

**The UNECE/WHO-EURO
Protocol on Water and Health and
adaptation to climate change and extreme weather events**

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Overview

- The Protocol and climate change
- Focus on the resilience of water supply and sanitation systems in extreme events

Protocol as a planning tool

Targets are set in the medium and long term future

- ⇒ Need to take into account future economic and social scenarios (population growth, GDP, urbanization...)
- ⇒ Need to take into account climate change
- ⇒ Opportunities to identify potential risks related to the changing environment
- ⇒ Basis for the introduction of long-term objectives and adequate adaptation strategies

Potential risks and target setting (1)

- **Increased temperature**
 - ⇒ **Lower oxygen concentration, hence lower self-purification capacity of surface water.**
 - ⇒ **Longer algal season and earlier bloom**
 - ⇒ **Penetration of toxic (tropic or semi-tropic) opportunistic invaders in virgin ecosystems**
 - ⇒ **Impact on survival of micro-organisms in drinking water distribution systems**
 - ⇒ **Quality of drinking water supplied (6.2.a)**

Potential risks and target setting (2)

- Floods challenge storm water overflows, treatment systems and continued operation of water supply and sanitation systems
- Droughts cause an increased concentrations of pollution requiring better treatment options and better protection;
 - ⇒ Discharges of untreated storm water overflows (6.2.g.)
 - ⇒ Quality of drinking water, access to drinking water (6.2.a and c)
 - ⇒ Quality of discharge from wastewater treatment plants (6.2.h)
 - ⇒ Quality of waters used for drinking water (6.2.j.)

Potential risks and target setting (3)

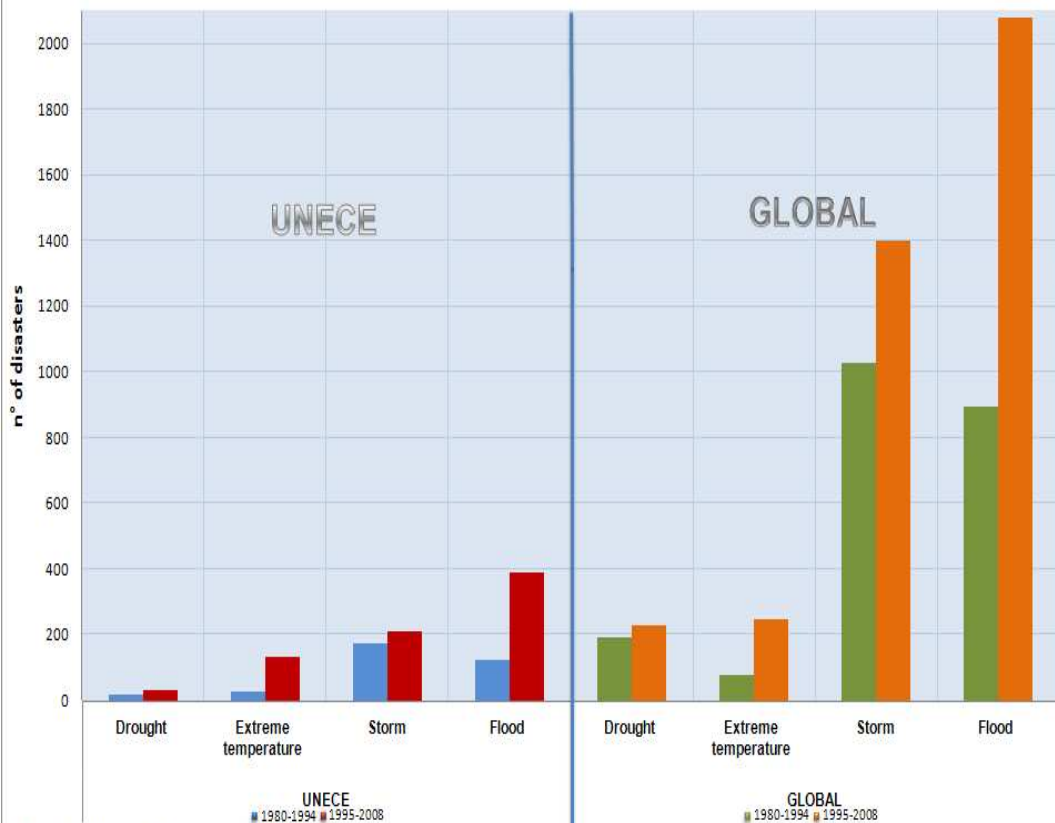
- Higher temperatures and decreasing freshwater quality can lead to
 - ⇒ A decrease in the quality of recipient recreational waters
 - ⇒ Proliferation of toxic micro-organisms can influence the quality of the food chain, particularly aquaculture
 - ⇒ Quality of waters used for bathing ,aquaculture or the cultivation of shellfish (6.2.j.)

