsidiarity responsibilities and uniqueness of each Member State
   - solidarity

2. **6 Strategic elements**
   - Knowledge, stewardship, advocacy, capacity, regulation, and partnership
Elements of an action plan for Europe (5-6-5)?

- 5 Objectives
  - To avoid additional deaths, disease and injuries from climate-change-related extreme weather events;
  - To anticipate, early identify and respond to climate-change-related infectious disease outbreaks and changes in diseases distribution;
  - To enforce water safety;
  - To enhance food security and safety; and
  - To reduce respiratory diseases from climate change and associated policies.
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