



INSTITUT NATIONAL DE L'EAU

UNIVERSITE D'ABOMEY-CALAVI



INE/UAC 01 B.P. 526
Tél. : (229) 43 72 41 94
N° IFU 4201710116446
E-mail : Ine2013@gmail.com

WATER AND SANITATION WEEK

3rd EDITION 2026

Harnessing Innovation and Digital Inclusion in Education and Research for Sustainable Transformation of Water, Sanitation, and Agriculture

Event homepage: <https://waterweek.cedine-uac.org>

DATES

20–22 October 2026

VENUE

Palais des Congrès
Cotonou, Benin

ORGANISERS

INE / C2EA, UAC
WDPP / UNESCO-IHE Delft
AIE
UNESCO-FRIEND Water

WATER AND
DEVELOPMENT
PARTNERSHIP
PROGRAMME



IHE
DELFT
Institute for
Water Education
under the auspices
of UNESCO



SECTION I

BACKGROUND AND RATIONALE

In a world increasingly shaped by climate change, demographic pressure, and challenges around food and water security, the water, sanitation and agriculture sectors are at the heart of sustainable development priorities. In West Africa and particularly in Benin, these sectors represent strategic levers for economic growth, public health, and community resilience. Yet their modernisation demands innovative, inclusive, and knowledge-driven approaches.

Digital innovation and inclusion have emerged as major catalysts for this structural transformation. Digitalisation of services, big data analytics, artificial intelligence, collaborative platforms and smart technologies offer unprecedented opportunities to improve governance, strengthen operational efficiency and promote evidence-based decision-making.

The 3rd Water and Sanitation Week brings together international experts, policy-makers, business leaders, field practitioners and local community representatives to create a dynamic ecosystem where research, innovation and technology transfer are continuously informed by real-world needs and emerging challenges.

Alignment with the Sustainable Development Goals

Digital technologies are estimated to play a central role in achieving 70% of SDG targets (AFD, 2024), in particular:

- ▶ SDG 6 — Ensure access to water and sanitation for all
- ▶ SDG 13 — Take urgent action to combat climate change
- ▶ SDG 4 — Ensure inclusive and equitable quality education

INDICATIVE PARTICIPANTS

Opening Plenary & Contextual Sessions

- ▶ Ministers and senior officials: Ministries of High Education, Water Resources, Agriculture and Digital Economy
- ▶ Representatives of international organisations: UNESCO IHE, World Bank, UNDP, AGRHYMET, IWMI
- ▶ Representatives of West African and European universities and research institutes
- ▶ Representatives of regional water bodies: Niger Basin Authority (NBA), VBA, ABM, OMVS,
- ▶ Representatives from water utilities, agri-tech and digital innovation companies.

SECTION II

OBJECTIVES**General Objective**

To strengthen the international visibility of the National Institute of Water (INE) and its partners by showcasing, sharing and disseminating scientific research outputs and fostering cross-disciplinary dialogue on digital innovation for sustainable development.

Specific Objectives

- ▶ Facilitate exchanges among researchers, professionals and decision-makers on digital transformation challenges in water management, sanitation and agriculture;
- ▶ Reassess the role of digital technologies in education and research for the sustainable transformation of targeted sectors;
- ▶ Promote reflection on Public-Private Partnerships for financing digital inclusion in education;
- ▶ Identify and showcase the best digital innovations in the water, sanitation and agriculture sectors;
- ▶ Strengthen regional capacity through high-level expert sessions, notably via the UNESCO-IHE Water and Development Partnership Programme (WDPP).

SECTION III

EVENT FORMAT AND TARGET AUDIENCE

Event Format

- ▶ Inaugural conference and keynote speeches
- ▶ High-level panels and special sessions
- ▶ Parallel scientific communication sessions
- ▶ UNESCO-IHE / WDPP Special Session
- ▶ PriMI Innovation Competition (pitch + jury)
- ▶ Innovation stand exhibition
- ▶ Networking receptions and closing ceremony

Target Audience

- ▶ Researchers and academic faculty
- ▶ MSc and PhD students
- ▶ Policy-makers and institutional leaders
- ▶ Water, digital and agriculture professionals
- ▶ Start-ups and social entrepreneurs
- ▶ Civil society organisations
- ▶ Technical and financial development partners

