



3° CORSO REGIONALE SUI PRODOTTI FITOSANITARI

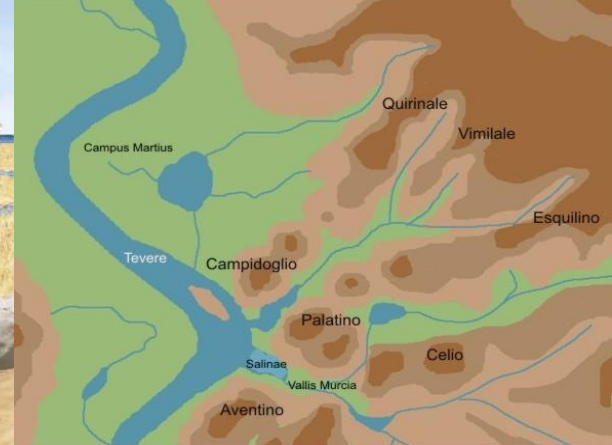
14 NOVEMBRE | 22 NOVEMBRE 2017

Palazzo Grandi Stazioni – Sala Polifunzionale | VENEZIA

Principi generali nei Piani di Sicurezza delle acque



Luca Lucentini
Direttore Reparto Qualità dell'acqua e salute



NON DIAMO TUTTO PER SCONTATO ...

The Human Right to Water and Sanitation

Milestones



July 2010 UN General Assembly Resolution A/RES/64/292

For the first time, this UN Resolution formally recognises for the right to water and sanitation and acknowledges that clean drinking water and sanitation are essential to the realisation of all human rights. The Resolution calls upon States and international organisations to provide financial resources, help capacity-building and technology transfer to help countries, in particular developing countries, to provide safe, clean, accessible and affordable drinking water and sanitation for all.

www.un.org/ga/search/view_doc.asp?symbol=A/RES/64/292

September 2010 Human Rights Council Resolution A/HRC/RES/15/9

Following the UN General Assembly resolution, this resolution of the UN Human Rights Council affirms that the rights to water and sanitation are part of existing international law and confirms that these rights are legally binding upon States. It also calls upon States to develop appropriate tools and mechanisms to achieve progressively the full realization of human rights obligations related to access to safe drinking water and sanitation, including in currently unserved and underserved areas.

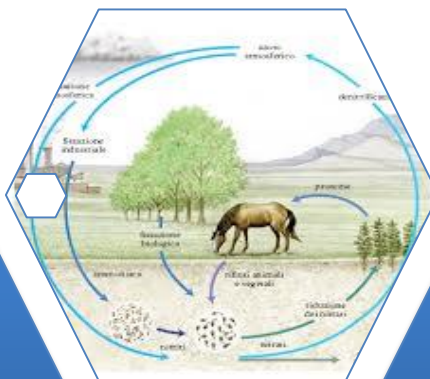
For the first time, this UN Resolution formally recognises for the right to water and sanitation and acknowledges that clean drinking water and sanitation are essential to the realisation of all human rights*

BENI E SERVIZI ECOSISTEMICI*

Nel passato, le società non sono riuscite a valutare l'importanza degli ecosistemi, che sono stati spesso ritenuti un bene di tutti e il cui valore è stato di conseguenza sottostimato

Gli ecosistemi sostengono la vita e l'attività umana nel loro complesso.

I beni e i servizi che offrono sono vitali per il benessere e lo sviluppo economico e sociale futuro.



Supporto: cicli dei nutrienti, impollinazione colture

Culturali: benefici ricreativi

Regolazione: controllo del clima e delle malattie

Fornitura o approvvigionamento: produzione di alimenti e acqua



2000

* UN Millennium Ecosystem Assessment

NON DIAMO TUTTO PER SCONTATO ...

-1956 series of expert consultations
culminating in a meeting in 1956 in
Geneva

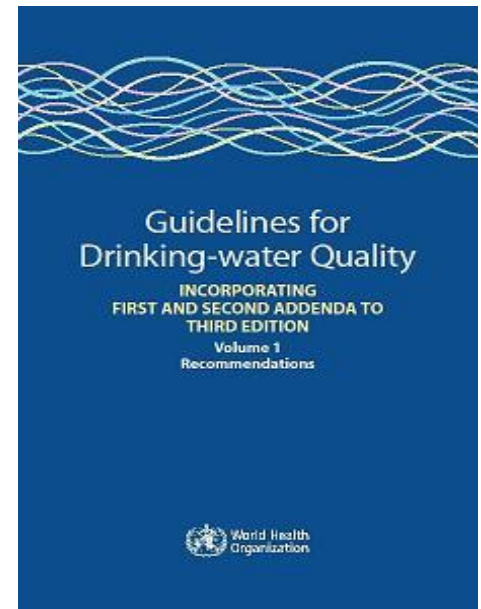


1958: International Standards for
Drinking-Water published

1958, 1963, 1971: revisions of
International Standards for Drinking-
Water

**1984: 1 ed. WHO Guidelines for
Drinking-Water Quality (GDWQ)
superseeded the International
Standards**

basis for the development of national
standards



Demand for the
document is among the
highest and most
sustained of all WHO
publications

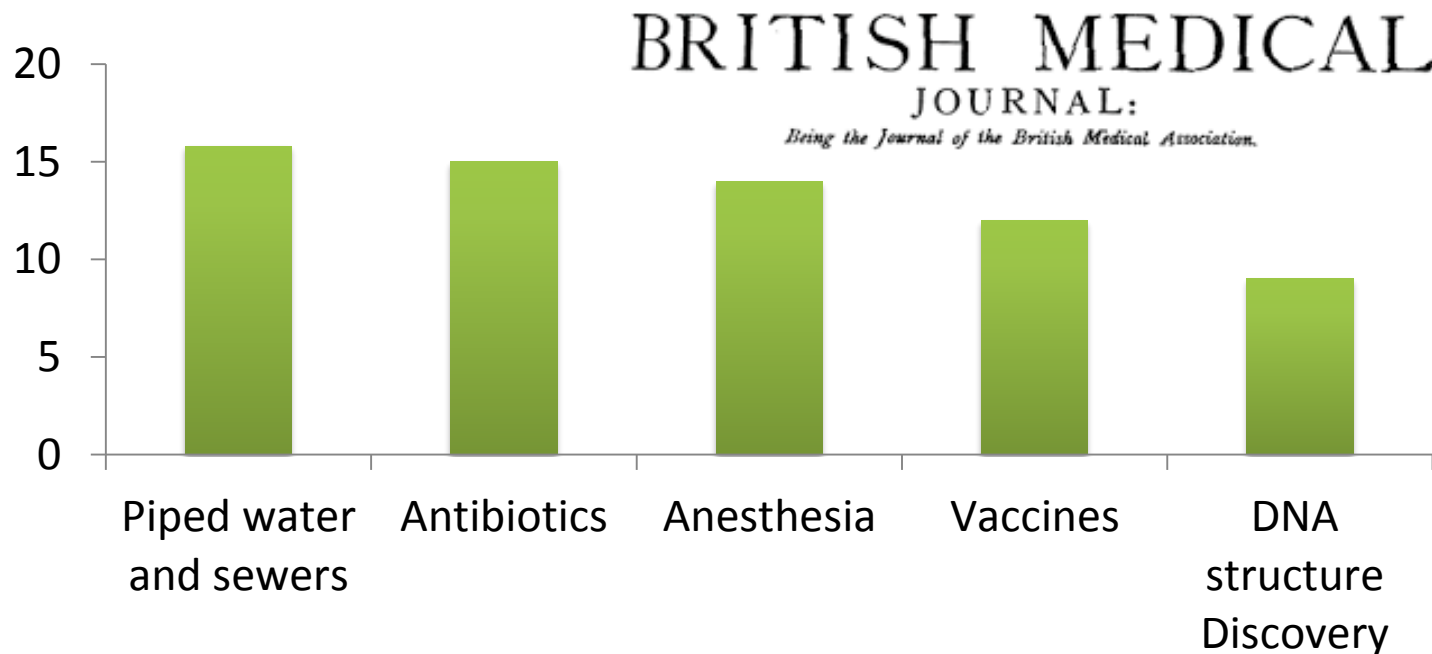
"Clean water and sewage disposal" won the Oscar

BMJ readers choose sanitation as greatest medical advance since 1840

Annabel Ferriman BMJ

More than 11 300 readers of the *BMJ* chose the introduction of clean water and sewage disposal—"the sanitary revolution"—as the most important medical milestone since 1840, when the *BMJ* was first published. Readers were given 10 days to vote on a shortlist of 15 milestones, and sanitation topped the poll, followed closely by the discovery of antibiotics and the development of anaesthesia.

The work of the 19th century lawyer Edwin Chadwick, who



BMJ | 20 JANUARY 2007 | VOLUME 334



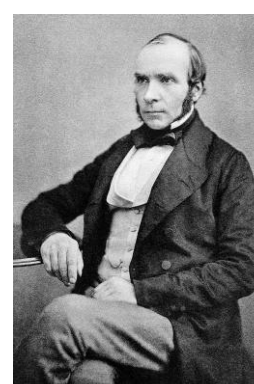
Edwin Chadwick



Ignác Semmelweis



Robert Koch



George Snow



Cholera map of London

The 2030 Agenda



A dedicated health goal



*Ensure healthy lives and
promote well-being for all
at all ages*

Target 3.3: By 2030, (...) **combat** hepatitis, **waterborne diseases** and other communicable diseases

Target 3.9: By 2030, substantially **reduce** the number of **deaths and illnesses** from (...) **water** and soil **pollution** and contamination

