

Environmental health-risks related to climate change, water and sanitation in Italy

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Water scarcity and drought, the impact on human health We can manage? Still a challenge?

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UNECE



World Health Organization

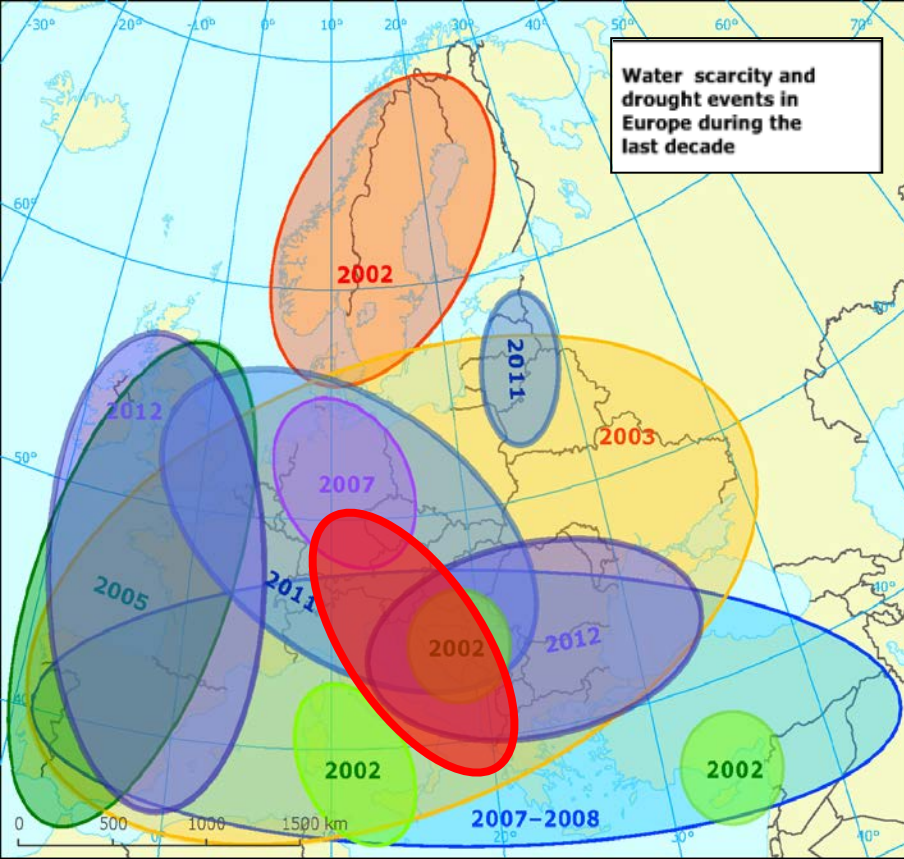
REGIONAL OFFICE FOR **Europe**



MINISTRY OF ENVIRONMENT,
WATERS AND FORESTS



FACE CLIMATE CHANGE



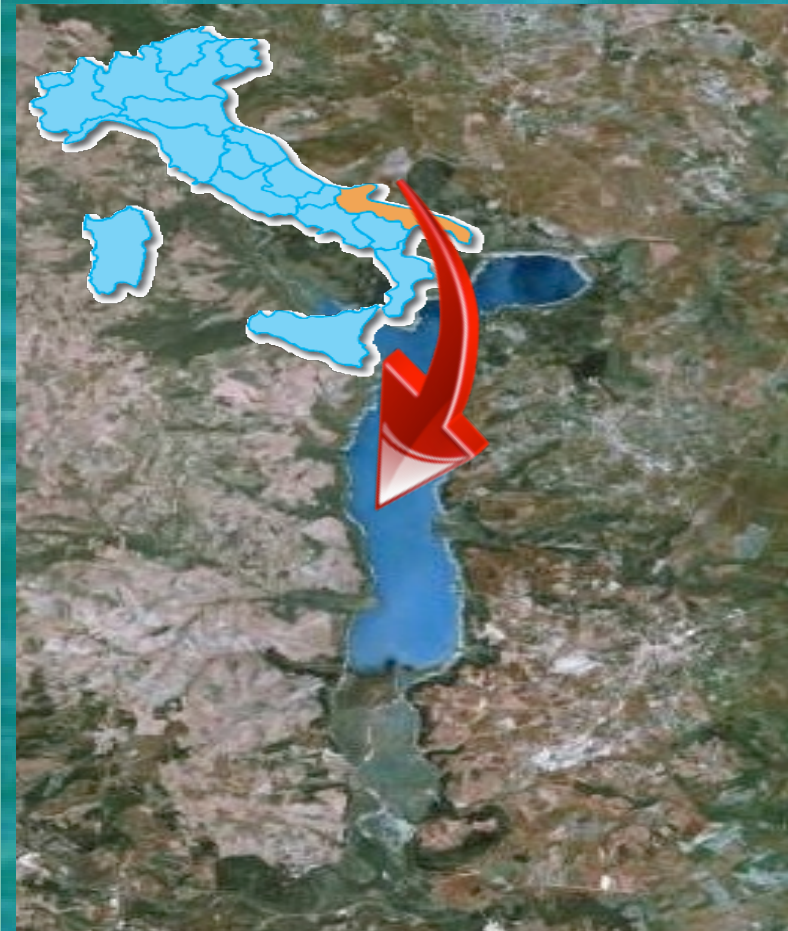
- Increase in air temperature
- High variability and changes of the annual rainfall
- Decrease in summer precipitation
- Increase frequency and intensity of extreme events, especially droughty events in CEE Europe



