IWA Water and Development Congress & Exhibition

the international water association

Advance Technical and Workshop Programme

Water, sanitation, and innovation – pathways to progress and a resilient future

BANGKOK
THAILAND

8-12 DECEMBER

2025

Organised by

the international water association

Co-organiser

AIT Asian Institute of Technology

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Programme Framework

Theme 1	Theme 2	Theme 3	Theme 4	Theme 5
ENSURE SAFE DRINKING WATER: INNOVATIVE APPROACHES FOR TREATMENT AND SUPPLY	ADVANCING WASTEWATER TREATMENT AND SANITATION SERVICES: SUSTAINABLE SOLUTIONS FOR ALL	SMART WATER MANAGEMENT: INTEGRATED APPROACHES FOR EFFECTIVE WATER MANAGEMENT AND PLANNING	ENHANCING UTILITY MANAGEMENT AND OPERATIONS FOR SUSTAINABLE GROWT	STRENGTHENING GOVERNANCE AND FINANCIAL SYSTEMS FOR LONG-TERM DEVELOPMENT

Monday 8 December	Tuesday 9 December	Wednesday 10 December	Thursday 11 December	Friday 12 December
	KEYNOTE PLENARY 09:00 — 09:45			
	BREAK 09:45 — 10:30			
	SESSION 1 10:30 — 12:00			
	LUNCH 12:00 — 13:30			
	SESSION 2 13:30 — 15:00			
	BREAK 15:00 — 15:30			CLOSING CEREMONY 15:15 — 16:45
OPENING CEREMONY 16:00 — 18:00 Followed by **Toast – Exhibition opening** (17:30-18:00)	SESSION 3 15:30 — 17:00			
	BREAK 17:00 — 17:15			
WELCOME RECEPTION 18:00 — 20:00	KEYNOTE PLENARY 17:15 — 18:00			
			GALA DINNER Evening	

Monday 8 December

16:00 - 17:30	**OPENING CEREMONY** with Keynote	17:30 - 18:00	**Exhibition Opening**	18:00 - 20:00	**Welcome Reception** *sponsored by ANGEL*

Tuesday 9 December

SCHEDULE	MR111 (A+B+C)	MR110 (A+B)	MR110 C	MR109 (A+B)	MR109 (C+D)	MR109 (G+H)	MR109 (E+F)	MR106	MR103	MR102	MR101	MR107 (A+B)
09:00 - 09:45	**KEYNOTE PLENARY**											
SESSION 1 10:30 - 12:00	**T 2.1** Circular economy in wastewater: Innovations in energy recovery, resource reuse, and sustainable treatment	**HIGH-LEVEL SUMMIT**	**SW.1** Sanitation as source-protection infrastructure: Reframing the water–sanitation nexus	**T 2.2** Sanitation and public health: Evidence-based approaches for safe, inclusive, and standardized solutions	**W 3.1** Scaling water-sensitive urban NbS for equitable and lasting impact	**W 5.1** WASH system index tool: An opportunity to strengthen WASH service delivery	**W 1.1** Effecting improved intermittent water supply (IWS)	**T 3.1** Resilient infrastructure & tackling non-revenue water loss	**T 1.1** Sustainable technologies for safe drinking water access	**T 3.2** From data to drops: AI in smart water management	**T 2.3** Decarbonizing wastewater and sanitation: emissions, resilience, and climate action	
SESSION 2 13:30 - 15:00	**T 2.4** Advancing resource recovery in wastewater and faecal sludge management	**HIGH-LEVEL SUMMIT**	**SW.2** Workshop	**T 2.5** Wastewater surveillance and the challenge of antimicrobial resistance (AMR)	**W 3.2** A catchment-level approach for climate resilience in water systems	**W 4.1** Scaling up peer learning partnerships in water and sanitation: A capacity development approach	**W 3.3** Understanding the NRW water balance	**T 4.1** Equity & access in water distribution	**T 1.2** Cutting-edge innovations in water quality monitoring and risk assessment	**T 3.3** Connected communities: Digital platforms for inclusive engagement	**T 2.6** Disaster-ready sanitation: Safeguarding health and infrastructure in disaster prone areas	**W 3.9** Inclusive water and sanitation for circularity and climate-resilient cities
SESSION 3 15:30 - 17:00	**T 2.7** Advancing pathways to circularity and sustainability in sludge management	**HIGH-LEVEL SUMMIT**	**SW.3** Citywide inclusive sanitation, water in circular economy and resilience, and reuse	**T 2.8** Emerging contaminants and microbial and microplastic risks in wastewater: Monitoring, mitigation, and molecular insights	**W 2.1** Design sprint: building future water-sensitive cities	**W 5.2** Empowerment of women in sanitation enterprises: Innovations for inclusive governance for reaching unserved communities	**W 3.4** Nature-based Solutions for climate action: The role of water utilities	**T 5.1** Financing & economic approaches	**T 1.3** Advances in water quality and management for climate resilient cities	**T 1.4** Data-driven insights for water treatment efficiency	**T 2.9** Policy and economic tools for sustainable waste and water management	**W 1.4** HRWM workshop for pathogen risk management for drinking water consumption
17:15 - 18:00	**KEYNOTE PLENARY**											