A dedicated water and sanitation goal



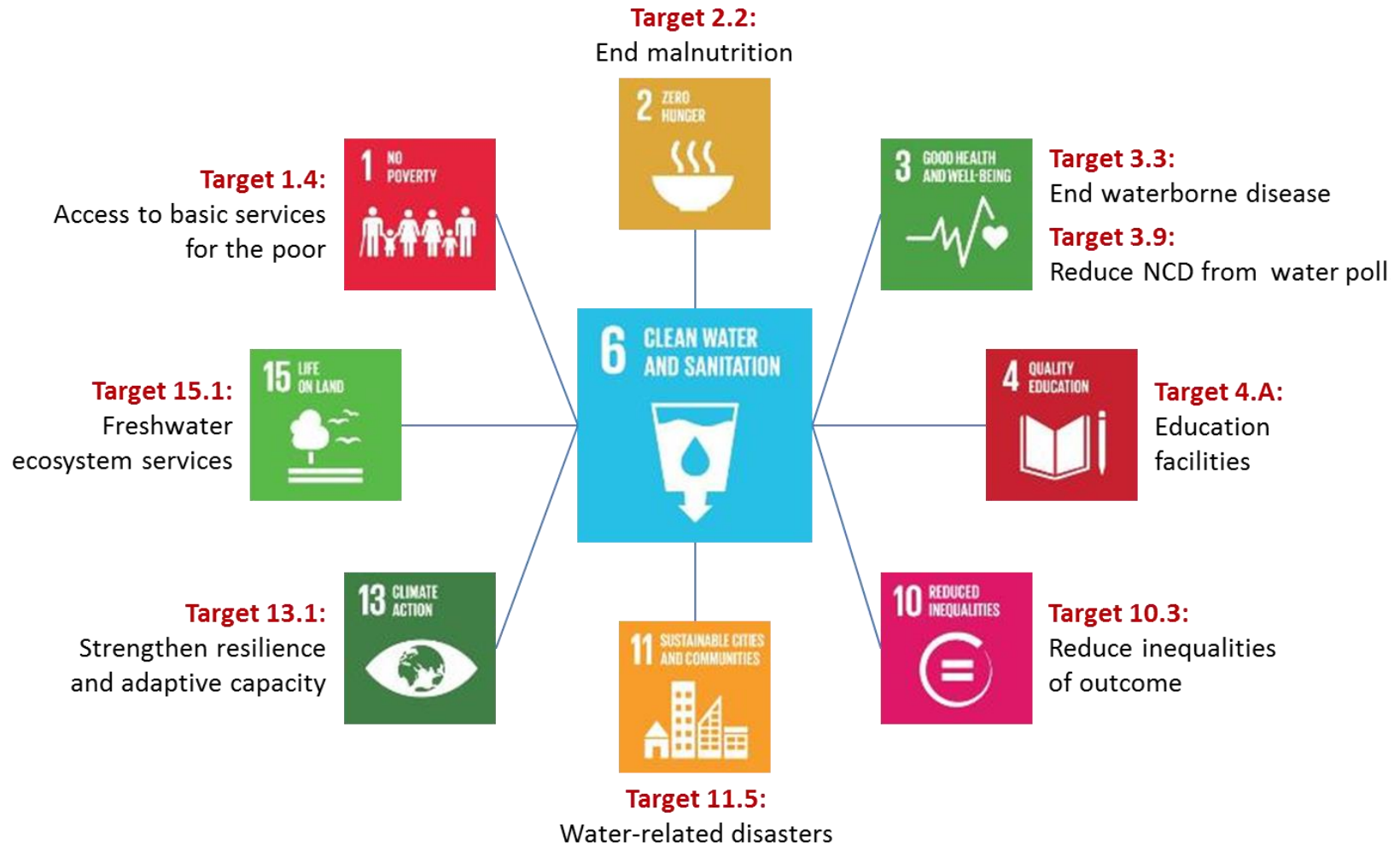
- *Ensure availability and sustainable management of water and sanitation for all*

Target 6.1: By 2030, achieve **universal** and **equitable** access to **safe** and affordable **drinking-water** for all

Target 6.2: By 2030, achieve access to **adequate** and **equitable** sanitation and **hygiene** for all (...), paying special attention to the needs of **women and girls** (...)



The SDG 6 web

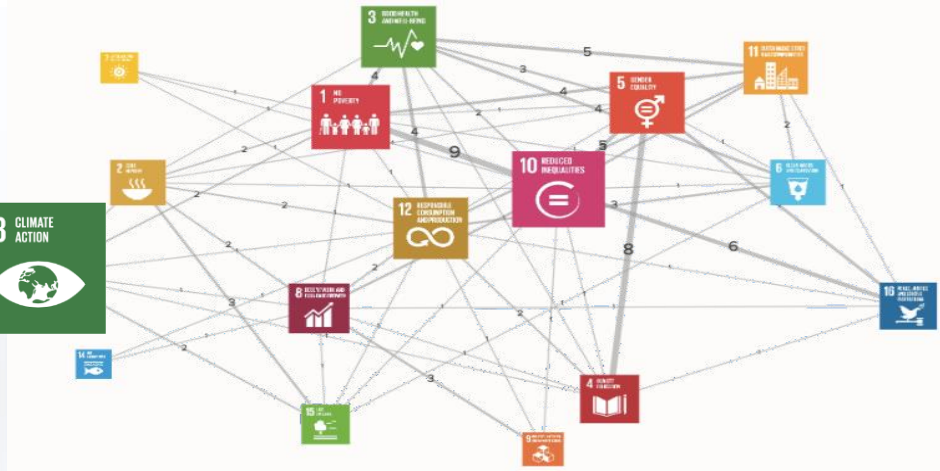


Health

G7#Taormina#Leaders'#Communiqué

38. We are committed to **advancing global health security** and pursuing policies that advance physical and mental health improvements across the globe. **Healthy lives and well-being are important to broader economic, social and security gains.** We recognize that women's and adolescents' health and healthcare must be promoted. **We acknowledge the role of environmental factors in affecting human health.** We remain committed to strengthening health systems, preparedness for, and a prompt, effective and coordinated response to public health emergencies and long-term challenges. On this basis, **we have asked our Health Ministers to follow up on these issues during their November meeting.**

*The United Nations Development Programme (UNDP) recognises **planetary health as critical to achieving sustainable development** across the economic, social, and environmental spheres—this ethos underpins our Strategic Plan for 2014–17.*



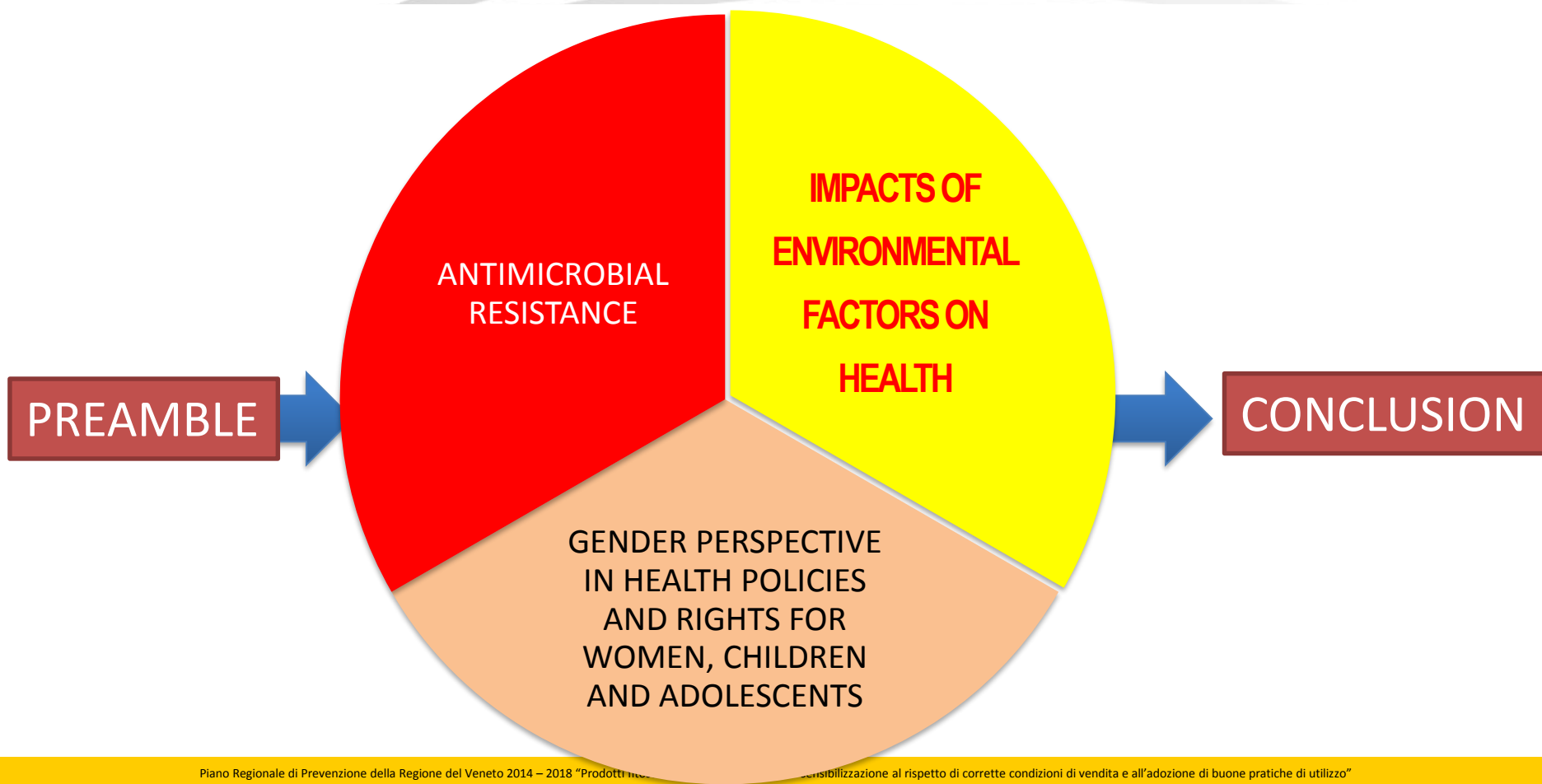
Actions on
climate change
and global partnerships
are pivotal pillars
towards other SDGs