Potential risks and target setting (4)

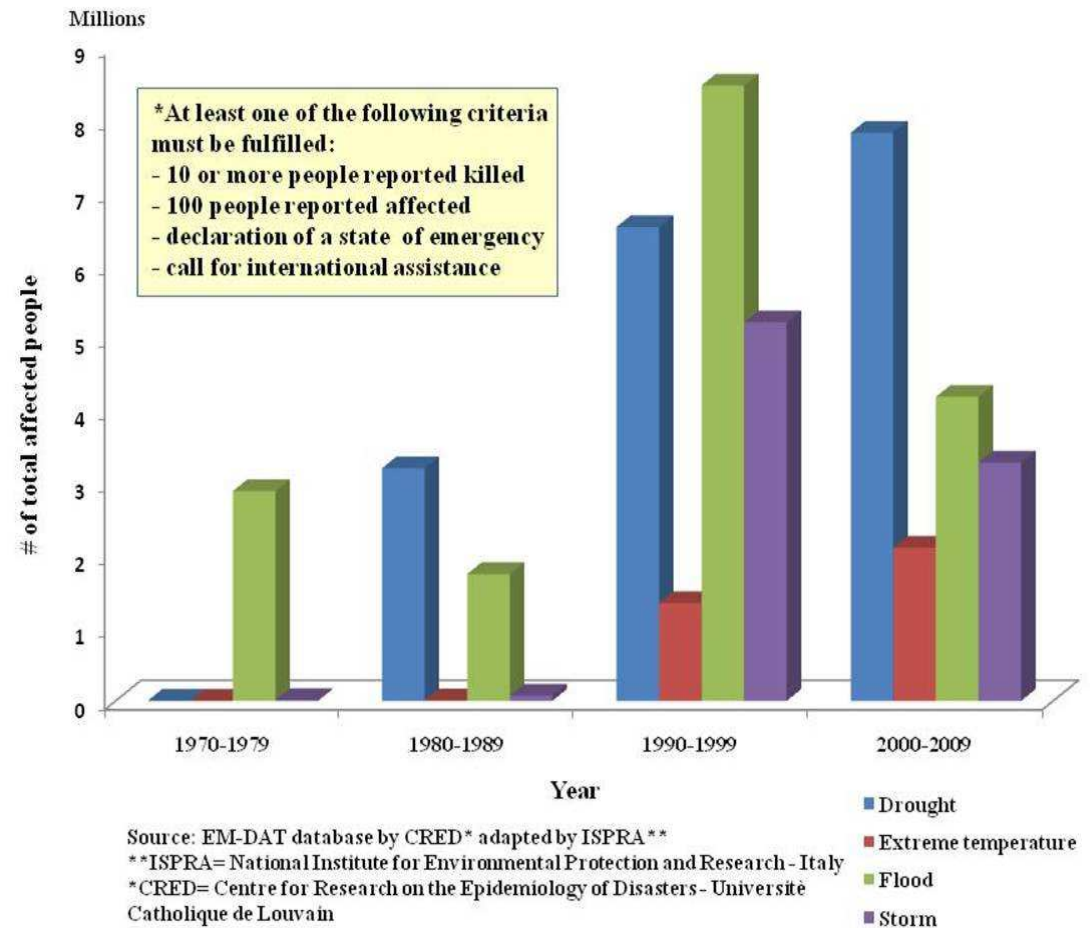
- Improved breeding grounds for disease carrying vectors
 - Outbreak of waterborne diseases and vectorborne diseases due to flooding and heat waves
- ⇒ **Reduction of the scale of outbreaks and incidents of water-related disease (art 6. 2.c)**