Wednesday 10 December

SCHEDULE	MR111 (A+B+C)	MR110 (A+B)	MR110 C	MR109 (A+B)	MR109 (C+D)	MR109 (G+H)	MR109 (E+F)	MR106	MR103	MR102	MR101	MR107 (A+B)
09:00 - 09:45	**KEYNOTE PLENARY**											
SESSION 1 10:30 - 12:00	**T 4.2** Urban water resilience & infrastructure	**SW.4** Charting the course to water security: The Asian Water Development Outlook 2025	**UTILITY LEADERS FORUM**	**T 2.10** Transforming sanitation through decentralized and non-sewered systems	**IWA WATER EFFICIENT SANITATION SOLUTIONS FORUM 2025**	**W 4.2** The state of water and sanitation utilities: Utility and system-level perspectives for transformation?	**W 1.2** Ensuring rural drinking water safety in developing countries: Challenges and opportunities	**INTERNATIONAL WATER REGULATORS FORUM**	**T 1.5** Innovative water technologies	**T 2.11** Enhancing wastewater treatment through emerging technologies and artificial intelligence	**T 2.12** Cutting-edge nitrogen removal strategies in wastewater treatment	**W 5.10** Unlocking mechanisms for sustainable financing for climate resilient and inclusive WASH
SESSION 2 13:30 - 15:00	**T 4.3** Sustainable water management & circular economy	**SW.5** Trends in climate resilient water and sanitation systems in Asia and the Pacific	**UTILITY LEADERS FORUM**	**T 2.13** Decentralized sanitation innovations and scalable solutions for inclusive urban-rural wastewater management	**IWA WATER EFFICIENT SANITATION SOLUTIONS FORUM 2025**	**W 2.2** Pre-assessment for carbon finance: Evaluating wastewater & sanitation project eligibility for carbon finance	**W 1.3** Strengthening the impact of water safety plan training	**INTERNATIONAL WATER REGULATORS FORUM**	**T 1.6** Novel treatment mechanisms	**T 4.4** Data-driven water management	**T 2.14** Understanding microbial interactions for enhanced treatment performance	**W 2.6** From climate vulnerability to climate resilience: Innovation and systems change in urban sanitation
SESSION 3 15:30 - 17:00	**T 5.2** Environmental health & circular economy	**SW.6** IWA & Grundfos Youth Action for SDG6 Fellowship – Interactive discussion on enabling community-led solutions for water challenges	**UTILITY LEADERS FORUM**	**T 2.15** Decentralized and inclusive wastewater solutions: low-energy innovations for resilient sanitation systems	**IWA WATER EFFICIENT SANITATION SOLUTIONS FORUM 2025**	**W 4.3** Unlocking the power of AI to transform operational performance of water utilities	**W 2.4** Transformative water practices in the Circular Economy	**INTERNATIONAL WATER REGULATORS FORUM**	**T 1.7** New approaches for the removal of contaminants	**SW.7** Digital tools for evidence-based decision making in CWIS	**T 2.16** Harnessing Nature-based Solutions for resilient and sustainable wastewater management	**W 2.3** Empowering communities through resource-oriented sanitation
17:15 - 18:00	**KEYNOTE PLENARY**											

Thursday 11 December

SCHEDULE	MR111 (A+B+C)	MR110 (A+B)	MR110 C	MR109 (A+B)	MR109 (C+D)	MR109 (G+H)	MR109 (E+F)	MR106	MR103	MR102	MR101	MR107 (A+B)
09:00 - 09:45	**KEYNOTE PLENARY**											
SESSION 1 10:30 - 12:00	**T 3.4** Navigating flood hazards: Enhancing urban resilience	**FROM LAND TO SEA FORUM**	**SANITATION FORUM – IUS**	**SW.8** Workshop on system leadership	**W 4.4** Intermittent water supply: The challenge of transitioning to 24|7	**EMERGING WATER LEADERS FORUM**	**W 5.3** Co-designing a CWIS-centric transformative GEDSI framework to advance equitable, safe and resilient WASH systems	**W 3.5** Circular economy as an innovation pathway for resilient, inclusive water and sanitation	**T 1.8** Emerging contaminants and disinfection in water treatment systems	**T 2.17** Innovative membrane and adsorptive technologies for sustainable wastewater reuse and resource recovery	**T 3.5** Rural water security through small-scale, localized & decentralized solutions	**W 5.9** Bangladesh's sanitation journey: 'Access to Safe Management' – challenges, successes, and ways forward
SESSION 2 13:30 - 15:00	**T 5.3** Climate resilience & adaptation	**FROM LAND TO SEA FORUM**	**SANITATION FORUM – IUS**	**SW.9** Beyond biology: New frontiers in household wastewater treatment	**W 1.7** Community-based rainwater for drinking: Scalable local actions, policy innovations, and technical solutions for achieving SDG 6	**EMERGING WATER LEADERS FORUM**	**W 3.6** Data insights for better utility management: Your path to improvement?		**T 1.9** Managing the safety of water services in urban and rural setups	**T 2.18** Emerging solutions for toxic metal and contaminant removal	**T 5.4** Technology & innovation	
SESSION 3 15:30 - 17:00	**T 3.6** Climate-resilient water security: Strategies for a changing world	**SW.10** Smart regulation for resilient and investable water systems	**SANITATION FORUM – IUS**	**T 2.19** Waste-to-Farm: Enhancing soil health through safe reuse practices	**W 5.4** Building bankable urban water investments: What works, what doesn't, and what needs to change?	**EMERGING WATER LEADERS FORUM**	**W 1.5** Innovative DX solutions for sustainable water supply	**W 2.5** The science you need to understand: Emissions from non-sewered sanitation	**W 4.6** Community-driven participatory monitoring for safe, equitable, sustainable and climate resilient water, sanitation, and hygiene services	**T 2.20** Tailored treatment solutions for industrial wastewater	**W 2.8** Bridging the gap: Overcoming implementation barriers to scale sustainable sanitation solutions	
17:15 - 18:00	**KEYNOTE PLENARY**											

