



Welcome to the first edition of the **SPRINGS project Newsletter**

Welcome to the first edition of SPRINGS Watch, the newsletter of the SPRINGS project, an EU-funded initiative tackling the impact of climate change on waterborne diarrhoeal diseases. Over the next five years, our scientists will share updates and insights in these bi-annual editions, keeping you informed on the project's progress and outcomes.

In today's edition, you'll read about the latest developments in the SPRINGS project and our upcoming meeting in Ghana. We also highlight our ongoing research in our case studies and the recent events we've attended, along with insights into the implications of climate change for the pathogens we've selected and their impact on public health.

Enjoy your read!

But first, let's read a message from Vanessa Harris, the project coordinator.

A message from



Vanessa Harris, Project Coordinator

As SPRINGS reaches its first year, we're encouraged by the early progress we've made toward our scientific goals. Across our case study sites in Ghana, Romania, Tanzania, and Italy, teams have been gathering crucial climate, water, and health data that will help us understand the varied impacts of environmental changes on waterborne diarrhoeal diseases. By studying these diverse settings, we hope to build the evidence base needed to prioritise interventions to prevent waterborne diarrheal disease in communities facing growing climate hazards. We are inspired by interventions that cross environmental, animal, and human health sectors. It's an exciting start, and we look forward to continuing this important work with our partners.



Project milestones

SPRINGS Project Consortium gathers in Naples, Italy 🇮🇹

In April, consortium members from 15 partner organisations gathered in Naples, Italy, for the SPRINGS project's first in-person meeting since its launch. Hosted by the University of Naples Federico II, the event included 35 participants from diverse fields like climate science, hydrology, and health. Discussions focused on aligning expertise with scientific goals, particularly in climate data modelling and downscaling, which are crucial for understanding the impact of climate change on waterborne diarrhoeal diseases.

Presentations highlighted four case studies from Romania, Ghana, Italy, and Tanzania, providing valuable insights into climate change implications. Participants also engaged in strategy sessions to outline methodologies and identify next steps, while beginning stakeholder mapping for policy integration. Led by project coordinator Vanessa Harris, the meeting underscored the importance of collaboration and strategic planning for the project's success.

👉 [Read the full article.](#)



Updates from ongoing case studies 🔍

On-site in Ghana: SPRINGS project advances case study in Akuse

The SPRINGS project team, including [Vanessa Harris](#), [Francis Ruiz](#), [Adelina Mensah](#), and [Ted Nii Yemoh Annang](#) — visited Akuse, a project case study site in Ghana's Lower Manya Krobo district. The visit focused on reviewing progress, building partnerships and preparing for upcoming diarrheal and water surveillance efforts. In Akuse, the team connected with local stakeholders and visited key sites, such as the Akuse District Hospital and a primary healthcare clinic along the Volta River. These visits offered valuable insights into how the SPRINGS project can further support the region's water and health needs. A key highlight was a workshop on Quantitative Microbial Risk Assessment (QMRA) and water safety planning, conducted by [Lucie Vermeulen](#) from project partner [RIVM National Institute for Public Health and the Environment](#). This workshop brought together local authorities, community leaders, and representatives from the Ghana Water Company to discuss strategies for strengthening water management.

👉 [Click here to read our article about this visit.](#)

Updates on Romania, Ghana, and Tanzania

Our Global Climate and Local Impacts team is actively collecting rainfall and temperature data from Romania and Ghana. Team members, including Rasmus Benestad, are in discussions with the [Ghana Meteorological Agency](#) for data access, while [Shreedhar Maskey](#) ([IHE Delft Institute for Water Education](#)) and [Rik Oldenkamp](#) ([Vrije Universiteit Amsterdam](#)) are focusing on Romanian datasets from the European Climate and Assessment Dataset and ECMWF's reanalysis data ([ERA5](#)). Additionally, we are exploring the installation of a rain gauge in Tanzania with potential support from the WMO's Systematic Observations Financing Facility ([SOFF](#)) program.

In the Timisoara case study, the SPRINGS project has achieved an important milestone by identifying water sampling points along the Timis-Bega hydrological network.

Field visit to Haydom, Tanzania

A team of SPRINGS researchers, including James Platts-Mills, [Lucie Vermeulen](#) , [Ana Maria de Roda Husman](#), Esto Mduma, and [Editha Lotto](#), recently visited Haydom, Tanzania, one of the four case study sites for the SPRINGS project. During their visit, they engaged with local clinics and pharmacies, assessed the community's water sources, and reviewed water quality testing techniques. The discussions on water safety planning held during the visit will play a crucial role in shaping the next steps to

improve water access and quality in the region—an essential element in tackling waterborne diseases in the face of climate change



Literature review

Multiple literature reviews have been done to survey relevant interventions, coordinated by the [London School of Hygiene and Tropical Medicine](#). These reviews have outlined a long list of interventions across different sectors, examining their impact and categorising them accordingly. In parallel, separate reviews conducted by [Amsterdam Institute for Global Health and Development](#), [Amsterdam UMC](#), and [University of Virginia School of Medicine](#) examined the associations between climate variables and diarrheal pathogens, while also identifying key data sets on water quality, and human and animal health across the case study sites.

