

T8 • One Health, One Water

1. BACKGROUND

“One Health One Water” concept cuts across integrated governance of resources, influencing food quality and availability, environment as it is shaped and ecosystems balances. While “One Water” promotes an integrated and holistic approach aiming to manage all water resources as a single connected system, “One Health” recognizes that the health of humans, animals, plants, and ecosystems is interdependent. Natural ecosystem, agroecosystem health and human health are functional mirrors of one another. Water has an irreplaceable ecological, social and territorial meaning, it is “unique” in time and space, and so is health as a fundamental and indivisible common good. Bringing these two paradigms together offers an adaptive framework for the Euro-Mediterranean region. “One Health One Water” understand that water management choices directly impact on public and individual health.

The ongoing water crises is insidiously worsened by compounding water-related health threats: antimicrobial resistance, chemical and pharmaceutical contaminations, zoonotic disease emergence. Furthermore, extreme weather events are amplifying vulnerabilities of ageing water and sanitation infrastructure and exposing inequalities in access to safe water and healthy environments. By adding “Health” as a water governance key output, we humanize the action framework recognising that human wellbeing and natural and social-ecological systems are strictly entwined, giving a purpose to the efforts in protecting water resources. Rethinking environmental and economic metrics, with a focus also on “One Health One Water”, introduces the values of dignity, personal autonomy and preservation of a healthy life among the criteria for evaluating political actions, public investments and the usefulness of subsidies.

“One Health One Water” emphasizes that water security, ecosystem integrity, food systems, sanitation, public health, biodiversity, and climate resilience must be addressed jointly rather than through siloed approaches. If the water is contaminated or the food is nutrient-poor, scarce or unsafe, the degradation of our health is the final evidence of a failed management system. This perspective is also consistent with the European focus on water resilience, looking to ensure water security and water-related disasters preparedness. The WHO/UNECE Protocol on Water and Health provides a key policy framework to connect water governance, prevention, public health and preparedness.

The way is being traced to reshape the cultural, regulatory and technical framework for health prevention and water resilience across different water uses. As such, the EuroMediterranean Water Forum provides a strategic platform to advance this integrated agenda by strengthening the science-policy interface, cooperation between Mediterranean and European stakeholders, including governments, research institutions, utilities, public health authorities, civil society, financial institutions, and regional organizations.

2. KEY CHALLENGES AND OBJECTIVES

The “One Health One Water” approach need to become a multisectoral and transdisciplinary model that recognizes and manage the complexity of modern public health protection, directly or indirectly entwined with water quality and food safety. A challenge increasingly goes beyond borders and sectors, requiring integrated and cooperative large-scale responses. The objective is to reposition water governance from an engineering sector to the cornerstone of regional biosecurity and environmental equity. By embedding health aspects, besides epidemiological and ecotoxicological metrics, directly into water resource management and capital market structures, Euro-Mediterranean states can systematically reduce the incidence of water-related diseases, curb the environmental spread of persistent chemical pollution, and protect critical biodiversity hotspots. The EuroMediterranean Forum calls for moving from governance and operation made under strict fiscal constraints ignoring the long-term public health externalities.

The application of the “One Health One Water” concept presents different implications depending on the situations in which it is confronted with reality. At the planning and management stage, the introduction of guiding criteria is crucial to foster a vital, large-scale, systemic approach. The application of the concept in risk analysis, prevention and disaster management plans is essential for effective emergency responses. The valorisation of the direct and indirect benefits resulting from its application is utmost needed to mobilise resources and create financial opportunities.

Challenge 1 • Water and Health nexus systemic management

Large part of water sources contains ubiquitous toxic pollutant carrying vectors, as microplastics, resulting in magnification and accumulation of toxic compounds, while emergent contaminants compromise antibiotics efficacy or cause endocrine disruption. This unprecedented influx of complex anthropogenic pollution into shared hydrological networks, undermines efforts at safeguarding public health and water resources. To counteract the pervasive distribution and eco-toxicological impacts of these compounds, which bypass conventional wastewater treatments, structural and systemic measure are needed. Because these pollutants cross borders via transboundary aquifers and surface currents, localized regulatory frameworks are insufficient; a unified, basin-wide “One Health One Water” based ecohydrological mitigation strategy is required. Even green infrastructure design and water governance should integrate “One Health One Water” criteria to avoid the primary risk associated with the potential for creating stagnant or slow-moving water bodies that serve as breeding sites for disease-carrying vectors. To provide measurable outcomes, “One Health One Water” need to be broadly integrated into the decision-making process, resource governance and infrastructure design achieving large-scale systemic management.