Friday 12 December

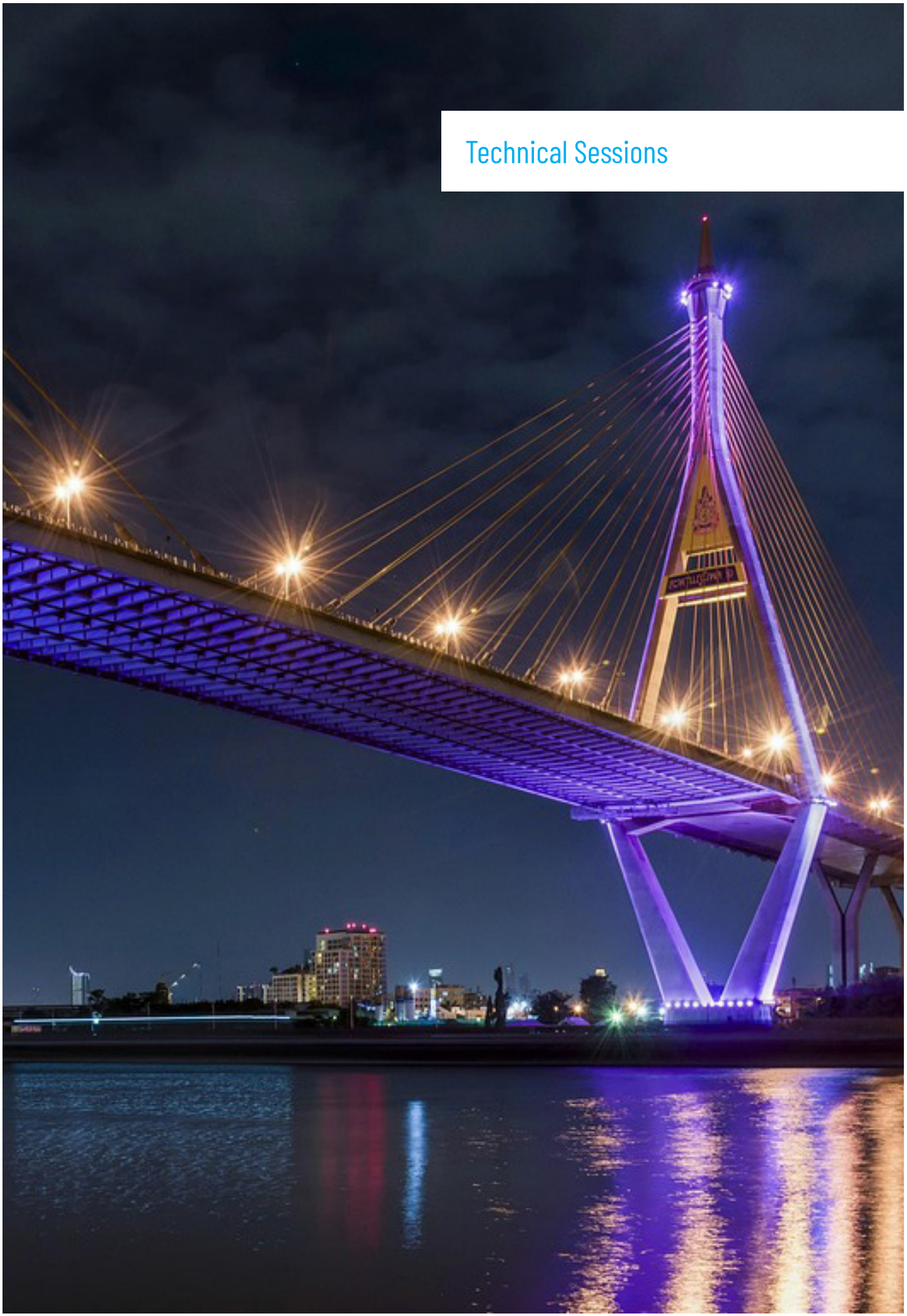
SCHEDULE	MR111 (A+B+C)	MR110 (A+B)	MR110 C	MR109 (A+B)	MR109 (C+D)	MR109 (G+H)	MR109 (E+F)	MR106	MR103	MR102	MR101	MR107 (A+B)
09:00 - 09:45	**KEYNOTE PLENARY**											
SESSION 1 10:30 - 12:00	**T 4.5** Rural & climate-resilient solutions	**W 5.5** Come Together: The challenges of an alliance on safe sanitation	**W 5.6** Conflict or cooperation: Exploring water conflict through game theory	**T 5.5** Equitable WASH solutions	**SW.11** Digital water in emerging economy: Needs, opportunities, and challenges	**W 2.7** Development of global database for faecal sludge characteristics	**W 5.7** Strengthen institutionalization of marginalized community networks/CBOs in WASH governance systems	**T 3.7** Regenerative water management: Sustainable & circular approaches	**T 3.8** Navigating the industrial water crisis: Technologies and best practices	**W 4.7** Water operator partnerships & their tangible results	**W 4.5** Practical toolkits on gender mainstreaming in water and sanitation	**W 3.8** Introducing the new IWA Nature-based Solutions Cluster: NbS from Source to Sea
SESSION 2 13:30 - 15:00	**T 3.9** From ideas to impact: Innovating policy and governance	**SW.12** Scaling up water & sanitation? What about the critical human capital bottleneck?	**W 5.8** Driving disruptive change in public toilets: Revolutionizing operational models and user behavior across Asia and Africa	**T 5.6** Governance & policy for WASH systems	**SW.13** Integrated water management for fast-developing cities in Asian countries	**W 3.7** Toilet pit to policy pixels: Building data-driven sanitation systems in South Asia	**W 1.6** Solving water pollution through youth-led community based water solution framework	**T 3.10** Water integrity: Advanced solutions for quality preservation and pollution reduction	**T 4.6** Industrial & health risk mitigation	**SW.14** 2025 Recognition Programme of the Climate Smart Utilities	**T 1.10** Partnerships and local approaches	
15:30 - 17:00	**CLOSING CEREMONY**											