Submission Modalities

- ▶ Researchers, professionals and students may submit abstracts for oral presentations or stand exhibitions via the official links provided in the event announcement.
- ▶ All proposals must align with one of the four main thematic areas.
- ▶ Keynote speakers introduce each thematic area ahead of the corresponding panel debate.
- ▶ Submission deadline: 15 August 2026. Notifications by 30 August 2026.
- ▶ Conference website : www.waterweek.cedine-uac.org

INDICATIVE PARTICIPANTS AND OUTPUTS

Format & Audience Sessions

- ▶ 300+ participants from Benin and across Africa and Europe
- ▶ 15+ high-level panelists: policy-makers, researchers, entrepreneurs, journalists
- ▶ 15+ keynote speakers from national, regional and international institutions
- ▶ 50+ scientific communications across four thematic streams
- ▶ 20+ innovation stands exhibiting technological solutions
- ▶ Participants from at least 15 countries across West Africa, Europe and beyond

SECTION IV

SESSIONS AND THEMATIC AREAS

The event is structured around four interconnected thematic areas, each encompassing scientific communications, keynote addresses and high-level panel debates. All areas welcome contributions from researchers, practitioners and students.

1

Session 1: Digital Transformation and Management of Water, Sanitation and Agriculture

- ▶ Digital tools and integrated water resource management under flood and drought risks
- ▶ Digital transformation and precision agriculture for sustainable water use
- ▶ Digital innovation for sustainable urban and peri-urban water and sanitation governance

1.1. Digital Tools and Integrated Water Resource Management

Floods and droughts represent major hydroclimatic risks in vulnerable urban, peri-urban and rural areas. Digital tools such as real-time hydrometeorological platforms, early warning systems, remote sensing, hydrological and hydraulic models, and climate databases support a better understanding of watershed dynamics and evidence-based decision-making. Digital inclusion strategies ensure that the knowledge produced is accessible to local communities and technical services through mobile technologies and citizen-science platforms.

1.2. Precision Agriculture and Sustainable Agricultural Water Management

Precision agriculture relies on soil moisture sensors, connected weather stations, satellite imagery, GIS and agro-hydrological models to optimise irrigation at the plot scale. In developing countries, the central challenge is extending digital access to smallholder farmers through simple tools (mobile apps, agricultural SMS) and adapted training. Research institutions play a pivotal role in contextualising these technologies for local realities and co-designing solutions with farmers.

1.3. Digital Innovation for Urban and Peri-Urban Water and Sanitation

Urban water and sanitation management faces rapid demographic growth, unplanned urbanisation, water pollution and infrastructure deficits. Digital technologies enable real-time network monitoring, leak detection, smart treatment plant management and sanitary risk mapping. In the sanitation domain, digital tools facilitate faecal sludge management and environmental impact assessment. Citizen participation and data transparency are essential to service quality and long-term system sustainability.

INDICATIVE PARTICIPANTS

- ▶ Hydrologists, hydraulic engineers and water resources specialists
- ▶ Agronomists, irrigation engineers and precision agriculture researchers
- ▶ Urban planners, sanitation engineers and WASH specialists
- ▶ GIS analysts, remote sensing experts and environmental data scientists
- ▶ Technical staff of national weather services, hydrological agencies and river basin authorities
- ▶ Representatives of water utilities, municipalities and sanitation operators
- ▶ NGOs and civil society organisations working on water access and hygiene promotion

2

Session 2: Open Data, AI and Participatory Science in Service of Research and Innovation

- Open data and water governance
- Artificial intelligence and big data for water risk management
- Participatory science and co-production of knowledge for water innovation

2.1. Open Data and Water Governance

Traditional water governance models are showing their limits in the face of growing pressures such as climate variability, agricultural intensification, and competing uses. Open data represents a strategic lever for transforming institutional frameworks and operational governance modes. Effective data openness requires standardisation, rigorous metadata structuring, interoperability of digital infrastructures and cross-sector integration, essential conditions for avoiding information silos and ensuring the comparability of results across territorial scales.