- Potential for direct damage to people's health and well-being, their assets, and crucial socioeconomic activities;
- Challenge for traditional preventive systems for environmental and health issues (environmental monitoring and control, disease surveillance, early warning) in all phases of preparedness, response and recovery.

POLICY ADAPTATION TO WATER CYCLE VARIATIONS IS THE KEY ISSUE OF SHORT- TO MEDIUM-TERM STRATEGIES IN RELATION TO CLIMATE CHANGE AND VARIABILITY SCENARIOS.





Lake Occhito: different uses:

- irrigation (~ 60 %) (~ 143,000 hectares)
- drinking supply (~ 20 %) (~ 800,000 consumers)
- industrial
- fishing
- natural wetland of International importance (Ramstar site)

Catchment area ~ 1000 km²

Network of torrential Inflows

Max area ~ 10 km²

Max depth ~ 40 m

Volume ~ 333 millions m³



The sequence (n. 4) of In Italy, in the last decades, more than 60 water bodies have been droughts and overflowing never occurred before as reported to be affected by cyanobacteria as in the last 10 years frequent risks related to the presence of cyanotoxins in basins used for agricultural purposes, bathing, fishing and drinking water production



CASE STUDY 7 : UNPRECEDENTED CYANOBACTERIAL BLOOM AND MCRRR PRODUCTION IN A DRINKING-WATER RESERVOIR

An extraordinary bloom of cyanobacteria (*Planktothrix rubescens*) was observed in the Occhito basin, a 13 km² wide reservoir with a storage capacity of over 270 million metres of water. Maximum algal density was 150 million cells/litre and associated cyanobacterial toxin production occurred in raw water used for the production of water for human consumption in the surrounding municipalities (serving approximately 100,000 inhabitants).

Response actions implemented in the following months were mainly focused on mitigation of toxin presence in distributed drinking water, efficiently communicating risk information to the target population and authorities.

These included:

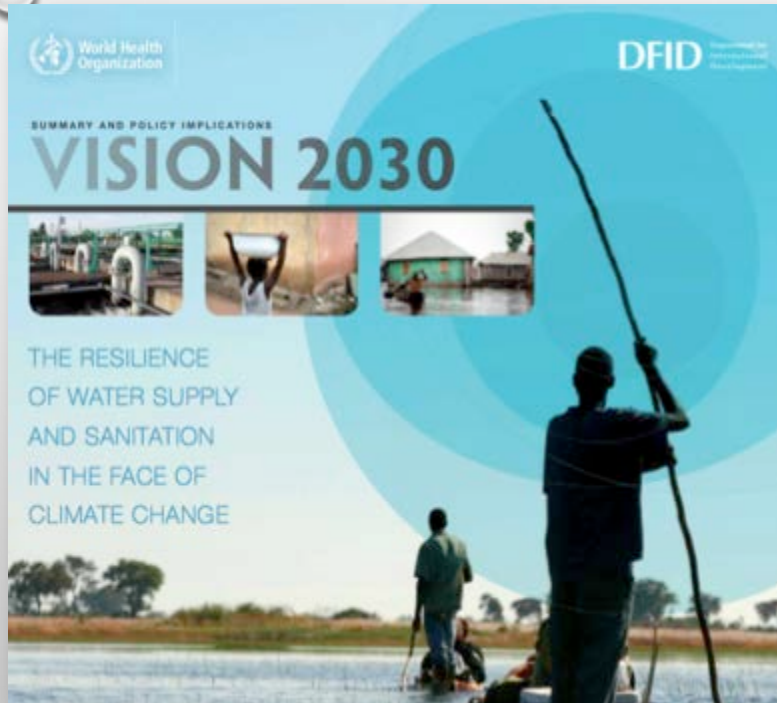
- a) identification and quantification of cyanobacterial toxin in raw, treated and distributed water, showing:
 - uncommon, changeable toxin production in raw water samples with dimethyl-MCRRR as the main cyanobacterial metabolite (range 5.0–30.5 µg l⁻¹) also together with MC-LR;
 - trace of microcystins sporadically detected in distributed water, always below WHO guideline value;