Daily schedule

KEYNOTE PLENARY | 09:00 - 09:45	**SESSION 1** | 10:30 - 12:00	**SESSION 2** | 13:30 - 15:00	**SESSION 3** | 15:30 - 17:00 *
BREAK | 09:45 - 10:30	**LUNCH** | 12:00 - 13:30	**BREAK** | 15:00 - 15:30 *	**KEYNOTE PLENARY** | 17:15 - 18:00 *

** Not Friday*

Technical Sessions



Technical Sessions **Theme 1**

Ensure safe drinking water: innovative approaches for treatment and supply

T1.1
Session 1 | Technical

Tuesday 9 December
Room MR103

Sustainable technologies for safe drinking water access

Chair: Esper Jacobeth Ncube, *South Africa*
Co-chair: Subrata Paul, *Bangladesh*

In this session, water treatment options are presented for ensuring the safety of drinking water under different scenarios. Low cost technologies are presented and described to respond to the impact of climate change and vatiability in some examples. Other water treatment options emphasize the various ways of contaminant removal in compromised surface and ground water.

Predicting effects of groundwater elements in arsenic mobilization using machine learning algorithms: BDT, LR and RF Asef Redwan, *Bangladesh*

Sustainable wastewater treatment focused on water reuse through innovative advanced oxidation processes Marina Prisciandaro, *Italy*

Rapid, low-cost removal of Cr(VI) from California groundwater using iron electrocoagulation Andrea Naranjo-Soledad, *United States*

Low-cost manufacturing and characterization of ultrafiltration membranes: application of the phase inversion method Paola Andrea Alvizuri Tintaya, *Bolivia*

Electrochemical disinfection as a resilient solution for microbial safety in rural and remote drinking water supplies Mingyue Hu, *Australia*

Solutions in traditional knowledge: how gravity driven water filters could help reduce single-use plastics in Sub-Saharan Africa Guus Wiersma, *Netherlands*

T1.2
Session 2 | Technical

Tuesday 9 December
Room MR103

Cutting-edge innovations in water quality monitoring and risk assessment

Chair: Antonio Lastra, *Spain*
Co-chair: Stella Reichen, *France*

This session explores advanced methodologies for enhancing water quality monitoring and risk assessment across diverse contexts. Presentations focus on the integration of machine learning and real-time sensing technologies to predict and detect contaminants such as microplastics and emerging pollutants like PFAS. Case studies from Tanzania, Malaysia, and global research efforts demonstrate how data-driven tools and laboratory innovations are transforming water quality assurance and supporting evidence-based public health interventions.

Real-time detection of microplastics in water utilizing electrical sensing zone method integrated with machine learning techniques Sameera Sandaruwan Yakdehi Kankanamge, *Thailand*

Elevating public health assurance standards: Air Selangor's Laboratory strategies on per- & polyfluoroalkyl substances (PFAS) Humairah Yeoh Yee Voon, *Malaysia*

Assessing drinking water quality of a native american tribe through genomics Maria Jose Uribe Perez, *United States*

Public health risks of refilled drinking water in urban Indonesia D. Daniel, *Indonesia*

Closing the data inequity gap with context-appropriate microbial water quality testing Caetano Dorea, *Canada*

High-sensitivity patterned SWCNTs based flexible strain sensor for pipe line Shushuai Zhu, *Republic of Korea*

T1.3 Session 3 |Technical

Tuesday 9 December
Room MR103

Advances in water quality and management for climate resilient cities

Chair: Martin Knuijt, *Netherlands*
Co-chair: Devika Hemalatha Devi, *India*

This session highlights innovative approaches and technological advancements in urban water quality improvement and sustainable water management. Case studies from diverse geographic contexts—including reservoir modelling, treatment optimization, and integrated strategies for arid regions and net-zero buildings—demonstrate how cities can enhance water security and build resilience to climate change. Emphasis is placed on data-driven solutions, interdisciplinary design, and scalable practices for climate- resilient urban infrastructure.