2.2. Artificial Intelligence and Big Data for Water Risk Management

Machine learning, predictive modelling and advanced time-series analysis enable exploitation of large heterogeneous datasets (hydrological, climatic, satellite-based and IoT sensor-generated) to improve early detection, forecasting and scenario simulation of water risks. These approaches support early warning systems, irrigation optimisation and decision-support tools for managers and public officials. Algorithmic robustness, transparency and associated ethical challenges are central concerns.

2.3. Participatory Science and Co-Production of Knowledge

Sustainable water management requires mobilising both scientific knowledge and local community expertise. Participatory science and collaborative data collection provide a privileged framework for co-producing knowledge and stimulating water innovation. By involving citizens, farmers and local stakeholders in monitoring water quality and quantity, these initiatives broaden the evidence base while reinforcing scientific legitimacy and institutional accountability. Digital participatory platforms integrate local knowledge into scientific tools and generate large-scale, territorially relevant data.

INDICATIVE PARTICIPANTS

- Data scientists, AI researchers and machine learning specialists in environmental applications
- Environmental modellers and climate change analysts
- Open data advocates, digital governance experts and information systems specialists
- Representatives of national statistics offices and data regulatory bodies
- Community-based monitoring coordinators and citizen science practitioners
- Researchers in hydrology, agronomy and environmental management working with large datasets
- Representatives of international data initiatives (AQUASTAT, CHIRPS, OpenStreetMap, GBIF)

3

Session 3 : Artificial Intelligence and Optimisation of Educational Systems

- Intelligent adaptive learning systems and improvement of academic performance
- Strategic use of educational data for planning and decision-making
- Design of sustainable and equitable digital educational ecosystems

3.1. Intelligent Adaptive Learning Systems and Academic Performance

AI technologies open new perspectives for transforming pedagogical practices and improving learner performance. Adaptive learning systems design educational environments that dynamically adjust to individual needs, learning paces and cognitive profiles. By offering personalised learning pathways, immediate feedback and targeted remediation, these tools contribute to improving outcomes and reducing performance gaps, challenges particularly acute in African educational systems characterised by high student-to-teacher ratios. Such tools can strategically support pedagogical effectiveness without replacing the central role of the teacher.

3.2. Strategic Use of Educational Data for Planning and Decision-Making

In a context of growing enrolment, resource constraints and persistent access inequalities, the strategic exploitation of educational data constitutes a key lever for improving governance of educational systems. AI tools can analyse large volumes of educational statistics, academic performance data and socioeconomic indicators to identify trends, evaluate programme effectiveness and anticipate future infrastructure or staffing needs, providing decision-makers with concrete, evidence-based inputs for targeted policy actions.

3.3. Sustainable and Equitable Digital Educational Ecosystems

Integrating digital and AI technologies into African educational systems requires a systemic approach encompassing technological infrastructure, regulatory frameworks and digital competency development. Particular attention must be given to locally adapted solutions: low-bandwidth applications, offline functionality, and accessibility on widely available mobile devices. Contextualised innovation is the strategic lever for ensuring effective adoption and impact of digital tools including those incorporating AI features.

INDICATIVE PARTICIPANTS

- Education researchers, educational technology specialists and e-learning designers
- Curriculum developers and academic administrators from universities and higher education institutions
- Representatives of ministries of education and national education planning agencies
- EdTech entrepreneurs, learning platform developers and education content producers
- Teachers and pedagogical coaches engaged in digital transformation of classrooms
- Researchers in learning analytics, educational data mining and AI ethics in education
- Representatives of UNESCO, UNICEF and World Bank education programmes

4

Session 4 : Innovative Processes and Smart Technologies in Water and Sludge Treatment

- Smart faecal sludge treatment and valorisation of by-products
- Innovative decentralised wastewater management technologies in urban and peri-urban areas
- Digital tools and predictive modelling of membrane performance for drinking water treatment
- Machine learning for leak detection and drinking water network management

4.1. Smart Faecal Sludge Treatment and By-Product Valorisation

Modern sanitation strategies increasingly adopt a value-chain logic and inclusive business models. Integrating smart technologies such as modelling, sensors, automation and AI into faecal sludge treatment improves process efficiency, enables better flow control, and creates economic opportunities from sanitation by-products. These approaches offer lower operating costs and are particularly relevant for African cities where decentralised on-site sanitation systems remain predominant.