G7 Milan Health Ministers' Communiqué

5-6 November, 2017

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

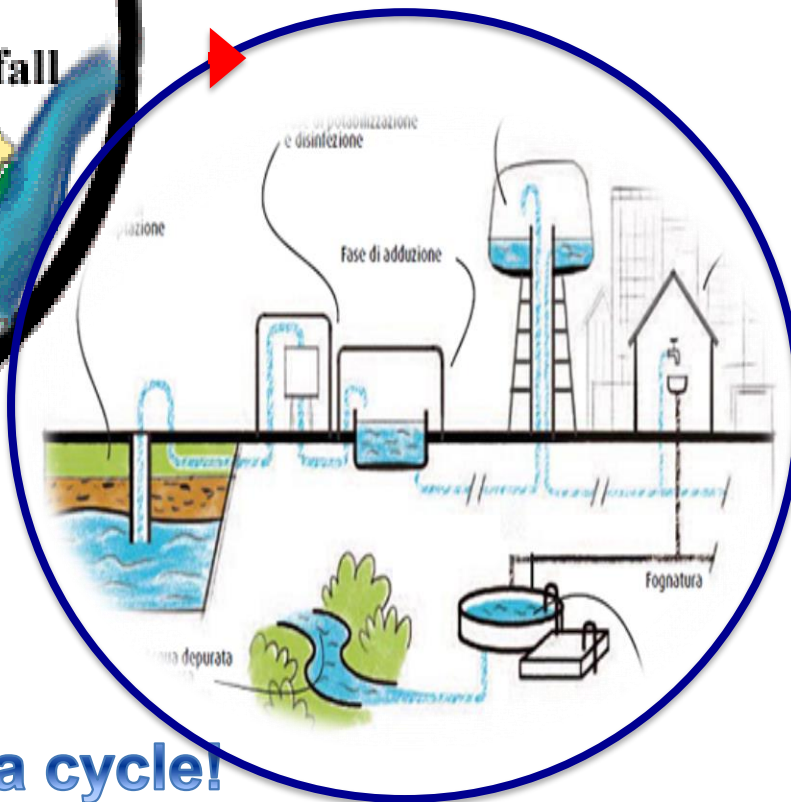
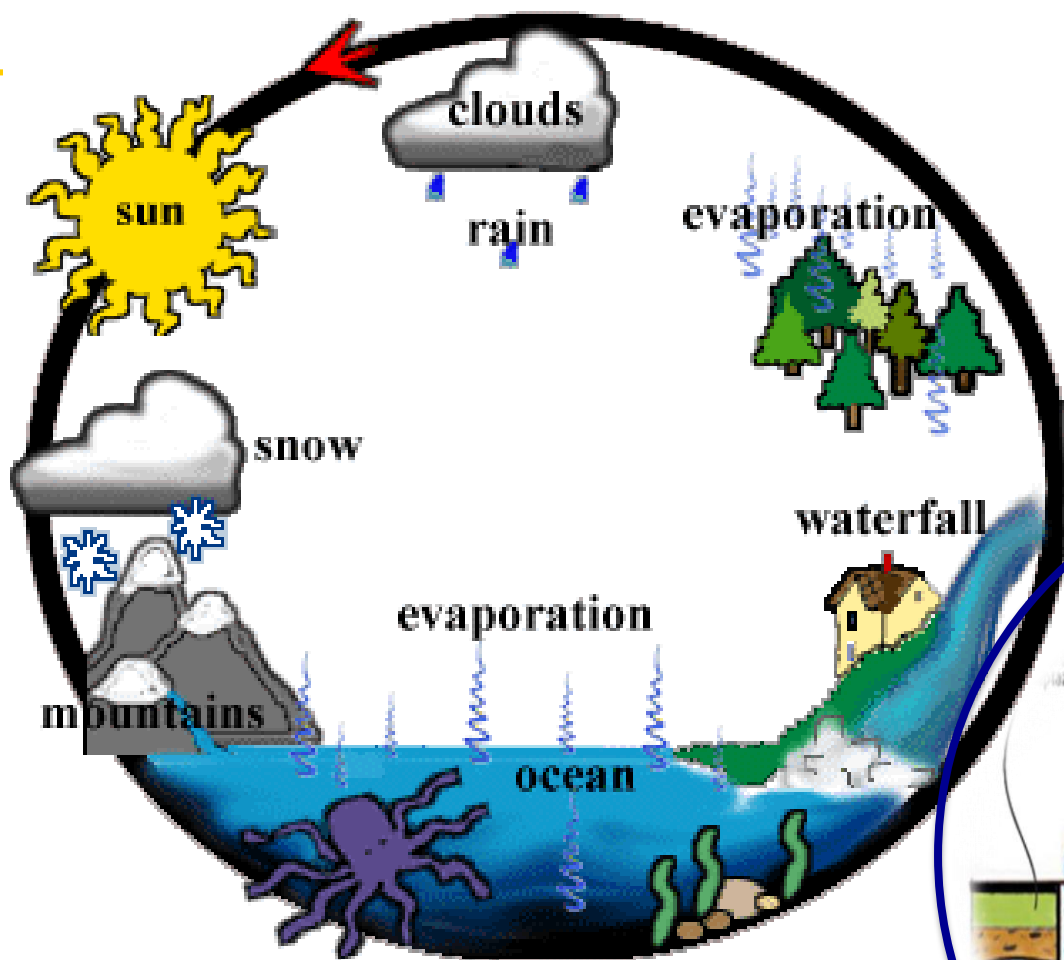


G7 Milan Health Ministers' Communiqué

5-6 November, 2017

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

22. 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.



Water service is a cycle into a cycle!

(More than) something is changing in our planet

Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation–Lancet Commission on planetary health

Sarah Whitmee, Andy Haines, Chris Beyrer, Frederick Boltz, Anthony G Capon, Bráulio Ferreira de Souza Dias, Alex Eze, Howard Frumkin, Peng Gong, Peter Head, Richard Horton, Georgina M Mace, Robert Marten, Samuel S Myers, Sania Nishtar, Steven A Osofsky, Subhrendu K Pattanayak, Montira J Pongsiri, Cristina Romanelli, Agnes Soucat, Jeanette Vega, Derek Yach

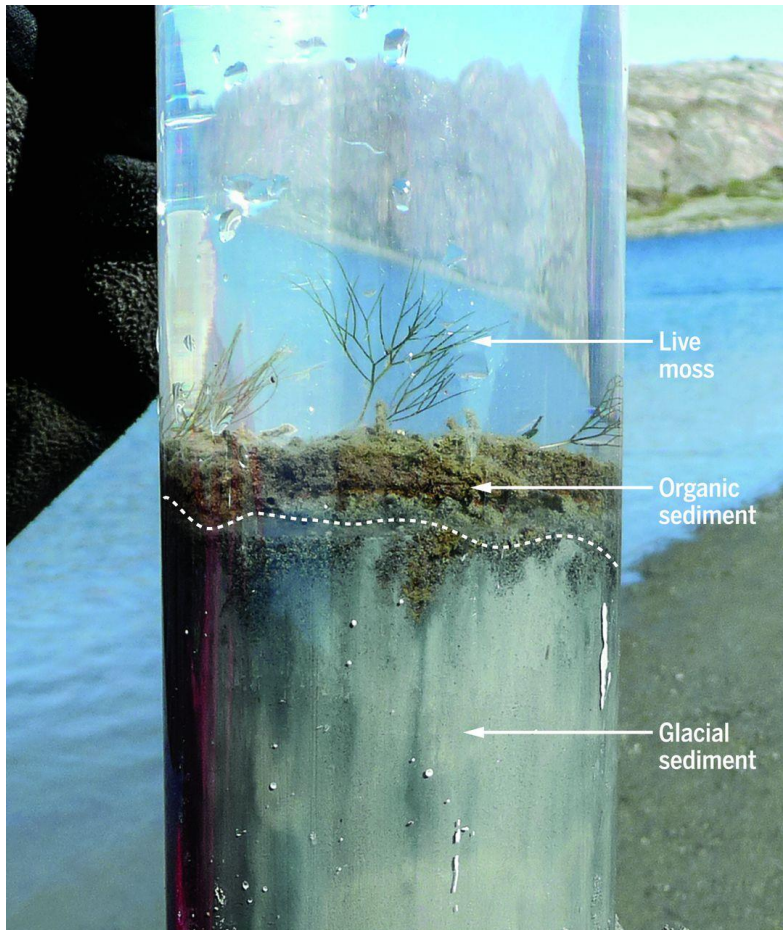


THE ROCKEFELLER
FOUNDATION

THE LANCET

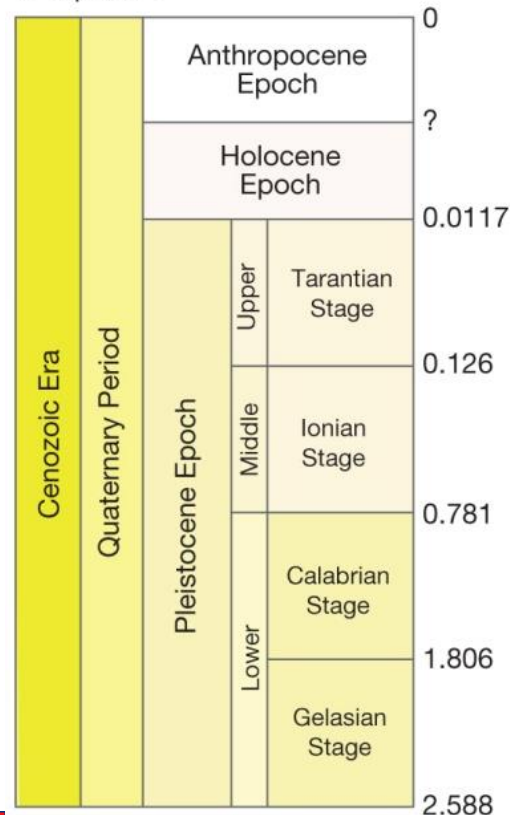


Indicators of the Anthropocene in recent lake sediments differ markedly from Holocene signatures.

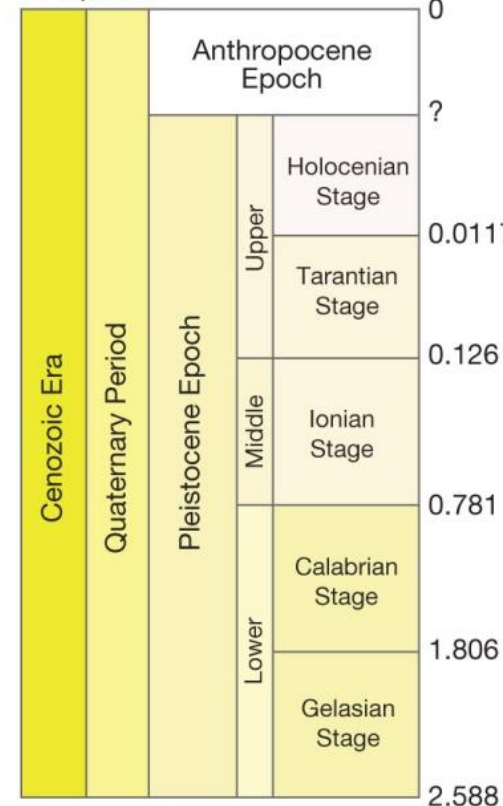


Comparison of the current Geologic Time Scale (GTS2012), with two alternatives.

b Option 1



c Option 2

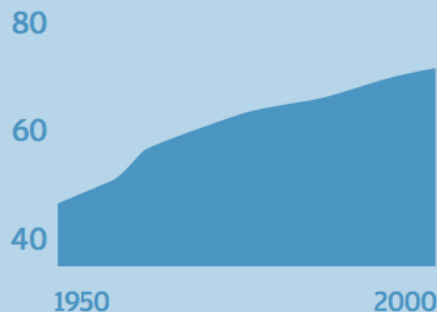




THE HUMAN POPULATION IS HEALTHIER THAN EVER BEFORE

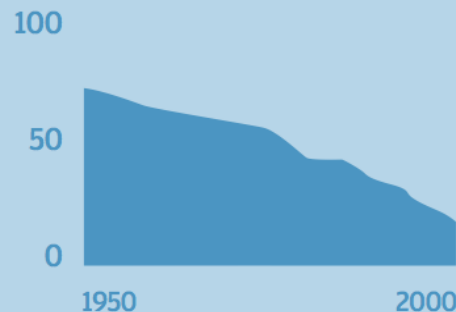
LIFE EXPECTANCY

Mean global life expectancy at birth (years)