Optimizing artificial destratification strategies for Oberon Reservoir: A modelling approach Khin July Win Thant, *Australia*

Mitigating manganese-induced discoloration in Metro Manila's tap water: a case study of La Mesa Water Treatment Plants 1&2 Guia Publico, *Philippines*

Emergent themes and knowledge gaps in river water temperature research and climate change Ali Jahanbakhshi, *Singapore*

Enhancing water security and quality: Design and implementation of an off-river storage facility in Ghana Water LTD.'s Konongo WTP Mawunyo Kofiloto, *Ghana*

Legionella contamination in South African Water Systems: Socio-economic and climatic determinants Atheesha Singh, South Africa

Implementing 24x7 water supply in high-altitude cold regions: The Gangles pilot project Ansu Cherian, *India*

T1.4 Session 3 | Technical

Tuesday 9 December
Room MR102

Data-driven insights for water treatment efficiency

Chair: Ismail Banoo, *South Africa*
Co-chair: Viktoria Yavorska, *Norway*

This session presents innovative research and analytical approaches aimed at improving water treatment performance and understanding contamination risks. Topics include simulation of sludge dynamics under high turbidity conditions, application of smart metering to analyze consumption behavior, assessment of microbial risks influenced by abstraction methods, and pesticide risk evaluation in surface water sources. Drawing from case studies in the Philippines, Nepal, and Kenya, the session highlights how data-driven strategies can enhance operational decision-making and safeguard water quality in diverse settings.

Water abstraction method shapes microbial communities and pathogen risks in Kenyan Sand Dam Aquifers Reuben Duncan, *United Kingdom*

Low-cost method for comparing turbidity data to guide drinking water distribution system interventions Roman Tijsseling, *United Kingdom*

Evaluation framework for smart predictive digital twin for water supply systems: A case study in Portugal Mariana Alão, *Portugal*

Simulation analysis of sludge accumulation in La Mesa Water Treatment Plants 1 and 2 under prolonged high turbidity Guia Publico, *Philippines*

Smart water distribution system management: Exploring digital twin simulation models Bong Seog Jung, *Republic of Korea*

Smart metering technology for determining water consumption behaviour, a case study from Nepal Jens Dyrberg Nielsen, *Denmark*

T1.5
Session 1 | Technical

Wednesday 10 December
Room MR103

Innovative water technologies

Chair: Cecilia Soto, *Bolivia*
Co-chair: Walter Ng'eno, *Kenya*

This session highlights innovative, energy-efficient water solutions for climate-vulnerable and rural areas. It includes solar-powered desalination, atmospheric water harvesting, selective electrodialysis, and deionization for safe drinking water. Projects also feature modular treatment plants, rainwater systems for healthcare facilities, and smart sensors for pipeline monitoring advancing SDG 6 with sustainable, low-energy technologies.

Developing innovative atmospheric water harvesting and solar desalination technologies for water production in water-stressed areas Alexandros Stefanakis, *Greece*

Performance characterization of a multi-stage air gap membrane distillation system with direct thermoelectric integration Jaber Asiri, *Saudi Arabia*

Innovative and energy-efficient flow-electrode capacitive deionization for heavy metal removal in climate-vulnerable drinking water systems Seungkwan Hong, *Republic of Korea*

Advancing SDG 6: Continuous drinking water supply via solar-powered, low-energy battery integrated selective electrodialysis for rural Sri Lanka Binghui Tian, *China*

Easy-maintenance assembled drinking water plant Chengzhi Hu, *China*

Innovative rainwater for drinking (RFD) systems for health care facilities in the Mekong Region Mooyoung Han, *Republic of Korea*

T1.6
Session 2 | Technical

Wednesday 10 December
Room MR103

Novel treatment mechanisms

Chair: Tripti Kharel, *Nepal*
Co-chair: Miles Folkes, *United Kingdom*

This session presents innovative research on novel mechanisms for treating emerging and persistent contaminants in water systems. Together, these approaches highlight promising directions for safe and sustainable water treatment.

Effects of water supply plants with ozone biological activated carbon process on the physicochemical properties of drinking water distribution systems Xin Song, *China*

Deciphering the virucidal potential of hydroxyl radicals in ozonation: Mechanistic insights and water safety implications Zhiting Liang, *China*

Clean-in-place of dense membrane systems reduces metabolic activity of biofouling layer: Implication for dissolved organic carbon (DOC) transmission Zhao Li, *Germany*

$KMnO_4$–Fe(II) pretreatment to enhance algae removal by aluminum coagulation
Jing Qi, *China*

Exploring the potential of laterite, an iron rich medium, combined with sand in iron removal from groundwater Haroun Bangura, *Sierra Leone*

T1.7
Session 3 | Technical

Wednesday 10 December
Room MR103

New approaches for the removal of contaminants

Chair: Seungkwan Hong, *Republic of Korea*
Co-chair: Andrea Veciana, *Australia*

This session will cover experimental and innovative approaches for the detection and removal of various chemical contaminants.