Additionally, work has begun to explore the application of new methods to extract relevant climate information for use in hydrological modelling, in collaboration with [Norwegian Meteorological Institute](#).

Engaging in key events

To raise awareness about the SPRINGS project and its research objectives, our team has actively participated in several key events, fostering connections with stakeholders and sharing insights on climate-health intersections. These events are invaluable for highlighting our goals and expanding our network within the scientific and health communities.

Some recent conferences and gatherings include the UNC Water & Health Conference ([read our full article](#)), ESOVE24, EMOP 2024 - focused on the role of parasitology in multi-disciplinary projects, and the Climate-Sensitive Vector Dynamics workshop. SPRINGS' researchers also participated in EGU and EMS 2024, where they introduced an improved method for downscaling rainfall that can be used with hydrological models. Additionally, we attended the Neapolitan Days of Health, Prevention, and Wellbeing in Naples, where we connected with local communities.

Each of these events allows SPRINGS to reach diverse audiences helping us build a strong foundation of support for climate-resilient health systems.



The European Planetary Health Cluster officially kicks off 🌱🌍

This past July marked the beginning of our collaboration journey with 4 Horizon Europe projects exploring the critical links between environmental degradation and health impacts.

The cluster was officially launched and presented on 3 July 2024 in Brussels during a joint event with GoGreen Routes and Sister Projects Final Cluster Event.

Each project coordinator introduced their project and discussed the challenges they will be addressing in the next years. The session was followed by the first cluster coordination meeting during which the projects' representatives initiated discussions on the way forward.

Here is a glimpse into the research projects of the cluster:

[SPRINGS](#) is studying the impact of climate change on waterborne diarrheal diseases.

[GoGreenNext](#) is advancing research and innovation to address the challenges of climate change, biodiversity loss, environmental degradation, and their impacts on human health in urban contexts.



Spotlight on

The SPRINGS project is powered by a diverse consortium of 15 partners from nine countries across three continents. Our interdisciplinary team brings together expertise from climate science, microbiology, medicine, communications, spatial analysis, and social sciences, all working collaboratively to tackle the complex intersections of climate change and health.



Visit our website to meet us all 🙌 <https://www.springsproject.eu/our-people>



Under the lens

Pathogens at the heart of the SPRINGS Project 🦠

As climate change reshapes our environment, the spread and impact of waterborne diarrheal diseases are rising as a serious health threat, not only in low- and middle-income countries (LMICs) but also in high-income regions. The SPRINGS project has identified four key pathogens—Rotavirus, Campylobacter, Cryptosporidium, and Giardia—to understand the effects of climate-driven waterborne diarrhoeal diseases.

Pathogens under study

Campylobacter is a bacterial pathogen known for causing the highest number of diarrheal infections in Europe. It thrives in warmer temperatures, which could lead to increased outbreaks due to climate change, especially through pathways like animal farming and contaminated water.

Cryptosporidium and **Giardia** are protozoan parasites that resist standard water treatments like chlorination, posing risks even in higher-income countries where untreated water sources are used. Giardia is becoming a more prominent concern in Europe, where it leads to high disease burdens.

Rotavirus is the leading cause of diarrhoeal death among young children worldwide. Transmitted primarily through contaminated water, it can also spread through respiratory droplets, making it a significant concern as milder winters shift seasonal transmission patterns in colder regions. The spread of these pathogens is further intensified by climate extremes, such as heavy rains and droughts, which can contaminate water sources, especially in areas with poor sanitation or high contact with animals.