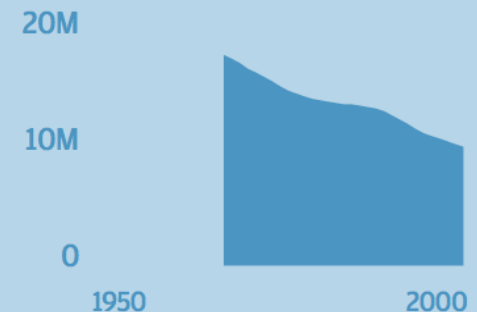
POVERTY

Population of world in poverty (%)



CHILD MORTALITY

Recorded deaths of under-fives¹



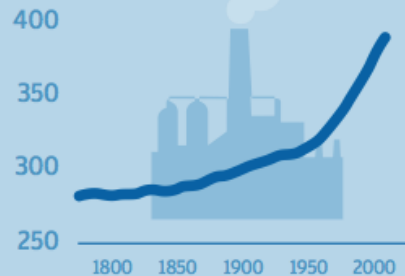
- ✓ aspettativa di vita: passata da **47 anni del periodo 1950-55 a 69 anni, nel periodo 2005-2010)** mortalità infantile: ridotta a **59/1000** negli anni 2005-2010 rispetto ai dati **214/1000** del periodo 1950-55
- ✓ riduzione del tasso di povertà nonostante l'ingente crescita demografica
- ✓ sviluppo dei sistemi sanitari e educativi
- ✓ applicazione di diritti umani universali
- ✓ sviluppo tecnologico e nelle comunicazioni



BUT TO ACHIEVE THIS WE'VE EXPLOITED THE PLANET AT AN UNPRECEDENTED RATE

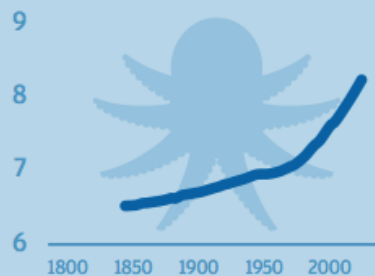
CARBON DIOXIDE EMISSIONS

Atmospheric concentration of CO₂ (ppm)



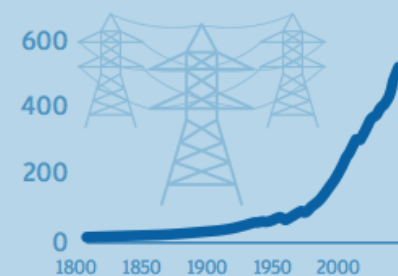
OCEAN ACIDIFICATION

Global ocean acidification (mean hydrogen ion concentration, nmol/kg)



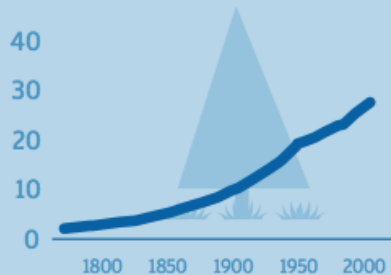
ENERGY USE

World primary energy use (EJ)



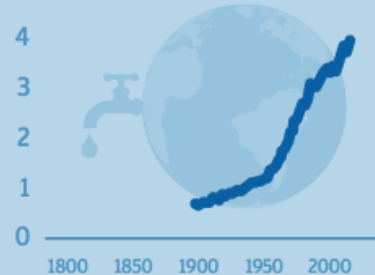
TROPICAL FOREST LOSS

Global tropical forest loss compared with 1700 baseline (%)



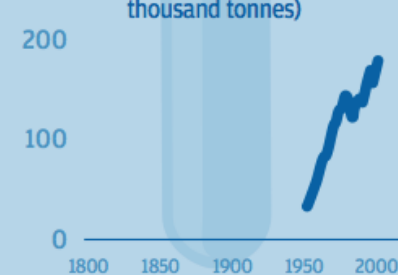
WATER USE

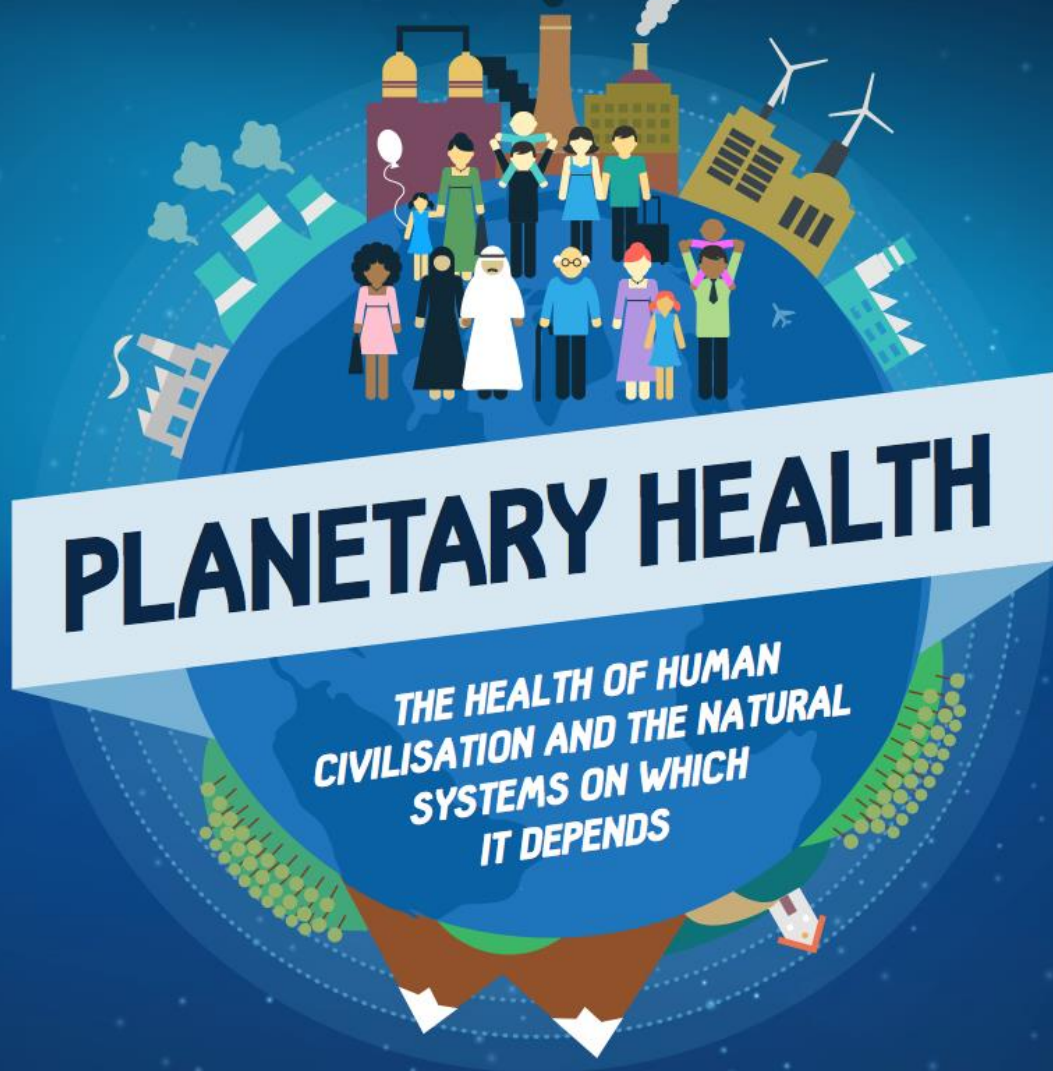
Water use (thousand km³)



FERTILISER USE

Global fertiliser use (nitrogen, phosphorus, and potassium; thousand tonnes)





- ✓ S. Whitmee et al., Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation–Lancet Commission on planetary health. 2015.
- ✓ R. Horton. Offline: Planetary health—a new vision for the post-2015 era. The Lancet, 2013.
- ✓ R. Horton, S. Lo. Planetary health: a new science for exceptional action. The Lancet, 386, 2105.
- ✓ H. Clark. Governance for planetary health and sustainable development. The Lancet, 386. 2015

Giudizio di idoneità di acque destinate a consumo umano

Industria alimentare



Trattamenti domestici



Chioschi dell'acqua



Caraffe filtranti



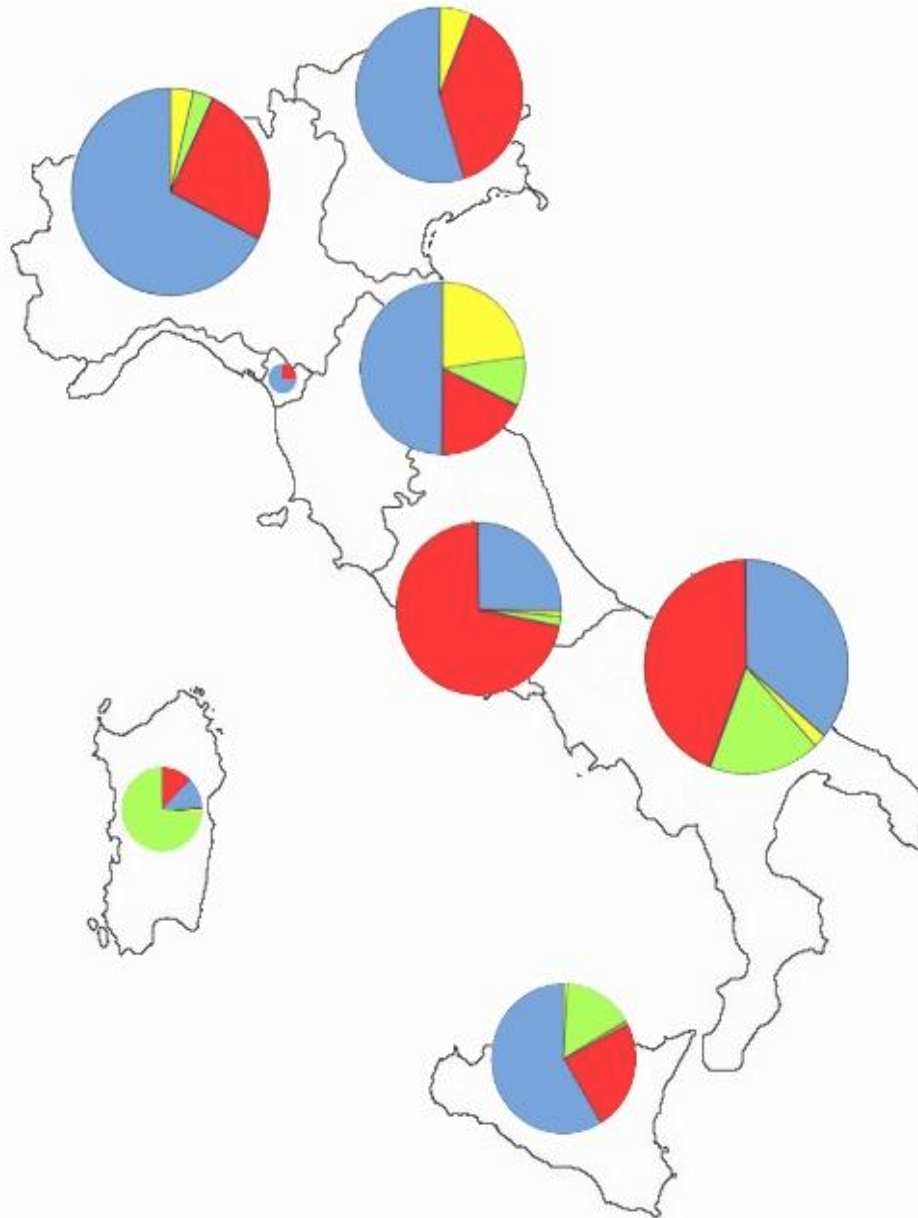
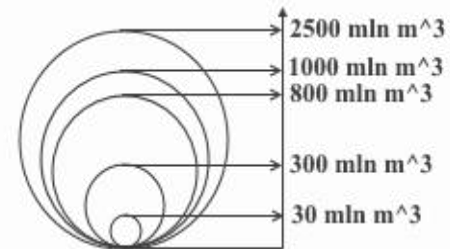
Conform
48 + x pa

