



Increasing resilience to climate change

Programme area 7

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5th session

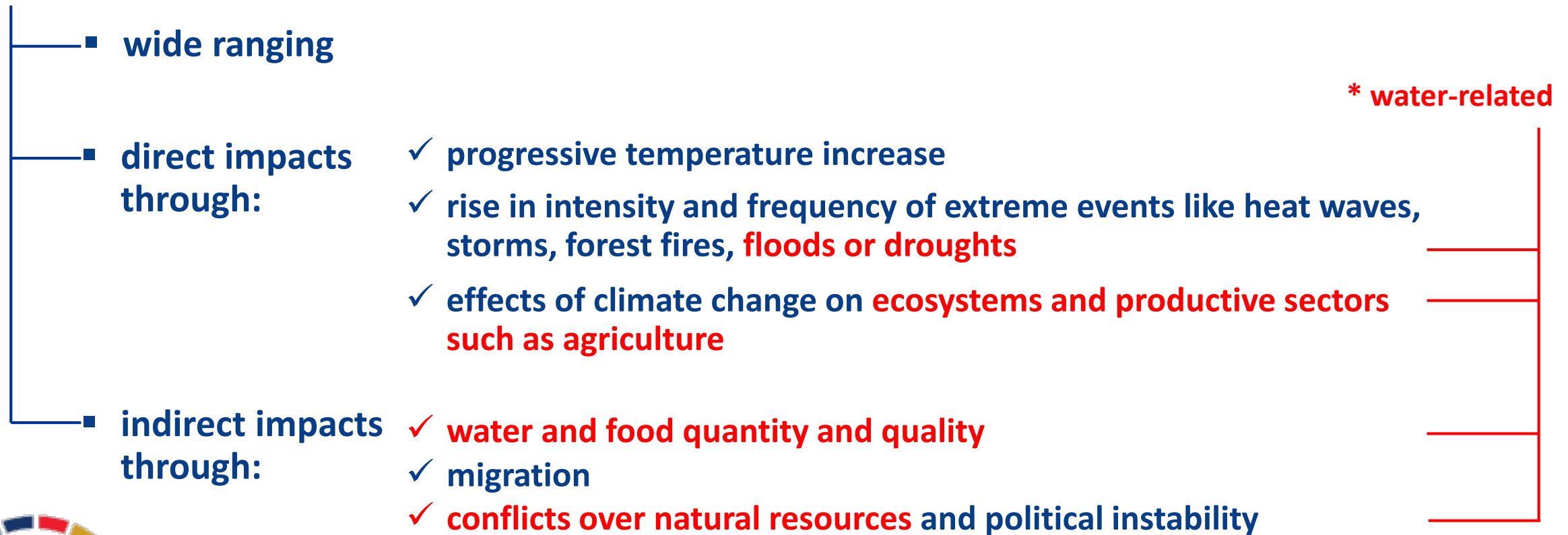
**Meeting of the Parties to the
Protocol on Water and Health**

19-21 November | Belgrade | Serbia



1. Why is this work is important for the pan-European region?

Health impacts of climate change across all Member States of the UNECE/WHO European Region



Climate change - water quantity

Water stress expected to increase across central and southern Europe and central Asia.

- high water stress: increasing areas from 19% (2007) to 35% (2070s) area of the EU
- number of additional people affected is expected to be 16–44 million

each 1 °C of temperature increase (global warming) projected to result in

- 20% reduction in renewable water resources
- additional 7% of affected population

reduced availability of freshwater in central and eastern Europe (freshwater flows may decrease by 80%)

water scarcity and agricultural droughts may increase the demand on irrigation, including wastewater reuse

competition for access to water will increase



Climate change - water quality

increasing temperatures and changing water composition:

- new ecological niches supporting invasions of new areas by pathogens
- depending on the local conditions, limited or temporarily

Insufficient sanitation in water-stress conditions:

- higher concentrations of faecal matter in surface water sources (viral, protozoal and/or bacterial pathogens)

low water flows and reduced water levels in surface water bodies:

- increase the concentration of pathogens, chemical pollutants and nutrients

higher water temperatures in large reservoirs:

- reduction of dissolved oxygen levels
- increasing benthic nutrient (such as phosphorus)
- promotion of (harmful) phytoplankton proliferation – including toxic cyanobacteria
- release of sediment-bound metals, such as iron and manganese into the water body

droughts:

- use of less safe alternative water sources
- saltwater intrusion into drinking-water sources increase water treatment costs

higher frequencies of torrential rains:

- rapid runoff (or ingress to groundwater sources) and poor water quality

coastal waters:

- changing natural ecosystems
- bathing waters: poorer water quality and higher risk of infection



Protocol and Ostrava Declaration



Sixth Ministerial Conference
on Environment and Health

Ostrava, Czech Republic
13–15 June 2017

**COMPENDIUM OF POSSIBLE ACTIONS TO ADVANCE
THE IMPLEMENTATION OF THE OSTRAVA DECLARATION**

Better Health. Better Environment. Sustainable Choices.

Enhancing action on environment and health at the national level – developing national portfolios for action

Ensuring universal, equitable and sustainable access to safe drinking-water, sanitation and hygiene for all and in all settings

Overall objective providing sufficient amounts of safely managed drinking-water, ensuring safely managed sanitation from collection to disposal or reuse of wastewater, and sustaining **the availability and quality of freshwater resources, especially in regions that experience water stress, high-usage patterns and competing demands accelerated by the consequences of climate change**

Actions

- efficient use of water, safe reuse of wastewater: water safety plan (WSP) and sanitation safety plan (SSP) in policies and regulations
- climate-resilient WASH services - responsive to the effects of climate change impacting variability, availability and quality of freshwater resources, as well as to extreme weather events
- strengthening disaster risk governance, increasing disaster preparedness



6 CLEAN WATER AND SANITATION



6.3, increasing recycling and safe reuse globally

6.4, address water scarcity and substantially reduce the number of people suffering from water scarcity

11 SUSTAINABLE CITIES AND COMMUNITIES

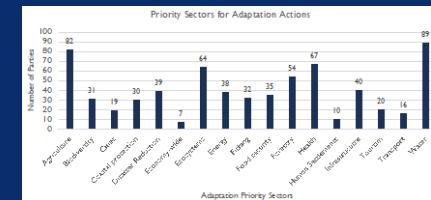


11.5 reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters

13 CLIMATE ACTION



Water is the first priority areas for adaptation actions among the Intended Nationally Determined Contributions (INDCs) after the Paris agreement



2. Major milestones since 2017 and outcomes

Area of work on increasing resilience to climate change: new in the work-programme 2017–2019

achievements:

- Starting the dialogue and promoting the need for consideration of climate change aspects in the area of water, sanitation and health
- Focus on extreme weather events and water scarcity

Work implemented in synergy with the programme area 5 on safe and efficient management of water supply and sanitation systems and in cooperation with the global climate programme of the Water Convention



2. Major milestones since 2017 and outcomes



International Workshop on Water Scarcity

Taking action in transboundary basins and reducing health impacts

11-12 December 2017

Salle XII, Palais des Nations, Geneva, Switzerland,
starting at 10.00 a.m. on Monday, 11 December 2017



- ✓ Organized under **the leadership of the Governments of Italy, the Netherlands and Switzerland** in cooperation with the **Water Convention** and a number of **other international partners**
- ✓ Increased capacity for **addressing water scarcity**, thereby reducing the related health, social, economic and environmental risks by sharing practical solutions, tools and approaches
- ✓ Actions to address water scarcity and thereby reduce the related health, social, economic and environmental risks by sharing practical solutions, tools and approaches
- ✓ more than 140 participants from all over the world.