Highly sensitive detection of the Tetracycline resistance Gene TetA in water supply systems with an autocatalytic Deoxyribonucleic acid–based cascade circuit Yu Zhou, *China*

Modification of an electrodisinfection system for nitrate removal from groundwaters in Australian regional and remote communities Ni Made S Suliartini, *Australia*

Effectiveness of orthophosphate corrosion inhibitor in controlling Ni release from stainless steel plumbing materials in drinking water Ding Quan Ng, *Chinese Taipei*

Optimization of Diclofenac sodium removal by adsorption onto powdered activated carbon from coconut endocarp Juliana Delgado Tinôco, *Brazil*

Physicochemical transformations of assimilable organic carbon (AOC) through ozone treatment Eric Cowan, *United Kingdom*

Direct photolysis of Ciprofloxacin and Levofloxacin under UV-LED irradiation: Influence of wavelength and light intensity Zi Bin Tang, *Chinese Taipei*

T1.8
Session 1 | Technical

Thursday 11 December
Room MR103

Emerging contaminants and disinfection in water treatment systems

Chair: Lalantha Senevirathna, *Australia*
Co-chair: Rowshan Mamtaz, *Bangladesh*

This session explores current challenges and advancements in drinking water treatment, focusing on microbial contamination, emerging pollutants, and treatment resilience. Topics include antimicrobial membrane technologies using quaternary ammonium compounds, microplastics behavior during irrigation and disinfection, and the comparative effectiveness of treatment systems across water sources. Additional studies address Legionella detection in hotel systems, biological processes for treatment plant resilience, optimization of geosmin removal using activated carbon, and quality control in packaged water production. Together, these works highlight innovations and risks shaping safe water supply strategies.

Antimicrobial polylactic acid membrane grafted with quaternary ammonium salt for effective and durable water disinfection Kai Zhao, *China*

Experimental insights into PET and PTFE microplastic transport in soils
Mohd Faraz Khan, *India*

Detection of Legionella species in hotel water systems using culture-based and molecular methods Benya Nontaleerak, *Thailand*

Enhancing resiliency of WTPs with biological treatment of drinking water
Hayat Raza, *Canada*

Optimizing geosmin removal in drinking water treatment using powdered activated carbon Dailin Currie, *South Africa*

Bacteriological quality and heavy metal analysis of packaged water produced in Lusaka, Zambia, and associated quality control measures Rodney Banda, *Zambia*

T1.9
Session 2 | Technical

Thursday 11 December
Room MR103

Managing the safety of water services in urban and rural setups

Chair: Tanvir Ahmed, *Bangladesh*
Co-chair: Sandy Johnson, *Sierra Leone*

In this session factors that can compromised the integrity nad safety of wash services in both riral and urban set ups are discussed. This includes the nature of material used in didtribution systems, contaminants that can impact on the safety of drinking water especially the biological quality that results in waterborne diseases in marginalized communities. The need for climate resistent water services infrastructure is also presented and emphasized for the protection of vulnerable communities. Presentations are across the globe and emphasize the importance of managing risks acros the value chains.

Unveiling the corrosion of stainless steel pipe in drinking water distribution system: Interdisciplinary insights on water quality and anti-corrosion design Xinyu Pan, *China*

Stainless partially corrugated tube (SPCT): A material for sustainable and leakage resistant connection to water mains David Nicholas, *Australia*

Inclusive rural water supply services in Maharashtra: Bridging water abundance and accessibility Upsana Yadav, *India*

Association of stored tap water contamination with direct and indirect media in peri-urban Lusaka Wutyi Naing, *Japan*

Locked out of water: A reflection on WASH access in US prisons Kimberly Worsham, *United States*

Conservation in action: Assessing water quality in untreated surface water sources in Villagarzón, Putumayo, Colombia Diana Calvo, *United States*

T1.10
Session 2 | Technical

Friday 12 December
Room MR101

Partnerships and local approaches

Chair: Elina Baseri, *Malaysia*
Co-chair: Pranesh Muthuchami, *India*

Implementers and funders are identifying new models of collaboration to expand access and ensure the financial sustainability of both large and small water systems. This session highlights findings from both local case studies and global comparative studies.

Enabling PWO provision of piped water to the home: Insights from Cambodia John Stone, *United Kingdom*

Strategies for the successful legal and political integration of community-based drinking water providers in contemporary nation states Katharina Lindt, *Germany*

Climate resilience and socio-economic impact of water supply in marginalized urban communities: A case study of Cumilla City Corporation, Bangladesh Dilruba Farzana, *Bangladesh*

Revolving funds for social connections in Ghana Benjamin Wiredu, *Ghana*

From well to home: Understanding water quality changes in a Wayuu Indigenous Community Diana Calvo, *United States*

Building resilience in rural healthcare: Innovative strategies for introducing water treatment technologies in underserved communities Christabel Kambala, *Malawi*

Technical Sessions
Theme 2

Advancing wastewater treatment and sanitation services: Sustainable solutions for all

T2.1
Session 1 | Technical

Tuesday 9 December
Room MR111 (A+B+C)

Circular economy in wastewater: Innovations in energy recovery, resource reuse, and sustainable treatment

Chair: Ligy Philip, *India*
Co-chair: Ashton Mpofu, *South Africa*

This session highlights transformative approaches in wastewater and sludge management that align with circular economy goals. Topics include microbial fuel cells and MECs for energy generation, CO_2-to-fuel photoelectrochemical systems, and enhanced biogas production using co-digestion and biochar. Presentations also explore the reuse of biosolids for agriculture, development of sustainable disposal regulations in India, and nutrient recovery for rice cultivation. Together, these innovations demonstrate how wastewater systems can evolve into multifunctional hubs for energy, water, and resource recovery, promoting sustainability across treatment infrastructures.

