Climate change and food and water safety
- WHO perspectives

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World Food Day event, Osijek, Croatia
15 October 2010
FAO/WHO World Declaration on Nutrition (1992)

‘...access to nutritionally adequate and safe food is a basic individual right.’
Food and waterborne diseases - a considerable public health burden

- **Globally**
  - 2.2 million estimated deaths from food and waterborne diseases per year
    - 1.9 million being children

- **Industrialized countries**
  - Yearly, up to 30% suffer from foodborne illness
  - Yearly, up to 20 per million die of foodborne disease

- Does not include other food and waterborne diseases than GI illnesses, such as those caused by chemicals in food, e.g. aflatoxin or dioxins
Content

• Climate change as a global political issue
• WHO workplan on climate change and health
• Climate change impacts on health, nutrition, food and water safety, and food and waterborne diseases
• Ensuring food and water safety in times of changing climate
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Climate change a global political issue

- Climate change - a top priority for UN
- UN Secretary General establishes coordination group, including WHO
- April 7, 2008 - World Health Day on "Protecting health from climate change"
- May 2008 - World Health Assembly Resolution on climate change and health
- May 2009 - World Health Assembly approves WHO work plan on climate change and health
Mandates from World Health Assembly 2008 and Executive Board

WHA urges Member States to:

• Include health measures in adaptation plans

• Build technical, strategic and leadership capacity in the health sector

• Strengthen capacity for preparedness and response to natural disasters

• Promote active cross-sectoral engagement of the health sector

• Express commitment to meeting the challenge of climate change, and guide planning and investments
WHO workplan on climate change and health (WHA 2009)

Aim:

• to support health systems of all countries, but in particular those of low and middle income countries and small island states
  → enhanced capacity for assessing and monitoring the health vulnerability, risks and impacts due to climate change

• identify effective strategies and actions to protect human health and particularly the most vulnerable groups

• share knowledge and good practices on health system actions
Climate change work in the WHO European Region

- 4th Ministerial Conference on Environment & Health (extreme events & energy), Budapest, 2004
- World Health Day 2007: focus on health security
- Nobel Peace Prize to the IPCC
- World Health Day 2008: “Protecting health in Europe from climate change” (7 April)
- 5th Ministerial Conference on Environment & Health, Parma, 2010
Rising temperatures - the most certain impact from climate change

Intergovernmental Panel on Climate Change - IPCC 2007
Climate change impacts on agriculture

Some effects of global warming on agriculture

- Loss of biodiversity in fragile environments/tropical forests
- Loss of fertile coastal lands caused by rising sea levels
- Longer growing seasons in cool areas
- More unpredictable farming conditions in tropical areas
- Increase in incidence of pests and vector-borne diseases
- Dramatic changes in distribution and quantities of fish and sea foods

Long-term fluctuations in weather patterns could have extreme impacts on agricultural production, slashing crop yields and forcing farmers to adopt new agricultural practices in response to altered conditions.
Climate change impacts on food security and nutrition

• All 4 dimensions of food security affected: availability, stability, access, utilization
  – Thus negative impacts on quality, variety, frequency, safety and quantity of food, and thereby negative impacts on health

• Increases malnutrition

→ In seasonally dry and tropical regions, even slight warming (1-2°C) reduces yields

→ In developing countries, agricultural output is expected to decline 10-20% by 2080
Climate change impacts on food prices

- Rising food prices push millions back into poverty and malnutrition
- Changes in quality, variety, frequency, safety and quantity of food consumed

IPCC, 2007
Climate change impacts on water safety

- Water quality is a major starting point of water related diseases through ingestion of faecal-oral pathogens, viruses, toxic chemicals, or toxic algae.
- Flooding events cause spreading of contaminated waters from different polluting sources, long range transport of persistent pollutants.
- Waterborne diseases increase through use of contaminated water for drinking, irrigation or cleaning.
- Water scarcity:
  - increased concentrations of chemicals (nitrous oxide, volatile organic compounds (VOC), and toxic metals), changes in pesticide use, saline intrusion,
  - hygiene problems (infiltration of water pipes, unsafe use of recycled water or flooding water)
  - changes in crop production, diminished dietary diversity, reduced food consumption
Climate change can increase the risks of foodborne disease - I

- Pollution of water, air, soil, feed
  - Pathogens
  - Algal toxins
  - Toxic chemicals
    - Heavy metals
    - Persistent organic pollutants

- Food production
  - Microbiological contamination
  - Survival and growth of pathogens
  - Contaminated water for irrigation and food processing
  - Increased use of fertilizers, pesticides and antibiotics

- Demographics and human behavior
  - Increased opportunities for food contamination
Climate change can increase the risks of foodborne disease - II

- **Examples**
  - High temperatures
  - Storms
  - Flooding
  - Droughts
  - Population displacement
  - Human behavior

- *Salmonella*
- *Vibrio cholerae*
- Protozoa
- Mycotoxins
- Biotoxins (algal blooms)
Predicted effect of temperature increase on the growth of *Salmonella* during consumer transport of product to home

Joint FAO/WHO activities on microbiological risk assessment: *Salmonella* in eggs and broiler chickens
Rising temperature and reported \textit{Salmonella} cases

Figure 4.2 Relationship between mean temperature and monthly reports of \textit{Salmonella} cases in New Zealand 1965 - 2000

Climate change impacts on vector-borne diseases

- Global warming increases the surviving of vectors
- Recent outbreaks of the Blue tongue disease in northern Europe seems to be related to warmer weather conditions and the spreading of *Culicoides* spp.
Ensuring food/water safety and adequate nutrition in times of changing climate

- Promote research and information on links between climate change, food/water safety and nutrition

- Place food safety and nutrition issues higher on national and international climate change agendas

- Assist countries in building capacities and developing relevant skills
WHO EUROPEAN ACTION PLAN FOR FOOD AND NUTRITION POLICY 2007-2012
The Food Safety Chain
From Farm to Fork

- Vehicle emission
- Agricultural practices
- Sewage
- Industrial emissions and effluents

Crops
Livestock
Seafood

Processing
Storage
Distribution
Retail
Cooking

Man eating food
Ensuring food/water safety in times of changing climate

- Holistic and intersectoral **food safety systems** from farm-to-fork, **including environmental aspects**
- Proper monitoring systems for microbial and chemical hazards in the food chain, and traceability systems
- Timely surveillance of **food/waterborne diseases**
- Establish surveillance systems on **nutritional status** and food availability/consumption
- Integrated surveillance, investigation and rapid **alert system** between PH, food and veterinary sectors
- Targeted and timely **risk communication** on climate change and its impact on nutrition, food/water safety
- **International collaboration** and cooperation, including rapid alert systems and information sharing and application of the **risk analysis** framework
"Only if we act together can we respond effectively to international food safety problems and ensure safer food for everyone"

Dr Margaret Chan – Director-General
Conclusions

• Climate change is a global health issue of political concern
• Climate change impacts on nutrition, food security and food safety
• Foodborne diseases is a major public health problem throughout the European Region
  – Need for intersectoral collaboration and actions, nationally and internationally, also in relation to climate change
  – Need for proper surveillance and monitoring systems
  – Need for integrated surveillance, investigation and rapid alert systems
  – Need for targeted and timely risk communication on climate change and impact on nutrition and food safety
Thank you for your attention!

• Look forward to further good collaboration 😊

• http://www.euro.who.int/en/what-we-do/health-topics/disease-prevention/food-safety

• http://www.euro.who.int/en/what-we-do/health-topics/environmental-health/Climate-change