Volume d'acqua distribuito o prodotto ogni giorno in una zona di approvvigionamento (Note 1 e 2) m^3	Controllo di routine — Numero di campioni all'anno (Note 3, 4 e 5)	Controllo di verifica — Numero di campioni all'anno (Note 3 e 5)
≤ 100	(Nota 6)	(Nota 6)
$> 100 \leq 1\,000$	4	1
$> 1\,000 \leq 10\,000$	4 + 3 ogni 1 000 m^3/g del volume totale e frazione di 1 000	1 + 1 ogni 3 300 m^3/g del volume totale e frazione di 3 300
$> 10\,000 \leq 100\,000$		3 + 1 ogni 10 000 m^3/g del volume totale e frazione di 1 000
$> 100\,000$		10 + 1 ogni 25 000 m^3/g del volume totale e frazione di 10 000



Legenda:

- Well
- Source
- Natural or artificial basin
- River
- Seawater/Brackish water



**Water catchment
for human consumption
(ISTAT, 2012)**

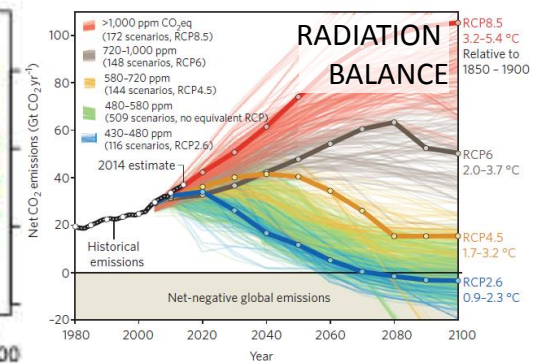
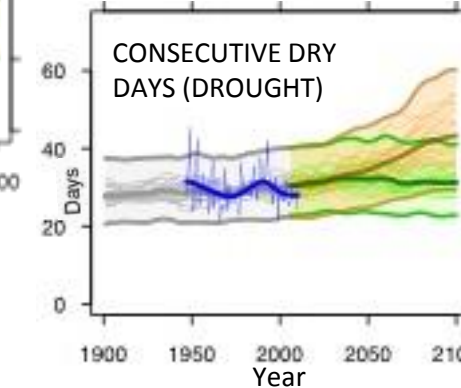
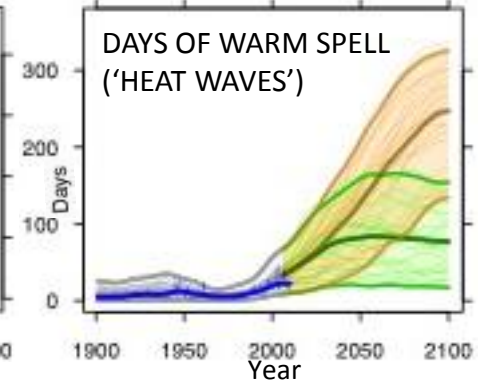
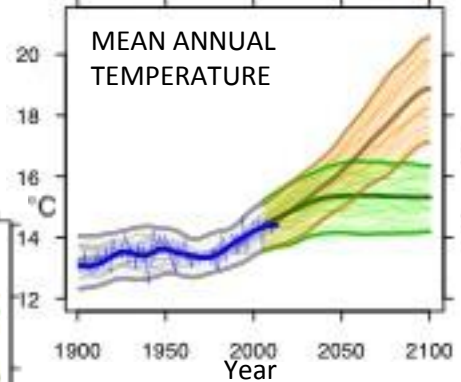
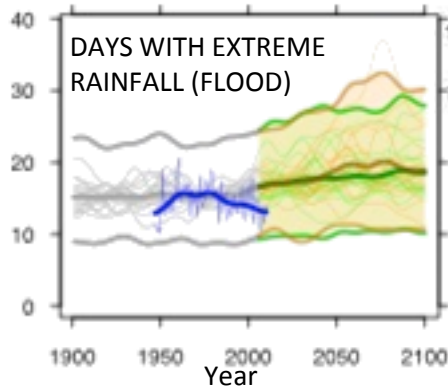
Italy: a living lab on climate and environmental changes



**some main
CC drivers**



**some main
CC effects**



High emissions scenario, representative concentration pathway 8.5 [RCP8.5] (orange), low emissions scenario, [RCP2.6] (green), annual observed record (blue), a) *Climatic Res. Unit & Tyndall Centre for Clim. Change Res., University of East Anglia, 2015.*; b) *CMCC*

- ✓ extreme climatic events seriously impacting systems and humans
- ✓ retreat of glaciers, coastal erosion, reduction in agricultural production, forest fires, desertification
- ✓ changing distribution of flora and fauna degrading biodiversity
- ✓ depletion of air quality, particularly in urban setting
- ✓ lacks in water access, deficit of safely managed water supplies, sanitation and hygiene
- ✓ re-emergence of previous/past endemic agents
- ✓ exotic communicable diseases, e.g., dengue, chikungunya, zika, crimea congo fever, west nile fever or blue tongue

Giudizio di idoneità di acque destinate a consumo umano

Industria alimentare



Trattamenti domestici



Chioschi dell'acqua



Caraffe filtranti

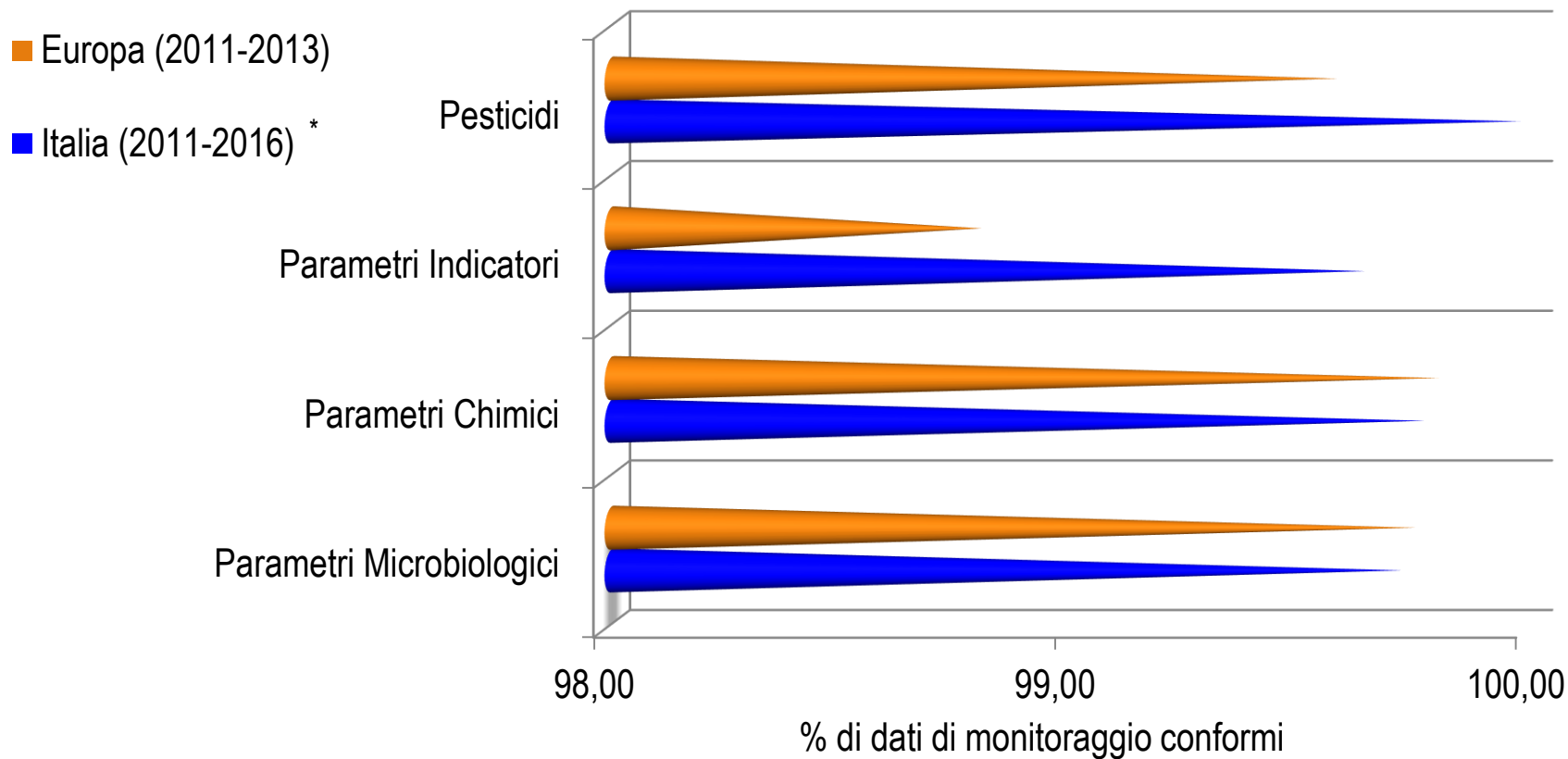


Conform
48 + x pa

Volume d'acqua distribuito o prodotto ogni giorno in una zona di approvvigionamento (Note 1 e 2) m ³		Controllo di routine — Numero di campioni all'anno (Note 3, 4 e 5)	Controllo di verifica — Numero di campioni all'anno (Note 3 e 5)
≤ 100		(Nota 6)	(Nota 6)
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> 10 000	≤ 100 000		3 + 1 ogni 10 000 m ³ /g del volume totale e frazione di 1 000
> 100 000			10 + 1 ogni 25 000 m ³ /g del volume totale e frazione di 10 000



Water quality



Possibly underestimated

- Small water suppliers (< 5.000 inhabitants)
- Risks due to domestic networks
- Parameters other than those of routine monitoring

* Partial data (ca. 65% for 2013-16)