Bilthoven 2017

Pan-European Symposium on
**Water and Sanitation
Safety Planning and
Extreme Weather Events**

Extreme weather events, causing floods, droughts, can have major implications for the performance of water and wastewater infrastructure and services, and the

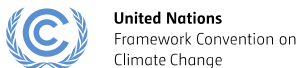


- ✓ joint activity under programme areas 5 and 7
- ✓ Regulators Forum – State of the art of Drinking Water Supply and Sanitation with special attention to Climate Change Challenges
- ✓ unique opportunity to share knowledge and experiences from within the region and to advance the topic of climate-resilient planning for water supply and sanitation services.
- ✓ Spain cooperation as co-leader of the programme area



Activities to promote the Protocol by Italy

CLIMATE AND HEALTH COUNTRY PROFILE
ITALY



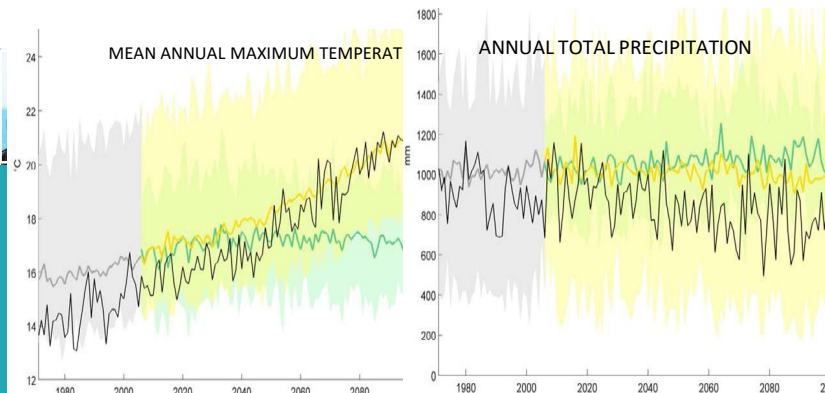
OVERVIEW

Italy, located in the middle of the Mediterranean basin, is comprised of a continental northern sector, a peninsular central-southern sector, two large islands [Sardegna and Sicilia] and various archipelagos and minor islands. Italy has a heterogeneous climate which leads to differences in the immediate risks posed by climate change throughout the country.

OPPORTUNITIES FOR ACTION

In Italy, the Ministry for the Environment Land and Sea is carrying out activities on climate change at the national level. In 2015, Italy adopted the National Adaptation Strategy to climate change (NAS) with the aim to give a common path, at national level, to deal with the impacts of climate change on natural systems and socio-economic sectors. The Ministry for the Environment is currently working for the implementation of the NAS.

WATER RESOURCES AND HEALTH KEY IMPLICATIONS FOR HEALTH



- current and future scenario
- ✓ ↓ precipitation
- ✓ ↑ temperatures
- ✓ ↑ sea water level
- ✓ over-exploitation of water resources
- ✓ gaps in management & investments

HEALTH Milan
November 5-6

G7 Milan Health Ministers' Communiqué
5-6 November, 2017

"United towards Global Health: common strategies for common challenges"

We will work with other sectors and with international colleagues towards achieving access to safe drinking water and sanitation by reducing geographical differences in services provided, avoiding discrimination or exclusion in access to services by vulnerable groups, and promoting affordability.



Activities to promote the Protocol by Italy (cont.d)



Oral Session 7 (BOVET ROOM) WATER, SANITATION AND CLIMATE CHANGE

Chairs **Luca Lucentini and Oliver Schmoll**

- 09.15 **Water safety planning for climate resilience**
R. Moses McKeown
- 09.50 **The Protocol on Water and Health tools to increase resilience to climate change and water-related disasters.**
N. Nikiforova
- 10.10 **Water and sanitation in extreme weather events. Environment and health risks and vulnerabilities.**
L. Sinisi
- 10.25 **Assessment of climate change impacts on groundwaters of semiarid regions. Health-risk for floods.**
C. Masciopinto
- 10.40 **Discussion**