Enhancing contaminant removal and chlorination byproduct control in saline sewage treatment through integrating CO_2-to-fuel conversion in a multifunctional photoelectrochemical system Dong Taoran, *Hong Kong, China*

Sustainable hydrogen production in a two-chamber MEC: Effect of synthetic and real substrate feeding on system performance Angela Marchetti, *Italy*

From waste to grain: Boosting protein-rich rice production with sludge-derived fertilizers Jittrera Buates, *Japan*

Energy recovery through co-digestion of biosolids and food waste: A microbial perspective Nirakar Pradhan, *Hong Kong, China*

Developing wastewater bio-solids (sludge) management strategies and new disposal regulations with reuse to achieve an effective circular economy – Need of the hour in India Uday Kelkar, *Japan*

Synergistic effects of digestate biochar and free nitrous acid on biogas production from sewage sludge Anish Ghimire, *Thailand*

T2.2 Session 1 | Technical

Tuesday 9 December
Room MR109 (A+B)

Sanitation and public health: Evidence-based approaches for safe, inclusive, and standardized solutions

Chair: Juliet Willetts, *Australia*
Co-chair: Sheik Mohammed Shibl Akbar Chinna Mohideen, *India*

This session presents evidence-based research and field experiences focused on the performance, safety, and standardization of sanitation systems in both urban and rural settings. Drawing on case studies from Bangladesh, Fiji, Nepal, Indonesia and India, these presentations will examine the extent and health implications of greywater and fecal contamination, risks to shallow groundwater, and pathogen exposure in non-sewered sanitation systems. Through rigorous data and field case studies, this session aims to inform the development of inclusive, safe, and performance-driven sanitation strategies, with a focus on human and environmental health.

Greywater contamination in Urban Bangladesh: Challenges and pathways to sustainable management Mostafizur Rahman, *Thailand*

Faecal contamination in latrine front-ends in Rural Fiji and Nepal: Implications and recommendations for sanitation and hygiene interventions Sabita Adhikari, *Australia*

On-site sanitation system and faecal contamination in shallow groundwater in Urban Indonesia: Assessing influence of distance and rainfall variables Gita Puri, *Australia*

Assessing the effectiveness of tiger worms at degrading Ascaris eggs in faeces Yogesh Badekar, *United Kingdom*

How effective is the sanitation intervention in Cox's Bazar Rohingya Camp? Sadia Rakib Shamonti, *Bangladesh*

Evaluation of sludge quality of faecal sludge treatment plants in Odisha (India) for reuse Prasanta Mohapatra, *India*

T2.3 Session 1 | Technical

Tuesday 9 December
Room MR101

Decarbonizing wastewater and sanitation: Emissions, resilience, and climate action

Chair: Freya Mills, *Australia*
Co-chair: Md Sahidul Islam, *China*

This session focuses on the critical role of wastewater and sanitation systems in climate mitigation, showcasing research and field applications aimed at measuring, evaluating, and reducing greenhouse gas (GHG) emissions across both sewered and non-sewered contexts. Presentations include empirical studies on methane emissions from decentralized sanitation systems, as well as advanced treatment processes. In addition to technical approaches, the session explores institutional strategies for climate resilience, including the integration of energy audits and solar infrastructure within WASH systems. By combining emissions quantification with system-wide mitigation and adaptation strategies, this session offers a comprehensive view of how wastewater and sanitation can be decarbonized while contributing to broader sustainability and climate resilience goals.

Measuring, scaling, and reporting methane emissions from low-cost non-sewered sanitation to advance mitigation strategies Kelsey Shaw, *Canada*

Determining population equivalents for individual, non-sewered sanitation systems Linda Strande, *Switzerland*

Evaluating methane emissions and exploring potential methane capturing mechanisms across the sanitation service chain Aasim Mansuri, *India*

Greenhouse gas emission from non-sewered sanitation-a case study in Faridpur City, Bangladesh Sharmistha Debnath, *Bangladesh*

Moving towards climate resilient WASH services through energy audit and solar infrastructure Arwa Bharmal, *India*

A study on climate-resilient WASH in disasters: Addressing gaps in disaster waste management in Kerala, India Akhilesh Ramesh, *India*

T2.4
Session 2 | Technical

Tuesday 9 December
Room MR111 (A+B+C)

Advancing resource recovery in wastewater and fecal sludge management

Chair: Guemegbo Hypolithe Gogo, *Ivory Coast*
Co-chair: Yogita Gupta, *India*

This session explores innovative approaches to resource recovery within wastewater and fecal sludge management, emphasizing solutions that promote sustainability and circularity. It highlights emerging technologies and strategies for recovering valuable resources such as nutrients and energy, and reusing treated water and biosolids. Case studies demonstrate the practical application of electrochemical methods, material reuse, and microbial analysis, while also examining the development of decision-making tools like quality indices and circular economy frameworks. Policy integration and system-level planning are also discussed to support the scalable adoption of these solutions in diverse contexts, from urban centers to island nations.