... it is everything under

Some “reasoned opinions” on drinking water quality by ISS* (2009-2016)

- Cyanobacteria - toxins
- Organochlorides
- Chromium VI
- Aromatic compounds
- Vanadium
- Dinitrotoluene
- ◆ Legionella
- ◆ Suspected deliberate contamination
- Uranium
- Thallium
- ✂ Perfluoroalkyl compounds
- ◆ Aromatic amines
- Hydrocarbons
- *P. aeruginosa*
- Norovirus
- Manganese
- Aluminium
- Other indicator parameters
- Arsenic



* Episodes of alert related to concern of water contamination

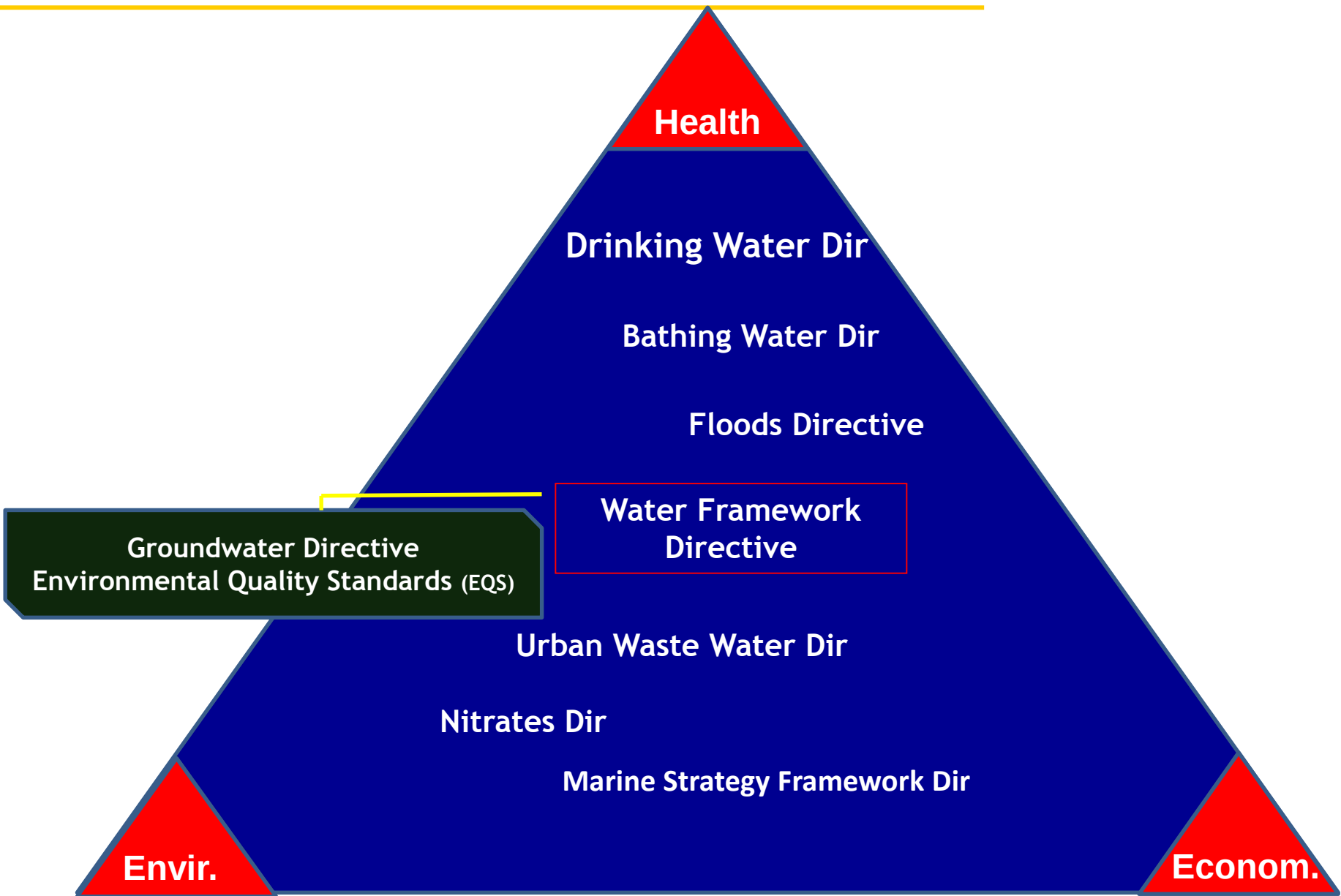
Metals & organochloride contamination (Bussi sul Tirino - Abruzzo Region)

Hazards	Heavy metals, > 20 organochlorides (8 carcinogenic)
Pollution sources	Huge ancient landfills (inside and around an industrial site) progressively grown in number and side
Duration of pollution phenomena	> 50 yrs
Water contamination and uses	groundwater, surface water, drinking water
Exposed population	> 700.000
Emerging of phenomena	2005 – Groundwater monitoring by Environmental authorities, in compliance with dir 2000/60/EC
Main prevention control gaps (before emergency)	Lack of monitoring (before dir 2000/60/EC related actions)
Risk Management	Drinking water treatment & changes of drinking water catchment
Polluter payment	Yes: Tribunal condemned responsible of contamination for “human poisoning” since the pollution of an environmental matrix (because underground water constitutes a source of water supply)
Follow-up	Legal actions. Possible retrospective health impact assessment: Epidemiological study (currently under feasibility assessment)
Costs	1.800.000.000 €

PFAS contamination (21 municipalities in Veneto Region)

Hazards	Polyfluoroalkylated substances (PFAS): highly resistant persistent compounds, wide diffusion; impact on human health: pregnancy complications, thyroid diseases, increasing cholesterol, possible cancer
Pollution sources	Industry (1968-on course) producing pesticides, pharmaceuticals, and PFAS
Duration of pollution phenomena	Unknown (possibly 20 yrs)
Water contamination and uses	Groundwater, surface water, drinking water
Exposed population	ca. 120.000.
Emerging of phenomena	2013 – Environmental Research project
Main prevention control gaps (before emergency)	Lack of specific limits for PFAS in wastewater; Lack of environmental monitoring; Lack of lesson learnt (similar phenomena in 1977); Lack of sharing of information environmental/health authorities
Risk Management	Drinking water advanced treatments; changes of drinking water catchment (in progress)
Polluter payment	Investigation in progress
Follow-up	Restrospective health impact assessment (biomonitoring, epidemiological study and monitoring follow-up), Intersectoral cooperation and risk communication strategy. Health Surveillance Plan. Water safety plans (emphasis on hazardous events related to waste disposal in water recharging areas)
Cost	> 6.000.000 €

Objectives and impact of EU Water legislation



Ambiente, Acqua e salute: *pericoli e rischi ambientali ed esposizione umana*



Pericolosità intrinseca, presenza nell'ambiente, concentrazione, attività biologica, destino ambientale



Miscelazione & diluizione



Volatilizzazione



Adsorbimento



Ambiente chimico



Degradazione biologica



Vulnerabilità suolo



Captazione



Trattamenti di potabilizzazione e distribuzione



Distribuzione

Esposizione umana:



- Consumo
- Igiene personale e domestica
- Uso potabile
- Usi agricoli, zootecnia, produzione alimentare
- Usi ricreazionali, esposizione professionale, ecc.

captazione

>> sorgenti d'acqua

superficiali

sotterranee



rischi tenuti sotto controllo

- >> agenti naturali
(es. arsenico, fluoro)
- >> contaminanti
da attività umana
(es. nitrati, pesticidi,
rifiuti industriali)

potabilizzazione

>> ciclo di trattamento

chiariflocculazione



filtrazione
(sabbia,
carboni attivi)

disinfezione
(cloro, ozono)



rischi tenuti sotto controllo

- >> materiali
- >> prodotti
- >> processi

distribuzione

>> rete acquedottistica

>> contatore

>> distribuzione domestica



rischi tenuti sotto controllo

- >> agenti chimici rilasciati
da tubature domestiche
(es. piombo)
- >> biofilm
(es. Legionella)

restituzione
all'ambiente

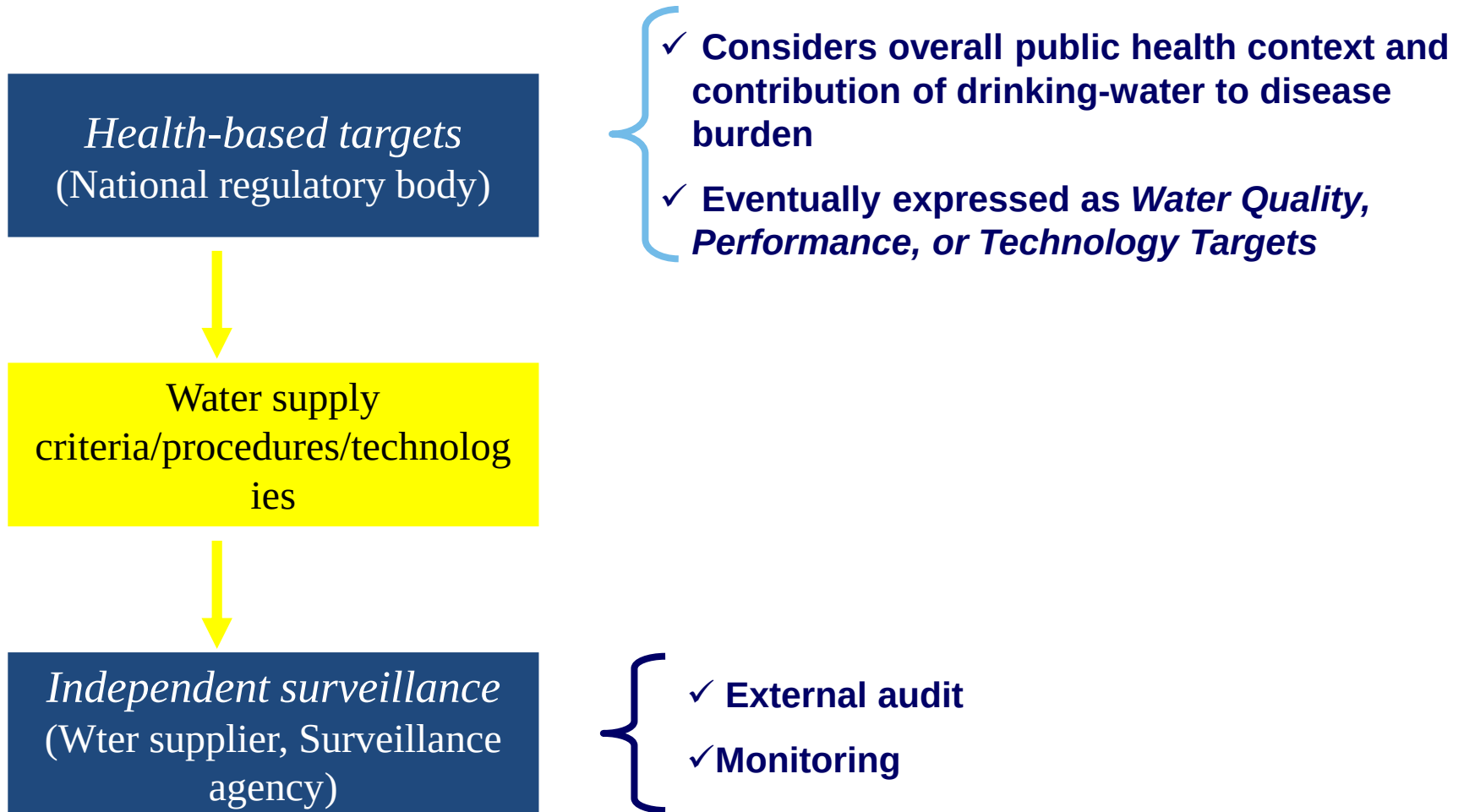
depurazione

fognature

a cura di
Istituto Superiore di Sanità

Servizi Attività Editoriali e Dipartimento di Ambiente e Comunità Prevenzionale - Firenze
in collaborazione con ISPES

Current Framework for Safe Drinking Water:



Sicurezza igienico-sanitaria delle acque destinate a consumo umano (D.Lgs. 31/2001 e s.m.i.)