Challenge 2 • “One Health, One Water” concept as part of emergency responses

“One Health One Water” criteria application proved essential during crisis, when drought and floodwaters compromise surface and wells water quality. A single unmanaged climate event can ripple through the entire water/food/environment system. Drought deteriorated water/health nexus by concentrating contaminants, while surveys in flood-impacted areas show that flooding events can transform water resources into a public health crisis, and water infrastructures into diseases hotspots. In flooded areas, risk threshold for gastrointestinal

infection and other water-borne illnesses has been found far over safety limit. The long-term effects on soils and food chains have been not assessed yet, but the large quantities of chemicals of diverse nature carried by flood water does not bode well. During rainfall periods or early season heat waves, green infrastructures as wetlands and ponds, when not carefully designed and governed, can inadvertently become the cradle of vector-borne diseases responsible of diffusion of serious tropical illnesses, already on their way to become autochthonous in south Europe. The human health implications of this ecohydrological breakdown are direct and severe. Resolving these crises requires a complete overhaul of risk assessment and emergency plans. Keeping “One Health One Water” on focus, involves integrating human and ecosystems health into the security dialogue.

Challenge 3 • Maximise “One Health, One Water” direct and indirect benefits

Riverwalks and riverfront green spaces have the capability to improve community mental health by serving as nature-based solutions that facilitate psychological restoration, reduce environmental stressors, and provide structured therapeutic interventions. This novel therapeutical approach is currently being codified into international law and multi-agency strategy, driving a transition from reactive medicine to proactive systems management for health. Political narrative widely recognizes that Mediterranean diet and high food quality serves as a health protector. Thereby, Mediterranean areas with chronic water poverty must be avoided to turn into disruptive losses in food safety and sovereignty, as this represents a direct risk to human health. Under a circular economy model, municipal and industrial wastewater streams are no longer viewed as environmental liabilities requiring dilution or discharge. Instead, they represent vital, predictable volumes of non-conventional water that can be reclaimed for agricultural production or to maintain critical environmental flows in drought-stressed river basins. Furthermore, the systematic extraction of phosphorus, nitrogen, and organic carbon from sewage streams mitigates downstream eutrophication while providing localized agricultural inputs, effectively insulating the Mediterranean agrarian sector from volatile global fertilizer supply chains. These direct and indirect benefits are the basis of a “One Health One Water” economy that must materialize in markets able to transform water resources devoted to eco-hydrological health preservation into rewarded ecosystem services and marketable products/services.

3. GUIDING QUESTIONS

- To transform “One Health, One Water” in an actionable management model require breaking down silos, moving toward intersectoral extended coordination involving principal stakeholders. What are in your opinion the three most effective approaches to easier “One Health, One Water” uptake in the everyday practice? Can you describe it, providing examples if possible?
- The spread of pervasive pollutants represents a clear example of a multisectoral failure in protecting water, ecosystems, and human health, that expose a systemic breakdown in environmental safety of products and waste management. How we can transform “Zero Pollution”, “Extended Producer Responsibility” and “Food System Sustainability” principles from a bureaucratic entity into a transdisciplinary engine capable of achieving a tolerable “One Health, One Water” risk level?
- “One Health, One Water” decisions that come with profound socio-economic impacts, while producing direct and indirect benefits. Nevertheless, significant infrastructural and organizational changes are to be foreseen to attain a widespread application of the concept. What kind of economic and financial instruments could be applied to support the “One Health, One Water” nexus implementation?

4. EXPECTED OUTCOMES

Outcome 1

The panel aims to pressure policy to step forward from plain environmental narrative, recognising water and health nexus as both a central determinant and the ultimate culmination of sustainable water resource management. Human wellbeing must be the core of water/food/environment governance. That respect, the correct management of the health/water nexus and of the cascading effects on food quality, safety and availability has to become in the next future the cornerstone of environmental water management. Panel discussion will address the granular operationalization of soft-law mechanisms and polycentric coordination networks as well necessary to bridge fragmented statutory authorities by removing silos. Aiming to promote more coherent and actionable policies, the panel outcomes will address how to catalyze this dialogue and position into action bringing the Mediterranean Basin and Europe at the forefront of advancing resilient, sustainable, and health-centered water governance.

Outcome 2

The proposed discussion is expected to contribute to the identification of regional priorities and existing/possible collaborative initiatives. Besides, recommendations for integrated policy and governance approaches and for an active partnership between water and health communities will provide inputs for future EuroMed and EU regional frameworks on water resilience and public health.

Outcome 3

To achieve a “One Health One Water” management is necessary to increase investment in enhanced capacity for local human and animal health surveillance and for clear, timely information-sharing aimed to react to real risks though avoiding blanket application of precautionary principle. To mitigate compounding pollution vectors, Euro-Mediterranean infrastructure must undergo a shift in conceptual and operational approaches. As an example, public sewage services must be decoupled from the historical “disposal paradigm” and redefined as a proactive resource service. To support that effort investment in resilient, inclusive, and nature-positive water systems must be encouraged, as well as innovative finance/economic instruments as, i.e., eco-hydrologically bound debt mechanisms will be discussed. The panel will provide experts’ insights on how to ensure that the circular water economy directly funds and sustains “One Health One Water” implementation.