Water supply and sanitation in extremes: THE FACTS

Number of extreme weather disasters 1980-2008
Comparative trends between UNECE and Global Regions



Number of total affected people by drought, extreme temperatures, flood and storm disasters* in UNECE Region (1970-2009)



Water supply and sanitation in extremes: THE ISSUE

- ❑ Extremes such as floods, droughts and thermal anomalies are more & more recurrent worldwide and are a significant pressures on healthy environments
- ❑ Water and waste water utilities are very vulnerable to extremes and in the region WSS performance is still an issue
- ❑ Under critical conditions water supply and sanitation services aren't anymore an healthy delivery services, but a significant source of contamination, sometimes irreversible that may also affect areas beyond local and national borders.
- ❑ Health risk are not only related to direct damages and supply disruption but also to contamination of water and biota

Health risks WSS utilities performance

Contaminated discharge
in environment and water
bodies

Lack of available safe
water

Higher pollutants
concentrations
and/ or overload

Impairment of waste
water treatment
performance

Unsafe use of new water
sources



▶ Chemical and biological
safety of

- Drinking water
- Bathing waters
- Irrigated crops
- Food and sea food

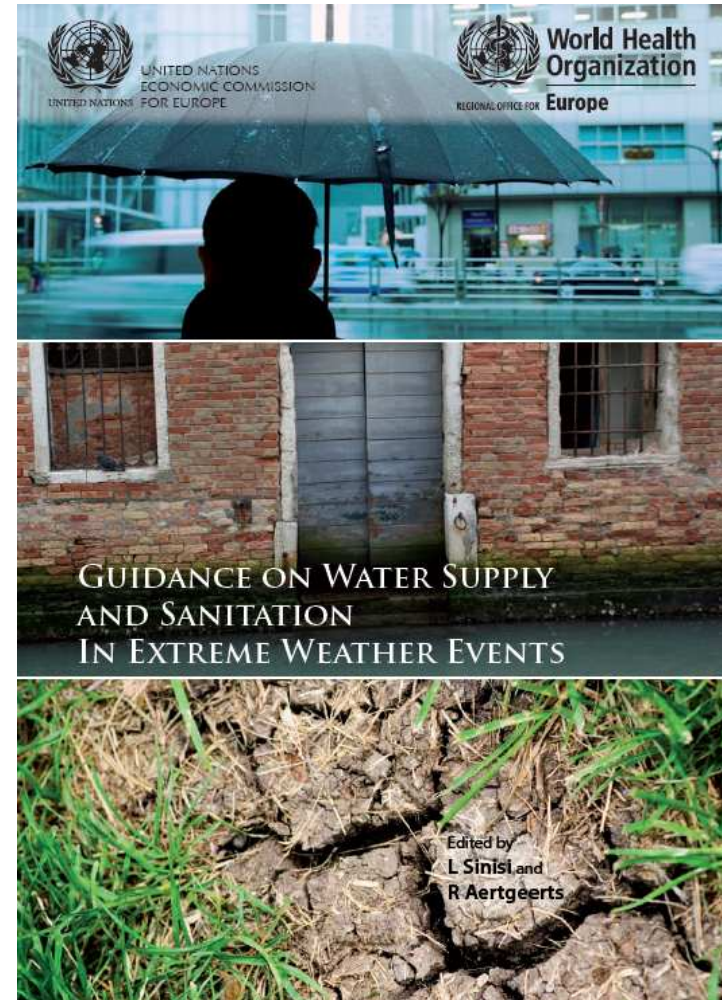
▶ Increase of vectors and rodents

▶ (Costly) impairment of
effectiveness of
environmental protection
of healthy water resources