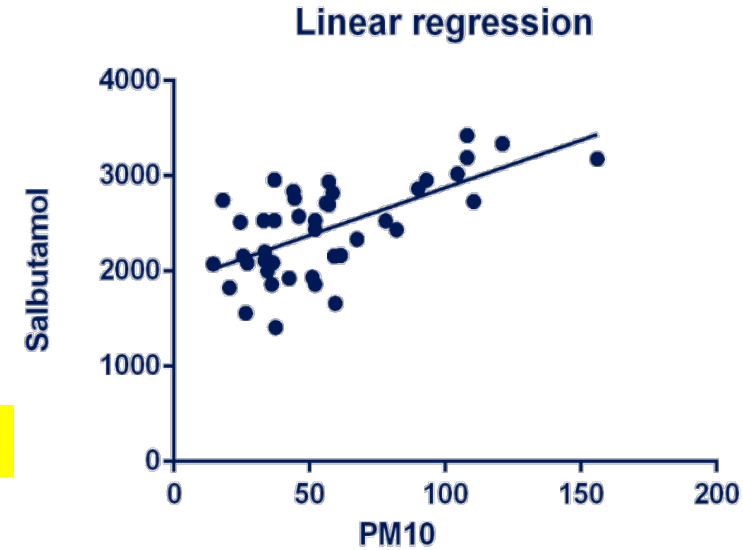
Activities to promote the Protocol by Italy (contd)



Impact of CC/air pollution on WASH and health

Relationship between concentration of the *bronchodilator* Salbutamol in wastewater and PM₁₀ e PM_{2,5} concentration in urban air.

RR = 1.06 (95% CI: 1.02-1.10) for increasing of 10 µg/m³ of PM₁₀
Environ. Res. 2016 Oct;150:106-11



Impact of CC on quality of natural, drinking, bathing water resources


CASE STUDY 7 : UNPRECEDENTED CYANOBACTERIAL BLOOM AND MC PRODUCTION IN A DRINKING-WATER RESERVOIR IN THE SOUTH OF ITALY

An extraordinary bloom of cyanobacterium *Planktothrix rubescens* was observed in early 2009 in the Occhito basin, a reservoir with a storage capacity of 150 million litres. The maximum production of water surrounding municipalities (inhabitants). Response actions in the months were mainly aimed at the efficient communication of the target population. These included:


- a) identification in raw, treated and distributed water samples as the main source (range 5.0–10.0 µg/L) and MC-LR (range 0.1–0.5 µg/L) trace of microcystins distributed in the water.
- b) specific treatments using granulated activated carbon (GAC) combined with pre-existing treatment practices, that is, pre-oxidation, flocculation, sand filtration and post-disinfection;

the matrix of dissolved solutes. Levels of trace metals, herbicides and pesticides were also measured in the lake and in the main river waters. These measures, implemented through intensive communication amongst the main stakeholders, were managing the health risk for the population without requiring any additional investments.


The treatment plants can treat 700 000 for the first time, which consisted of the removal of sand from the standard filtration process and its replacement with a GAC (about 400 tonnes). Long-term actions requires massive investments (€ 10 million) to implement a GAC filtration system to remove HMs) and microcystins. Plans for the medium-long term are implemented in line with the WHO approach and involve specific investments in a new flexible treatment system, and environmental parameters inducing/controlling bloom formation in the basin in response to climatic changes, as well as specific measures for local environmental and health protection.


Waterborne norovirus epidemics in Italy and the potential impact of climate change scenarios



Waterborne Pathogenic Protozoa Survival to Climatic Changes.



Impact of droughts on water quality in Italy: preliminary data and risk analysis.