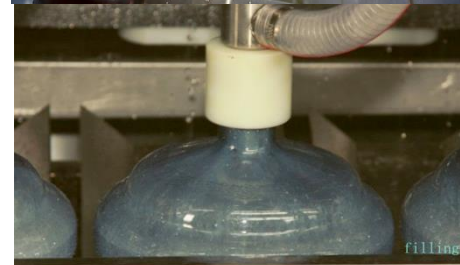
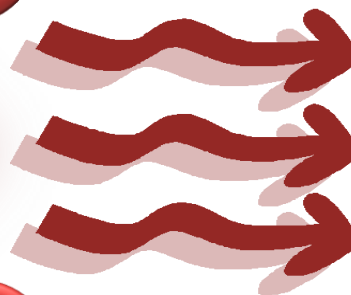
criteri e procedure consolidate nelle fasi di captazione-potabilizzazione-distribuzione

protezione della qualità delle acque captate

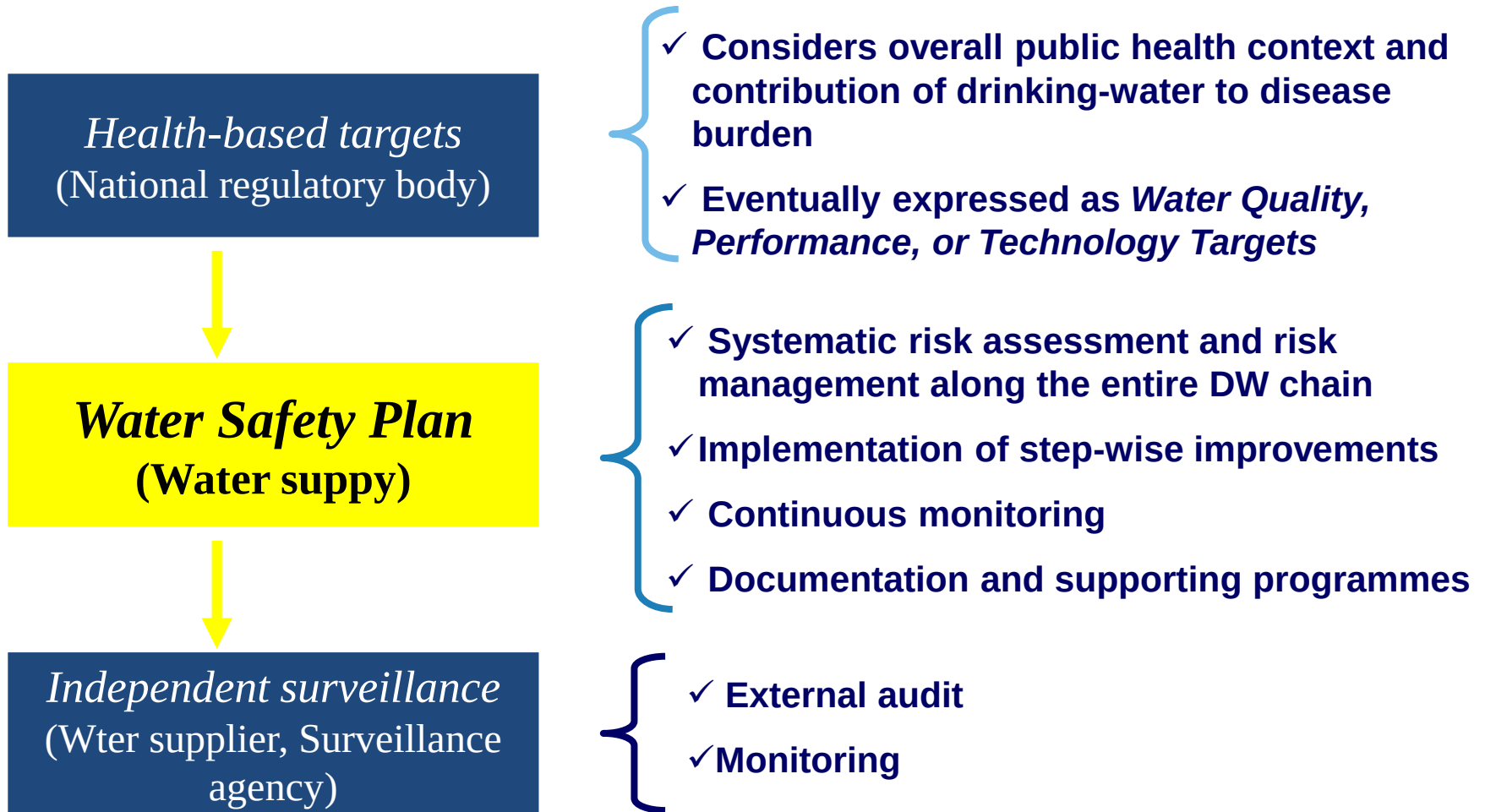
**controlli interni
&
controlli esterni**

efficacia e sicurezza dei sistemi di trattamento (mitigazione da rischi potenzialmente associati alla risorsa idrica d'origine o alla distribuzione)

garanzia igienica degli impianti di distribuzione che forniscono acqua ai consumatori finali

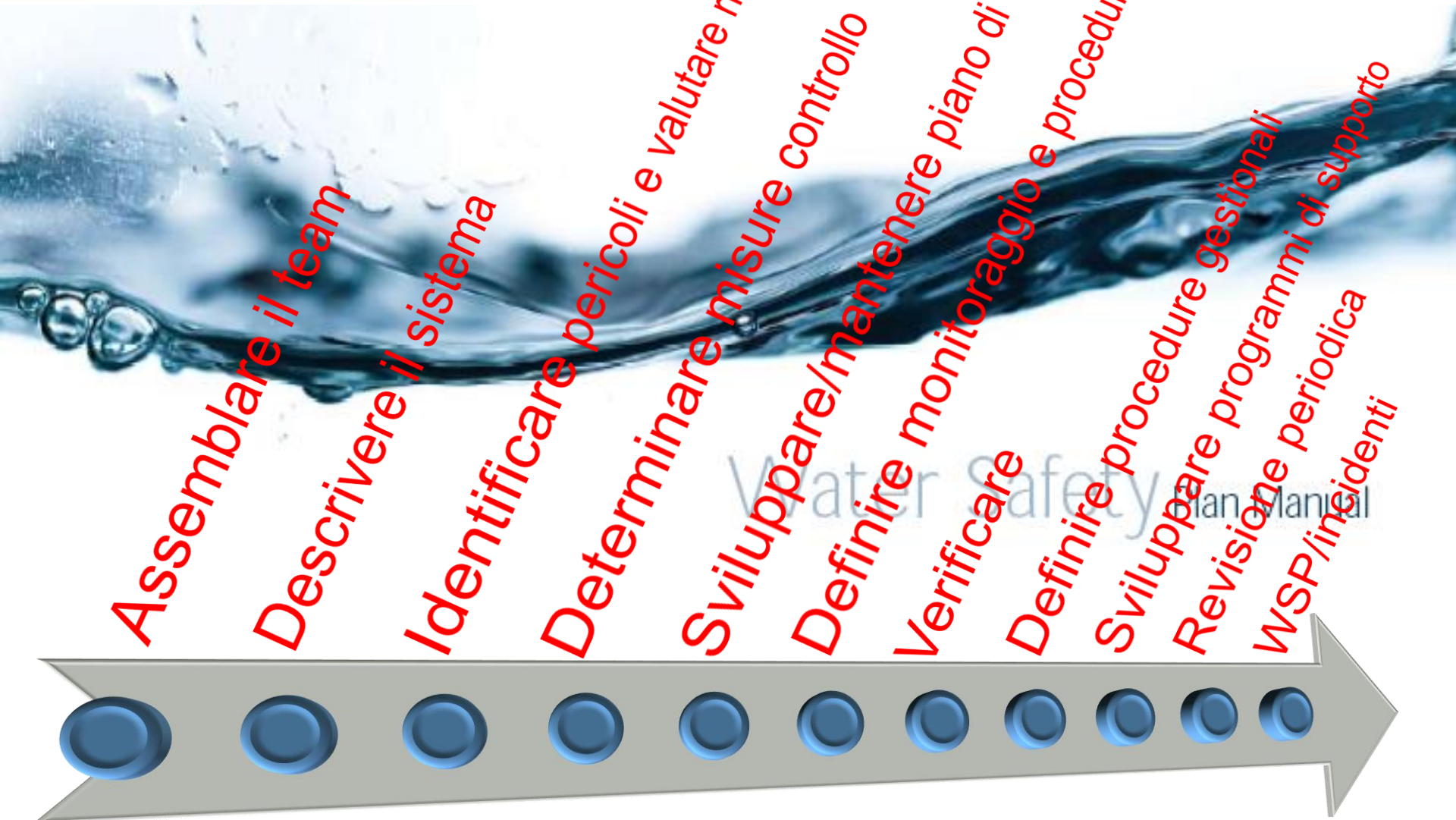


Current Framework for Safe Drinking Water:



Gestione di non conformità in acque destinate a consumo umano (caso tipo)