GUIDANCE ON WATER SUPPLY AND SANITATION IN EXTREME WEATHER EVENTS

Under severe weather conditions, water and wastewater services can become a significant source of chemical and biological contamination.

Infrastructure elements of water supply and sanitation systems show vulnerabilities to different types of extreme events.



RESILIENCE needs to be integrated into drinking-water and sanitation management to cope with present climate variability.

- Action required to turn the potential adaptive capacity of many water supplies to actual resilience to climate change.
- Systematic assessments of the climate change resilience of all utilities and of rural water and sanitation programmes are needed.
- Adaptations strategies available need to be put in place.

EFFECTIVENESS OF RISK REDUCTION IN EXTREME CONDITIONS BASED ON:

- ✓ commitment to apply integrated risk management principles in development planning
- ✓ existence of well-defined institutional responsibilities
- ✓ democratic process of consultation

EU ADAPTATION STRATEGY

The EU strategy on adaptation to climate change aims at making Europe **more climate-resilient**.

The EU Strategy in a Nutshell

Priority 1: Promoting action by Member States

Action 1. Encourage MS to adopt Adaptation Strategies and action plans

Action 2. LIFE funding, including adaptation priority areas

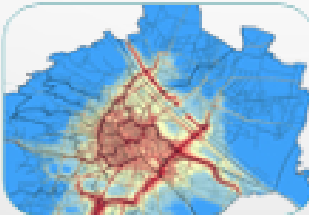
Action 3. Promoting adaptation action by cities along the Covenant of Mayors Initiative



Priority 2: Better informed decision-making

Action 4. Knowledge-gap strategy

Action 5. Climate-ADAPT

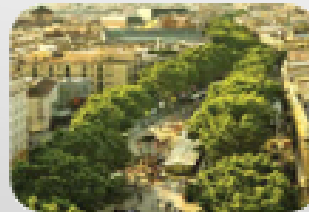


Priority 3: Key vulnerable sectors

Action 6. Climate proofing the Common Agricultural Policy, Cohesion Policy, and the Common Fisheries Policy

Action 7. Making infrastructure more resilient

Action 8. Promote products & services by insurance and finance markets



ACTION 1

- ✓ MSs encouraged to adopt adaptation strategies;
- ✓ The Commission has provided guidelines to help MSs formulate their adaptation strategies;
- ✓ The Commission is developing an adaptation preparedness scoreboard for measuring MSs' level of readiness.

THE ADAPTATION STRATEGY IN ITALY



Summary

Policy & legal framework

Sectors & actions

Assessments

Engaging stakeholders

Contact

Item	Status	Links
National adaptation strategy	Approved	National Adaptation Strategy
Action plans	Sectoral Adaptation Plans are being developed	
Impacts, vulnerability and adaptation assessments	National Vulnerability Assessment	National Vulnerability Assessment
Research programs	Established	see chapter research.
Climate services / Met Office	Established	<ul style="list-style-type: none"> • CNMCA • CMCC
Web portal	Established /national platform ongoing	Web portal
Monitoring, Indicators, Methodologies	Being developed	<ul style="list-style-type: none"> • ISPRA-Bar • LTER-Italia • Polaris-IRPI-CNR • Italia Sicura • Rendis-ISPRA
Training and education resources	Being developed	
National Communication on the UN Framework Convention on Climate Change	Last National Communication Submitted (2014)	6th National Communication under the UNFCCC



Strategia Nazionale di Adattamento ai Cambiamenti Climatici

PRIORITY SECTORS IMPACTED BY CC IN ITALY (FROM IMPACT AND VULNERABILITY ASSESSMENT)

water resources and areas prone to desertification risk

soil erosion and coastal zone flooding

loss of biodiversity

modification of marine and mountain ecosystems

loss of snow and glaciers covered areas

negative impacts on health and wellness

increase of hydrogeological risk

Po river basin and the river district of Central Appennines
where are situated the main water reservoirs

