Deltares ADB

EVENT SNAPSHOT

Part 2 – Understanding Disease Transmission and Health Risks through Water Systems

Event Details

Date and Time
25 August, 3:00–4:00 p.m. (Manila time)

Venue
Zoom

Related water subthemes

x	Water supply, sanitation, and wastewater	x	Flood/drought risk management and disaster resilience
x	Irrigation and productivity	x	Water governance and finance
x	IWRM, storage, water-food-energy nexus	x	Water and health

For the second part of the series, Dr. Eline Boelee, senior researcher and advisor for water-environment-health interlinkages at Deltares, discussed how an integrated approach contributes to the understanding of health risks in water systems. She focused mainly on freshwater systems, looking at drivers, pressures, state, impact, and responses. Boelee also provided examples of innovative monitoring and modelling used in forecasting and preventing health risks and spread of diseases.

The topic, she noted, has been growing globally, and now more so with the ongoing coronavirus disease (COVID-19) crisis. Given that many aspects in water and health are closely linked, the use of integrated system approaches is recommended, rather than focusing on individual diseases or compounds. She added that this requires interdisciplinary tools that can be facilitated through the One Health approach. This is a useful umbrella that brings together scientists and practitioners in human health, veterinary health, and environmental health—internationally and in many countries. The One Health approach would benefit from strong engagement by the water sector, which already has cross-sectoral experience through integrated water resources management.

Over 130 participants attended the session.

Key Takeaways

Health risks from water systems are diverse, complex, and inter-related. Exposure to emissions from industry, cities, and food production can bring health risks and disease. Interactions between water quality, climate change, and ecology can lead to changes in transmission of water-related diseases, including those transmitted

by mosquitoes or other vectors. Examples include harmful algal blooms, anti-microbial resistance, and the multidimensional health risks of plastic waste in water.

Innovative monitoring and modelling of pollutants and pathogens provide insights into water-related health and disease risk. Innovative monitoring of pollutants and pathogens in water and subsurface, such as the use of passive samplers, mobile qPCR and citizen science, provides useful information, complementary to existing databases. By combining 'trains' of models, more insight is gained into the fate, transport, interaction and future risk of pollutants, pathogens, and vector-related diseases.

A better understanding of the health risks in water systems and the related burden of disease supports co-management of water and public health. Early warning, predictions, and projections of the burden of disease in water systems can guide co-management. Environmental responses, particularly interventions in water management, have the potential to address drivers, pressures, state, and impact caused by various pollutants, pathogens, and vector-related diseases.

> **"As many aspects in water and health are inter-related, the focus should be on using integrated system approaches, rather than on individual diseases or compounds. This requires interdisciplinary tools that can be facilitated by mainstreaming the One Health approach."**
>
> — Dr. Eline Boelee

About the Speaker

Eline Boelee
Senior Researcher and Advisor (water-environment-health interlinkages), Deltares
eline.boelee@deltares.nl

Dr. Eline Boelee is an all-round interdisciplinary scientist in water-health-ecosystems interlinkages, with 28 years of experience in health and environmental impacts of water resources use and management, ranging from irrigation to drinking water supply and sanitation. This includes ecology and environmental control of water-related diseases, One Health approaches, and multiple use water services. She lived and worked for several years in Asia.

Related Resources

Human health needs knowledge about water and the subsurface
https://www.deltares.nl/en/issues/human-health-needs-knowledge-about-water-and-the-subsurface/

Water and health: From environmental pressures to integrated responses
http://dx.doi.org/10.1016/j.actatropica.2019.03.011