4.2. Innovative Decentralised Wastewater Management

Source-separation approaches in domestic wastewater management allow appropriate treatment of effluents based on their characteristics, and open pathways for the reuse of water, energy and fertilisers. Separately collected blackwater, containing the vast majority of nutrients and pathogens, requires specific treatment pathways. Modular integrated systems show strong potential for high-density urban areas without requiring centralised infrastructure. Recent advances in membrane technology are of particular relevance to this sub-theme.

4.3. Digital Modelling of Membrane Performance for Drinking Water Treatment

In a context of growing drinking water access challenges across Africa, membrane treatment technologies offer promising solutions for water quality improvement. Digital tools for predicting membrane structural performance, namely simulating particle and ion behaviour within filtration membranes and accounting for physicochemical interactions, contribute to optimising system design and operation. AI integration refines predictive models of solute dynamics in membrane active layers and opens perspectives for automated monitoring and process control.

4.4. Machine Learning for Leak Detection and Drinking Water Network Management

Drinking water supply networks, often developed incrementally and with limited planning, are characterised by great structural complexity, with thousands of interconnected nodes, pipes and equipment. Machine learning approaches, coupled with hydraulic modelling and simulation, enable the analysis of sensor data (flow, pressure, consumption), identification of anomalies, prediction of failures and optimisation of network zoning. These tools reduce losses, optimise technical interventions and improve service quality.

INDICATIVE PARTICIPANTS

- ▶ Environmental engineers, process engineers and water treatment specialists
- ▶ Sanitation researchers and FSSM (Faecal Sludge and Septage Management) practitioners
- ▶ Membrane technology researchers and water quality scientists
- ▶ Hydraulic engineers, network modellers and GIS specialists in water supply
- ▶ Representatives of water utilities, treatment plant operators and infrastructure managers
- ▶ Researchers in AI, machine learning and IoT applied to infrastructure management
- ▶ Entrepreneurs and technology providers in water treatment and smart sensor markets

SECTION V

SPECIAL SESSIONS

SPECIAL SESSION 1

CROSS-PERSPECTIVES DEBATE

"Artificial Intelligence vs. Classical Approaches to Predicting Natural Phenomena: Complementarity or Opposition?"

This special panel will illuminate the evolution of forecasting methods used in hydrology, agriculture and environmental science. Speakers will compare the performance, limitations and application domains of classical approaches (physical, statistical and empirical models) with AI-based methods drawing on machine learning and big data, in the prediction of floods, droughts, extreme rainfall, crop yields and other natural phenomena.

Particular attention will be given to data reliability, model interpretability, the role of human expertise, and the ethical and scientific challenges associated with the growing use of AI. The session will provide a dialogue space between experienced researchers and young digital specialists to explore complementarity between traditional knowledge, classical models and intelligent technologies in sustainable natural resource management.

Key debate axes:

- ▶ Performance and limits of physical, statistical and empirical modelling approaches
- ▶ Capabilities and constraints of machine learning and deep learning for environmental forecasting
- ▶ Data reliability, model interpretability and the role of domain expertise
- ▶ Convergence opportunities between traditional knowledge and intelligent technologies
- ▶ Ethical and scientific challenges of growing AI use in natural resource management

INDICATIVE PARTICIPANTS

- ▶ Senior hydrologists and hydrometeorologists with expertise in classical modelling (HBV, SWAT, MIKE, GR4J)
- ▶ AI and machine learning researchers applying deep learning and neural networks to environmental forecasting
- ▶ Statisticians and climate scientists specialised in extreme event analysis and stochastic modelling
- ▶ Representatives of national meteorological services and disaster risk reduction agencies (AGRHYMET, ACMAD, WASCAL)
- ▶ Young researchers and PhD students working at the interface of AI and environmental sciences
- ▶ Science journalists and communicators covering AI, climate and water policy topics

SPECIAL SESSION 2

UNESCO-IHE: WATER AND DEVELOPMENT PARTNERSHIP PROGRAMME (WDPP)*Water Diplomacy, Transboundary Governance and Capacity Building in West Africa***About the Programme**

Launched in 2008, the Water and Development Partnership Programme (WDPP) has been nurturing a community of scientists, practitioners and policymakers from over 40 countries, with the support of the Dutch Ministry of Foreign Affairs. Currently, IHE Delft coordinates two phases, phase 2 and 3, which run partly in parallel. While each phase has its own specific focus and targets, both aim to contribute to a peaceful, socially just and ecologically sustainable world ([read more](#)).