WSPs as the most effective approach for water supply systems to cope with extreme weather events



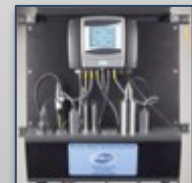
The multidisciplinary team offers the possibility of including meteorologists, hydrologists, and geohydrologists from the beginning the RA/RM process

Description of the water supply system allows the identification of CC vulnerable areas



Extreme weather events can be managed within the comprehensive risk analysis of the entire water supply chain

Assessment the effectiveness of control measures during (early-warning) quality changes of the resource waters



Risk prioritization vs prevention scenario allows the allocation of resources to address the issues in a brief/medium/long term horizon



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Italian Guidelines for risk assessment and management within the drinking water chain

according to Water Safety

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 Federica Nigro Di Gregorio, Paola Pettine



Catchment

Hazardous event	Associated hazards and issues to consider
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Meteorology: flooding droughts	Drastic changes in water quality and quantity
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Distribution

Hazardous event	Associated hazards and issues to consider
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Pipe burst	Ingress of contamination. Migration of chemical/biological hazards from pipes
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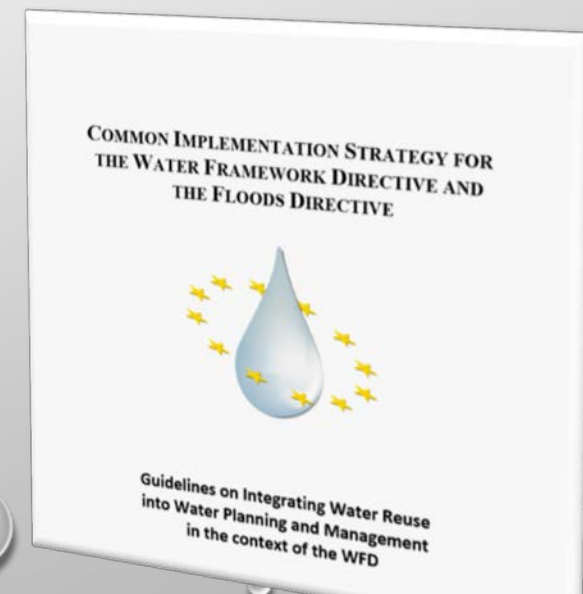
CC environmental-health risks: some Italian contribution at National and EU level

National Centre for Disease Prevention and Control:
Ministry of health and regional governments: specific synergies to improve surveillance, prevention and promptly responding to emergencies.
National and Regional Prevention plans, multiple prevention initiatives nationwide and in the national health service, through cooperation and interventions tasks whose efficiency demonstrated by solid scientific data a working method based on projects



Report “Risk assessment related to water uses for primary food production” edited by a multidisciplinary workgroup of the Istituto Superiore di Sanità and by collaboration of several experts on field

Document developed through a collaborative programme involving the European Commission and Member States Italian Ministry of Environment : Environmental aspect related to the water reuse



National Institute of Health: Human health Risk analysis related to the water

Water reuse: some Italian contribution at National and

Development of minimum quality requirements
for water reuse in agricultural irrigation and
aquifer recharge

Draft V.3.1
October 2016

Proposals of minimum quality requirements for water reuse in
agricultural irrigation and aquifer recharge
Italian Ministry of Environment : Environmental aspect related to the
water reuse
National Institute of Health: Human health Risk analysis related to the
water reuse

FRAME Project to develop integrated approach able to assess
indirect potable reuse measures (IPR) effective and efficient to
minimize the risks associated with emerging chemicals and microbial
contaminants;



Programme Area 7 – Increasing resilience to climate change

Building capacity to deal with water scarcity and its health impacts

Exchanging experience on building resilience to climate change in urban areas

Italy candidate co-leader with Spain
Ministry of Health
joined with
National Institute of Health
Ministry of Environment

A hand-drawn heart in black ink on a blue background with water droplets. The heart is positioned in the upper left quadrant. A hand is visible at the bottom left, with a finger pointing towards the heart. The word 'Acqua' is written in black ink in the center of the image. The background is a gradient of blue and white, with many small water droplets scattered across it. The overall theme is water and gratitude.

Acqua

Thank you
for your