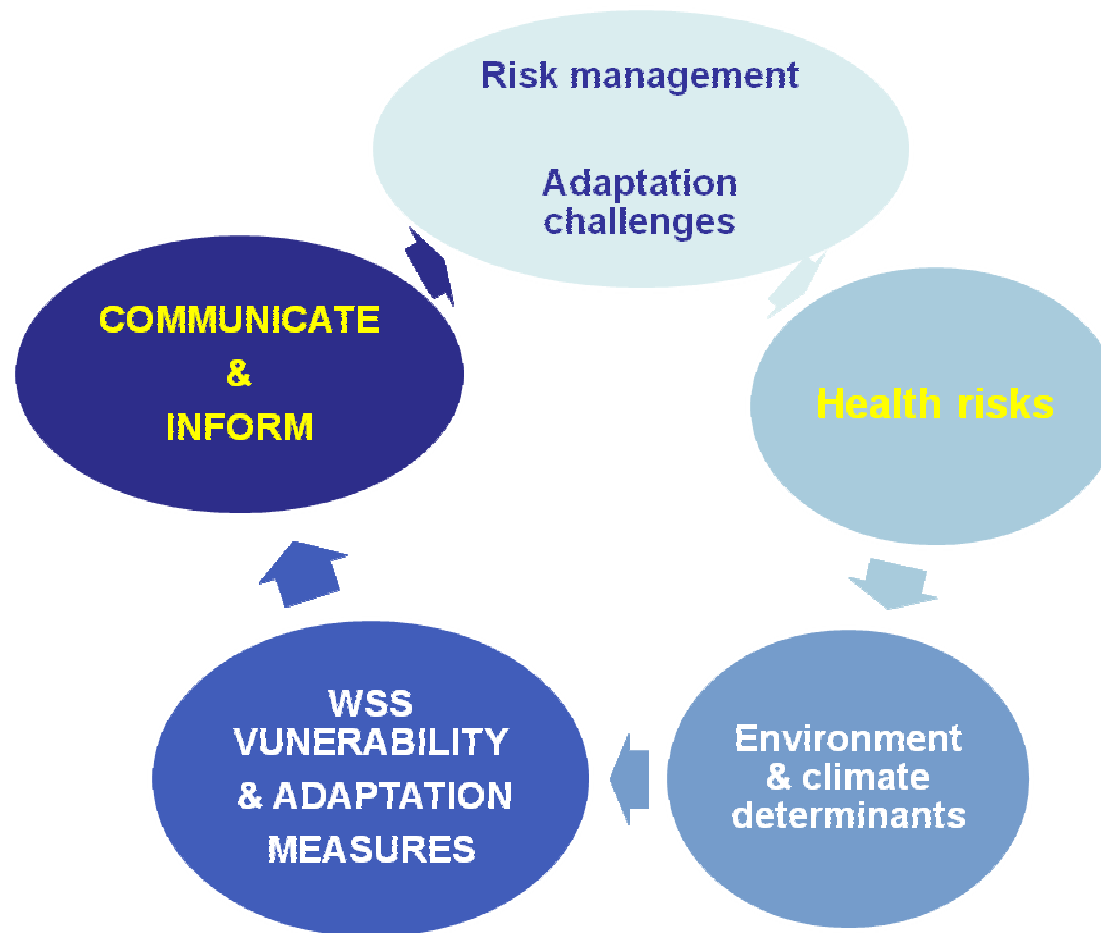
**High vulnerability of
WSS infrastructures
in the Region**

Guidance on water supply and sanitation in extreme weather events

- Science, engineering
 - Institutional stakeholders
 - Management tools
- => Cope not only with climate change impacts but also with other drivers