Session Objectives

- ▶ Present the WDPP and its opportunities for professionals;
- ▶ Share experiences and results of projects funded and supported by the WDPP in West Africa;
- ▶ Discuss water governance, equity and ecological sustainability in the context of climate change;
- ▶ Explore synergies between West African universities and IHE Delft for joint training and collaborative research;
- ▶ Identify funding pathways for continuing WDPP initiatives in Africa.

Session Structure**Block 1 — High-Level Panel (90 min)**

- ▶ Introduction to the WDPP by an IHE Delft representative
- ▶ Digital inclusion in Water governance, equity and ecological sustainability : challenges and opportunities
- ▶ Synergies between West African universities and IHE Delft
- ▶ Financing sustainable water management: role of international partnerships

*Moderation: IHE Delft expert / INE senior researcher***Block 2 — WDPP Communications (90 min)**

- ▶ Presentations of WDPP-funded or supported projects in Africa
- ▶ Experience-sharing by WDPP alumni Africa : WaSahelNet booklet on research gaps
- ▶ Resources and knowledge sharing : WDPP repository

*Format: 15-min presentations + Q&A***INDICATIVE PARTICIPANTS**

- ▶ Diplomats, foreign affairs officials and representatives of transboundary river basin organisations
- ▶ Senior water sector professionals and policy advisors from ECOWAS member states
- ▶ WDPP alumni and fellows currently active in Africa
- ▶ Representatives of IHE Delft and other UN water-related programmes
- ▶ Researchers in international law, environmental governance and water conflict resolution
- ▶ Representatives of development finance institutions funding water-related research and interventions
- ▶ Lecturers, researchers, PhD, MSc students and professionals

SECTION VI

INNOVATION COMPETITION — PriMI

The Prize for the Best Innovation (PriMI — Prix de la Meilleure Innovation) is one of the highlights of the Water and Sanitation Week. It identifies, showcases and rewards cutting-edge solutions developed by researchers, start-ups, entrepreneurs and students to address challenges in the water, sanitation and agriculture sectors.

Eligibility Criteria

- ▶ Technological innovation in water, sanitation or agriculture
- ▶ Applicability and relevance to African contexts
- ▶ Social, environmental and economic impact potential
- ▶ Degree of originality and technological maturity (MVP or working prototype)
- ▶ Sustainability and viable business model

Competition Timeline

- ▶ Application submission: before 15 August 2026
- ▶ Pre-selection of 10 best innovations
- ▶ Public pitch: 10 min + 5 min Q&A (Thursday 22 Oct., 09:00–10:30)
- ▶ Jury deliberation: 14:00–14:30
- ▶ Prize ceremony at the closing session

Prizes & Awards

- ▶ 1st Prize — Best Innovation: Financial endowment + Entrepreneurial mentorship
- ▶ 2nd Prize — Outstanding Innovation: Financial endowment + Entrepreneurial mentorship
- ▶ 3rd Prize — Promising Innovation: Financial endowment + Entrepreneurial mentorship

INDICATIVE PARTICIPANTS

- ▶ Start-up founders and entrepreneurs in water tech, agri-tech and sanitation innovation
- ▶ MSc and PhD students developing applied research with commercialisation potential
- ▶ Young engineers and technologists from African universities and polytechnics
- ▶ Representatives of business incubators, technology accelerators and innovation hubs
- ▶ Impact investors, venture capital representatives and development finance officials
- ▶ Senior researchers and industry experts serving on the selection jury
- ▶ Representatives of national innovation agencies and entrepreneurship support programmes