	<i>Campylobacter</i>	<i>Cryptosporidium</i>	<i>Giardia</i>	Rotavirus
Taxon	Bacterium	Protozoa	Protozoa	Virus
Disease burden				
HiCs	High	Low	High	High
LMICs	High	High	Low	High
Animal hosts of concern	Poultry	Mammals (esp. livestock)	Mammals (esp. pets)	None
Vaccine status	Phase 1 trials to start in humans	None available for humans or animals	Available for pets but not livestock or humans	Available introduced in all study sites but RO
Associated with malnutrition	Yes	Yes	Yes	No
Infection duration	Acute & chronic	Chronic	Chronic	Acute
Transmission routes				
Person-to-person	Rarely	Yes	Yes	Yes
Foodborne	Yes	Yes	Yes	No
Waterborne	Yes	Yes	Yes	Yes
Zoonotic	Yes	Yes	Yes	Rarely
Climatic drivers				
Temperature	Yes	Yes	Yes	Yes
Humidity	No	No	Yes	Yes
Soil moisture	Yes	Yes	Yes	Yes
Precipitation/runoff	No	No	No	Yes

Beyond immediate health risks

Repeated exposure to diarrhoeal pathogens has lasting impacts, particularly for children. Chronic infections can impair nutrient absorption, leading to stunted growth, cognitive delays, and a heightened risk of metabolic conditions like diabetes in adulthood.

By studying the complex interplay between climate and these four pathogens, the SPRINGS project is dedicated to developing insights that can guide effective interventions and policy responses.

👉 [Click here to read our article about the pathogens we are studying in this research.](#)



The road ahead

As we look to the future, SPRINGS is embarking on a series of activities that will bring us closer to our goals and deepen our understanding of climate health challenges.

Gathering in Ghana: In March, our consortium will meet in Ghana for the second in-person meeting. This gathering will allow us to share project progress, set new priorities, and connect with local stakeholders to enhance insights and engagement in our work.

Progress in research: We're wrapping up work on an important manuscript titled *Downscaling for Medical Professionals*, incorporating valuable insights from our water modellers. Additionally, the Global Climate, Local Impacts, and Health Impacts teams are co-authoring a paper exploring how climate downscaling can benefit health. This kind of interdisciplinary work is crucial for bridging the gap between our fields. We've also had our manuscript on downscaling rainfall methods accepted for publication, titled *Downscaling the Probability of Heavy Rainfall over the Nordic Countries*, co-authored by Rasmus E. Benestad, Kajsa M. Parding, and Andreas Dobler. This paper, which also mentions the SPRINGS project, demonstrates the method that will be used in our research, advancing our approach to integrating climate data with health impacts ([read the discussion paper](#)).

Data and discovery: Our efforts to gather data in Ghana and Romania are going strong, contributing to vital hydrological and climate models. To

support this work, we're bringing on a data analyst at UVA-SOM, who will help us make sense of the wealth of information we're collecting.

Critical reviews and reports: We're preparing to release findings from several key reviews, including a report on Health Technology Assessment (HTA) priority-setting systems in Ghana and Romania. These insights will be pivotal in guiding our efforts and ensuring our work is impactful.

Identifying effective interventions: Our Integration and Policy Translation Team is actively identifying interventions that can effectively address waterborne diseases. Consultations with stakeholders and interviews with key informants will refine these strategies and provide a deeper understanding of evidence use in diarrhoea-related decision-making.

Innovating in health investment: We're also developing a preliminary framework for evidence appraisal that's tailored for planetary health investments.

These upcoming activities represent our commitment to tackling climate-driven health challenges with actionable solutions. We're excited about the road ahead and look forward to sharing our progress with you!



Our PhD hires

Charles Dupont, PhD Candidate at AIGHD. Charles will be developing agent-based models to better understand human decision-making under risk and uncertainty and simulate intervention strategies to guide effective policymaking.

Frederike Kooiman, PhD Candidate at AIGHD. Frederike will investigate climate-sensitive pathways that influence the occurrence of key diarrheal pathogens in humans, animals, and water.

Miguel Garrido Zornoza, Junior researcher at ICTP. Miguel will be working on dynamic and mechanistic modelling.

Mutaz Abdelaziz, PhD Candidate at IHE Delft Institute for Water Education. Mutaz will focus on water flow modelling and identifying flooding hotspots in a changing climate, specifically in case study areas in Ghana and Romania.

Nasif Hussain, Postdoc University of Virginia. Nasif will be working on geostatistical modelling of index pathogens starting with *Campylobacter*.

Antonino Pace, Postdoc at University of Naples Federico II. Antonino will analyse the occurrence of key diarrhoeal pathogens in both human populations (including children, adults, and migrants) and in water samples.

Patience Lerato Sihwa, PhD Candidate at RIVM. Patience will be working on quantitative microbial risk assessments and water safety planning under different climate scenarios across study sites.

Aude Lemme, PhD student at VU Amsterdam. Aude will focus on modelling the fate and transport in river networks of *Cryptosporidium*, *Giardia*, *Campylobacter* and Rotavirus under a changing climate.

Stay connected, stay informed

[Spatial variation in housing construction material in low- and middle-income countries: a Bayesian spatial prediction model of a key infectious diseases risk factor and social determinant of health](#)

[Assessment and comparison of model estimated and directly observed weather data for prediction of diarrhoea aetiology](#)

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