Integrated environment and health approach

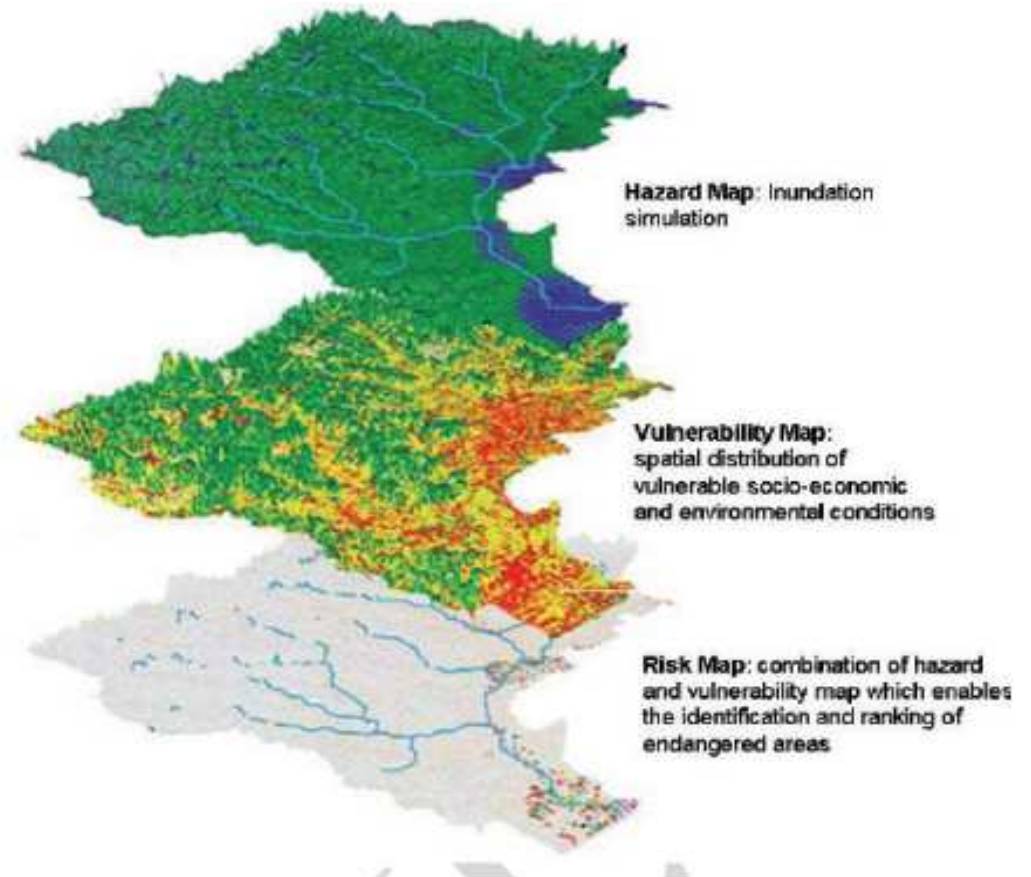


Disaster preparedness and early warning

- Apply integrated risk management in development planning
 - Well defined institutional responsibilities
 - Broad process of consultation
 - Tools for disaster management and information (forecasting, early warning, etc)
 - Awareness campaign
- => From disaster response and reaction to risk anticipation and mitigation

Communication and information

- The communication strategy, based on a multidisciplinary approach, should be part of the risk disaster management and adaptation plans for extreme weather events in order to share knowledge among different actors,
- Specific communication activities should be planned (before, during and after the event) and targeted at different groups at risk (e.g. the elderly, children, rural communities).
- Public authorities must be mainly responsible for elaborating and delivering the messages.
- The media are a key partner in communication.
- Communication should be a long-lasting and institutional process and not only a contingency tool.



THANK YOU FOR YOUR ATTENTION

<http://www.unece.org/env/water/>