SECTION VII

PROGRAMME AT A GLANCE

DAY 1 — Tuesday, 20 October 2026 | Opening & Keynotes

Time	Activity
08:00–09:30	Registration & Welcome
09:30–10:30	Inaugural Conference <i>"Digital Innovation and AI: New Drivers for Sustainable Water and Agriculture Management"</i>
10:30–11:30	Official Opening Ceremony <i>Addresses by dignitaries · Cultural performance · Awareness sketch</i>
11:30–12:00	Coffee Break — Departure of official guests
12:00–14:15	Keynote Speeches (3 × 30 min + 15 min Q&A) <i>K1: Digital technology and innovation in education · K2: AI and data valorisation for water and the environment · K3: Digital innovation and precision agriculture in Africa</i>
14:15–15:30	Lunch Break
15:30–17:30	Parallel Scientific Communication Sessions <i>Thematic Areas 1 & 2</i>
17:30–18:30	Innovation Stand Exhibition & Networking Reception

DAY 2 — Wednesday, 21 October 2026 | Panels & UNESCO-IHE/WDPP

Time	Activity
08:00–09:00	Registration & Installation
09:00–10:30	SPECIAL SESSION 1 — Cross-Perspectives Debate <i>"AI vs. Classical Approaches to Natural Phenomena Prediction" · 4 speakers · 1 moderator</i>
10:30–11:00	Coffee Break
11:00–12:30	HIGH-LEVEL PANEL — Education and Artificial Intelligence <i>Responsibility, ethics and sustainable use of AI in African educational systems · 4 panellists · 1 moderator</i>
12:30–14:00	Lunch Break
14:00–15:30	SPECIAL SESSION 2 — UNESCO-IHE/WDPP [Block 1: Panel] <i>Water diplomacy, transboundary governance and capacity building · 3 IHE Delft expert panellists · 1 moderator</i>
15:30–16:00	Coffee Break
16:00–17:30	SPECIAL SESSION 2 — UNESCO-IHE/WDPP [Block 2: Communications] <i>WDPP-funded projects in the sub-region · Alumni experience-sharing · 15-min presentations</i>
17:30–18:30	Innovation Stand Exhibition & Networking

DAY 3 — Thursday, 22 October 2026 | Innovation, Science & Closing

Time	Activity
08:30–09:00	Registration & Installation
09:00–10:30	PriMI COMPETITION — Innovation Pitches <i>Public presentations by 10 selected innovations (10 min pitch + 5 min Q&A each)</i>
10:30–11:00	Coffee Break
11:00–13:00	Parallel Scientific Communication Sessions <i>Thematic Areas 3 & 4</i>
13:00–14:00	Lunch Break
14:00–14:30	PriMI Jury Deliberation (closed session)
14:30–15:30	Closing Ceremony & PriMI Prize-Giving <i>Cultural performance · Reading of recommendations · Closing address · Prize-giving</i>

SECTION VIII

EXPECTED OUTCOMES

The 3rd Water and Sanitation Week aims to produce the following measurable outcomes:

Participation & Audience ▶ 300+ participants from across the sub-region ▶ 15+ high-level panellists ▶ 15+ international keynote speakers ▶ Representation from 15+ countries	Scientific Outputs ▶ 30+ scientific communications presented ▶ Publication of a peer-reviewed proceedings ▶ Repository of digital innovations in water & sanitation ▶ Collection of policy and scientific recommendations
Innovation & Stands ▶ 20+ innovation stands exhibiting technologies ▶ 3 PriMI prize-winners rewarded and mentored ▶ Connections forged between innovators and financiers	Partnerships & Cooperation ▶ WDPP projects’ outcomes relevant for Africa are identified and shared ▶ Strengthened WDPP alumni network in Africa

SECTION IX

PRACTICAL INFORMATION AND CONTACTS**Lead Organiser****National Institute of Water (INE)**

Centre of Excellence for Water & Sanitation in
Africa (C2EA)

University of Abomey-Calavi (UAC)

01 B.P. 526, Cotonou — Benin

c2eaineuac@gmail.com

+229 01 97 98 79 25

Co-Organiser — WDPP Session**IHE Delft Institute for Water Education**

Water Development Partnership Programme
(WDPP)

Westvest 7, 2611 AX Delft — Netherlands

wdpp@un-ihe.org

www.un-ihe.org

***We look forward to welcoming you to Cotonou for three days of science,
innovation and dialogue around the future of water in Africa.***

20–22 October 2026 Palais des Congrès, Cotonou, Benin