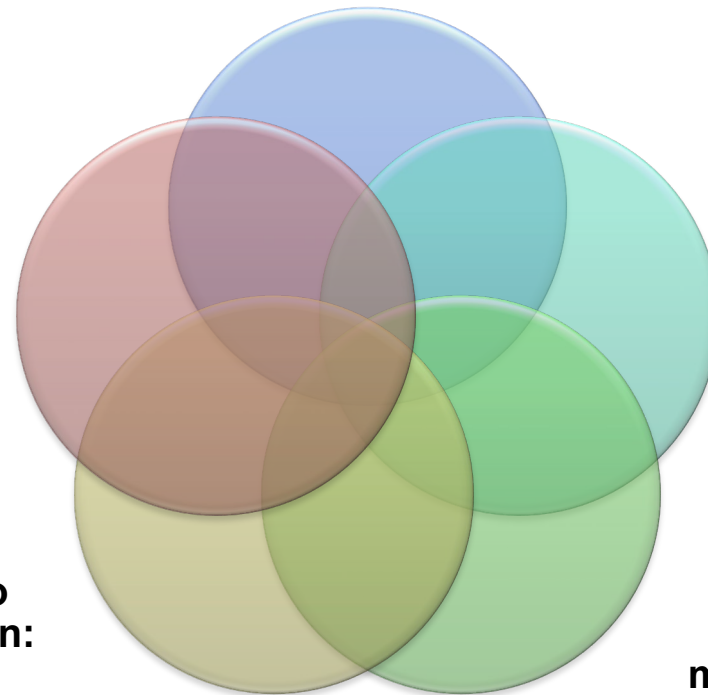
Climate changes impacts on groundwater: how do we cope with it?.



3. Challenges and lessons learnt for future work

**Programme area 2:
Prevention and
reduction of water-
related diseases**

**Programme area 7:
Increasing resilience
to climate change**



**Programme area 4:
Small-scale water
supplies and
sanitation**

**Programme area 6:
Equitable access to
water and sanitation:
translating the
human rights to
water and sanitation
into practice**

**Programme area 5:
Safe and efficient
management of water
supply and sanitation
systems**



4. Suggested future work in this area

1 Building capacity to increase resilience to climate change

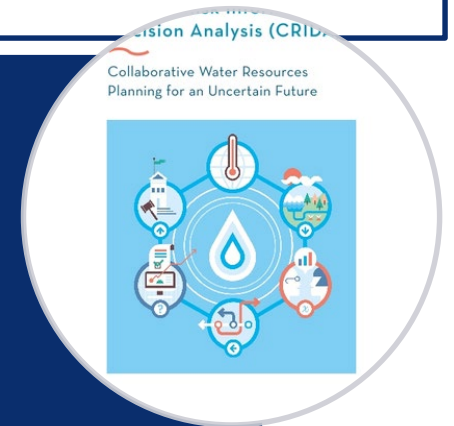
- Develop capacity and promote good practices on building climate resilience of drinking water supply and sanitation services, including preparing for and responding to extreme weather events

- Support water and wastewater operators in strategic planning for ensuring climate resilience, including through supporting Climate Risk Informed Decision Analysis (CRIDA) methodology

Organization of a **strategic round table** on climate resilience of drinking water supply and sanitation services in the pan-European region (in coordination with programme areas 4 and 5)



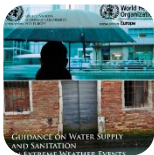
Organization of a **workshop on climate change adaptation on water and disaster risk reduction**, water scarcity, ecosystem-based adaptation and financing of climate change adaptation (in coordination with programme areas 4 and 5)



4. Suggested future work in this area

2 Exchanging experience on building resilience to climate change in urban areas

Organize a regional workshop aimed at assisting Parties and other States to increase the resilience of water supply and sanitation systems to climate change impacts in urban areas -2021 Italy (*tbc*)



build on the recommendations of the *Guidance on Water Supply and Sanitation in Extreme Weather Events*.



Issues:

- disaster preparedness and response
- adaptation
- wastewater management
- water recycling and reuse.



Aims:

- regional forum to facilitate progress towards global recommendations
- help incorporate scientific findings into policy approaches
- facilitate the exchange of knowledge and the joint identification of solutions to build climate change-resilient water supply and sanitation systems in urban areas



Thank you for your attention