RAPPORTI ISTISAN 14|21

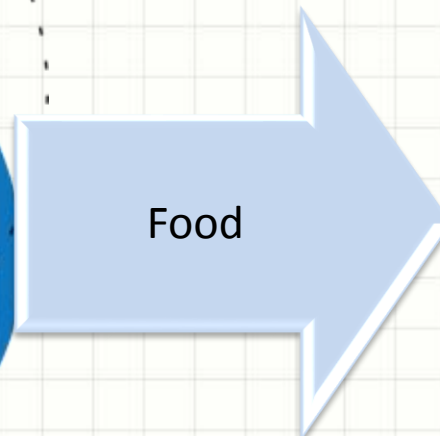
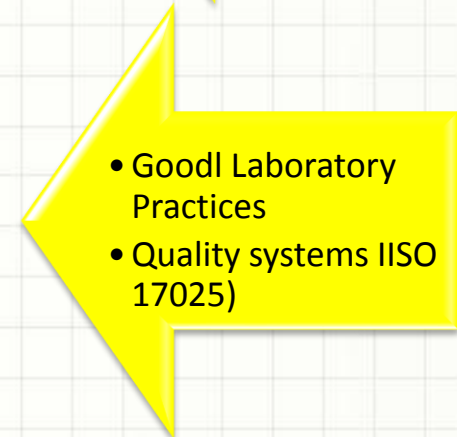
ISSN: 1123-3117 (cartaceo) • 2384-8936 (online)

**Linee guida per la valutazione
e gestione del rischio nella filiera
delle acque destinate al consumo umano
secondo il modello dei *Water Safety Plan***

A cura di

L. Lucentini, L. Achene, V. Fuscoletti, F. Nigro Di Gregorio e P. Pettine

The evolution of safety: from checking quality of samples to ensure safety during the process (along the chain)



Hazard Analysis & Critical Control Points

Water Safety Plans

Analisi di rischio
sull'intera filiera per
garantire prodotti sicuri

Produzione alimentare

- Processi prevedibili e controllati
- Controllo dell'ambiente e delle risorse umane coinvolte
- Prodotto progettato e realizzato riproducibile
- Variabili di processo note e controllabili
- **CCP!**
- Utilizzo previsto
- Data di scadenza
- Rintracciabilità del lotto
- Una via di esposizione

Filiera idro-potabile

- Processi limitatamente prevedibili e controllati
- Variabili ambientali e risorse umane limitatamente controllabili
- Prodotto progettato e realizzato non riproducibile
- Variabili di processo solo parzialmente note e controllabili
- **Controllo multibarriera**
- Diversi prodotti (acqua, ghiaccio, vapore, acqua calda sanitaria, ecc.)
- Nessuna data di scadenza
- Nessun lotto
- Molteplici vie di esposizione

Introduzione dei PSA nei sistemi di gestione idro-potabile: superare criticità dell'attuale sistema di controllo sulle acque



prevenire efficacemente emergenze idro-potabili dovute a parametri non oggetto di ordinario monitoraggio, considerando anche gli scenari di cambiamento climatico



(ri)definire le “zone di approvvigionamento idrico” attraverso una identificazione aggiornata delle filiere idro-potabili



potenziare la condivisione di informazioni e dati, come espressione della dovuta diligenza, tra gli organi che per diversi ambiti di competenza operano monitoraggi



consentire una partecipazione più consapevole e attiva delle comunità locali ai sistemi di prevenzione e controllo delle acque nei diversi territori



realizzare banche dati costantemente aggiornate dai soggetti del territorio

ALCUNI INTERVENTI

ISS IN PSA



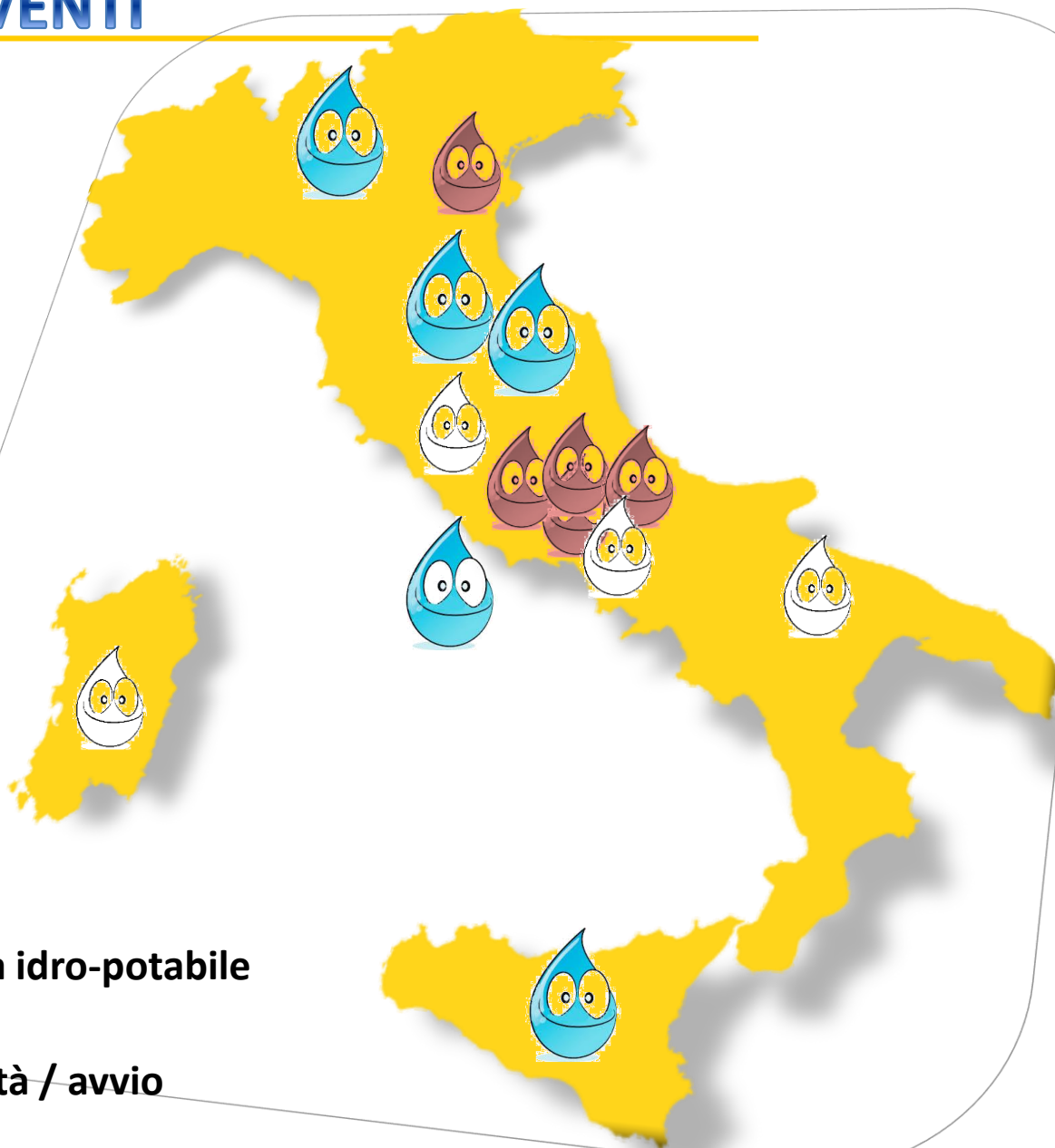
Iniziativa gestore

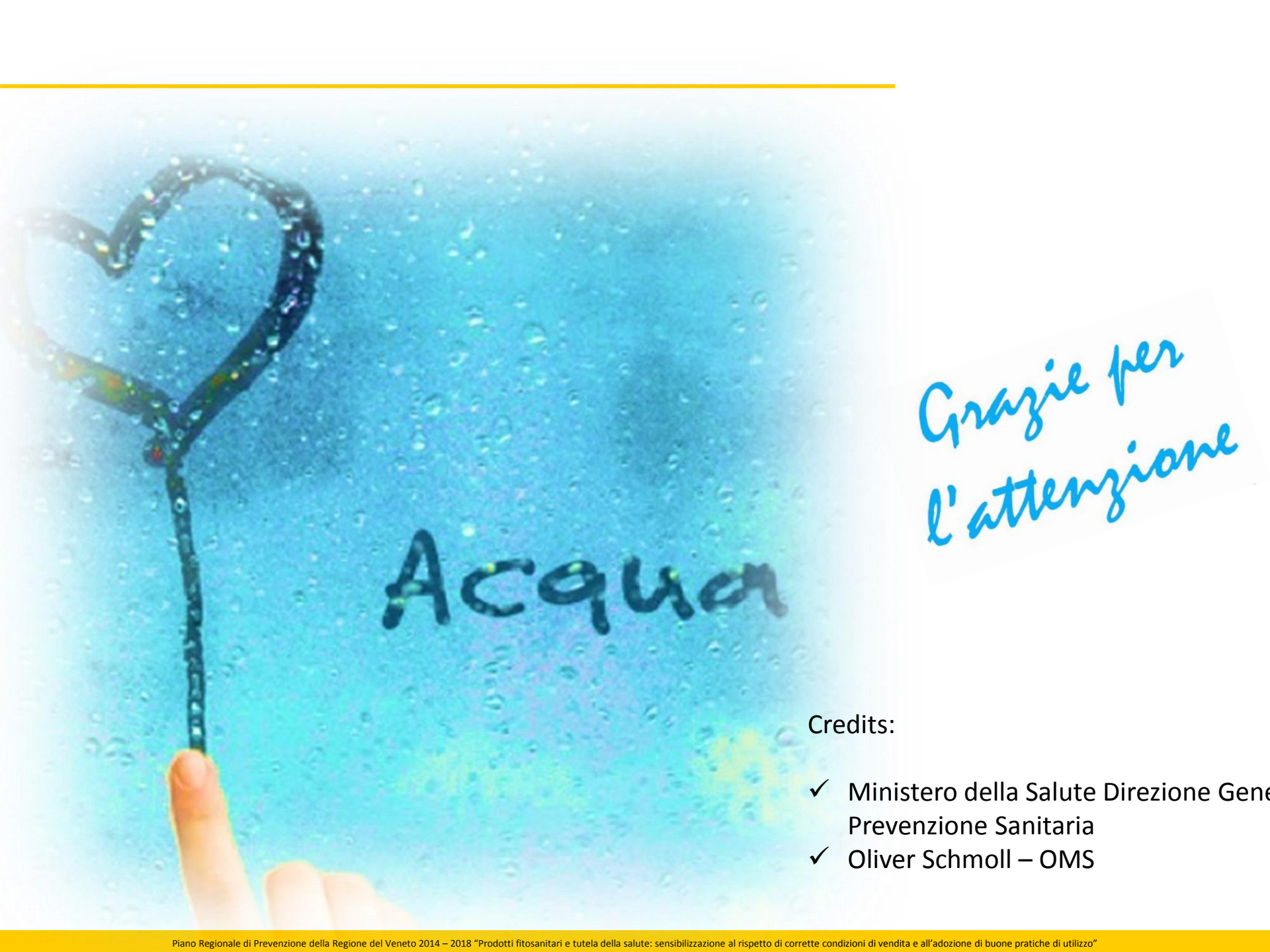


Seguito emergenza idro-potabile



Studio pre-fattibilità / avvio





*Grazie per
l'attenzione*

Acqua

Credits:

- ✓ Ministero della Salute Direzione Generale Prevenzione Sanitaria
- ✓ Oliver Schmoll – OMS