Recovery of phosphorous from anaerobic digestate using electrochemical struvite precipitation Kripa Singh, *Canada*

Faecal sludge management strategy for Fiji – A circular economy systems approach Pierre Mukheibir, *Australia*

Impact of PH and temperature on dark fermentation: A biotechnology for short chain volatile fatty acids production from sewage sludge James Manu, *United Kingdom*

Treating fecal sludge in the city – an Indian FSM success story Sasikumar Eswaramurthy, *India*

Faecal sludge management for addressing contamination in rural water systems Aakash Jain, *India*

T2.5
Session 2 | Technical

Tuesday 9 December
Room MR109 (A+B)

Wastewater surveillance and the challenge of antimicrobial resistance (AMR)

Chair: Zhugen Yang, *United Kingdom*
Co-chair: Ritu Negar Sultana, *Bangladesh*

As antimicrobial resistance (AMR) continues to pose a global health threat, its presence and persistence in wastewater systems demand urgent attention. This session examines the role of wastewater surveillance in tracking AMR and viral pathogens, focusing on both detection and mitigation strategies. Topics include the occurrence and removal of antibiotic-resistant bacteria and genes in treatment systems across various regions, from Kashmir to Southeast Asia. The session also explores advanced disinfection techniques such as ozone treatment, and how campus and rural surveillance systems have been adapted for pathogens like SARS-CoV-2 and seasonal influenza. Institutional frameworks and practical considerations for implementing surveillance in diverse settings will also be discussed, supporting broader efforts in public health and environmental protection.

Removal of antibiotic resistance genes from wastewater treatment plant and their distribution in Asian Communities Sadhana Shrestha, *Japan*

Campus source to sink wastewater surveillance of severe acute respiratory syndrome Coronavirus-2 (SARS-CoV-2) Miles Folkes, *United Kingdom*

Phenotypic antimicrobial resistance profile of *Escherichia Coli* in the water environment and sewage of Hong Kong Chu Ka Him, *Hong Kong, China*

Wastewater surveillance for seasonal influenza epidemics: Strategies and considerations for small public health units and rural regions Banu Ormeci, *Canada*

Effective viral inactivation by ozone in wastewater: Decoupling matrix effects and mechanistic insights Xiaoyuan Zhang, *China*

Reduction of indicator bacteria, somatic coliphages and antibiotic resistant genes (ARGs) from wastewater by combined disinfection processes Abidelfatah Nasser, *Israel*

T2.6
Session 2 | Technical

Tuesday 9 December
Room MR101

Disaster-ready sanitation: Safeguarding health and infrastructure in disaster prone areas

Chair: MD Azizur Rahman, *Bangladesh*
Co-chair: Meg Cummins, *Australia*

This session emphasise on disaster-ready sanitation solutions that protect public health and critical infrastructure in disaster-prone and climate-vulnerable regions. Presentations will showcase resilient sanitation technologies, emergency response systems, and adaptive infrastructure designs tailored to withstand floods, and other extreme events. Case studies will highlight successful implementations in both urban and rural settings, emphasizing rapid deployment, low-cost construction, and community engagement. The session will also explore policy frameworks, risk assessments, and capacity-building strategies essential for preparedness and recovery. By promoting resilient and inclusive sanitation systems, the session aims to reduce health risks and strengthen community resilience in the face of disasters.

When the shit hits the fan: analysing sanitation and flood risk in Kibera after the 2024 El Niño flood James Wallace, *United Kingdom*

Inclusive and sustainable sanitation intervention: a data-driven decision-making approach for marginalized urban communities in Bangladesh Dilruba Farzana, *Bangladesh*

An investigation of containment safety and risk framework for on-site sanitation back-ends: A rural context Nabeela Nasim, *Australia*

Building climate-resilient and inclusive WASH services in Bangladesh: A collaborative approach MD Habibur Rahman, *Bangladesh*

The assessing the readiness of the public health sector towards the development of a model for managing antimicrobial resistant from the wastewater treatment system in hospitals Thailand Sutchamarn Trancharoen, *Thailand*

Utilization of mobile treatment unit for faecal waste treatment in public toilets: A case study of Sabarimala, India Suraj Shaji, *India*

T2.7
Session 3 | Technical

Tuesday 9 December
Room MR111 (A+B+C)

Advancing pathways to circularity and sustainability in sludge management

Chair: Vedala Srinivasa Chary, *India*
Co-chair: Angela Marchetti, *Italy*

This technical session highlights cutting-edge research and practical innovations aimed at enhancing the efficiency, sustainability, and economic performance of sludge treatment and management. Presentations will explore a range of topics, including the development of high-value products such as bio-asphalt from fecal sludge, improved sludge pre-treatment strategies to optimize dewatering and reduce costs, and novel thermal processes like microwave treatment to boost sludge reuse potential.The session will also feature national-level strategies such as China's path toward carbon neutrality and India's evolving regulatory frameworks to promote sustainable sludge disposal and reuse.Special emphasis will be placed on the integration of these technologies into circular economy models, with relevance for both developed and developing contexts.

Microwave treatment of sludge using a new pilot set-up to enhance its market value for reuse. Case study: A wastewater treatment plant in Mostar City, Bosnia and Herzegovina Denis Taremwa, *Uganda*

Valorization of sludge: Enhancing performance & economics with wastewater by-product pre-treatment Subham Meher, *India*

Towards the carbon neutrality of sludge treatment and disposal in China: A nationwide analysis based on life cycle assessment and scenario discovery Xue Zhou, *China*

The science of sludge dewatering: Effect of G-force on dewatering centrifuge performance: G-volume as a key metric for centrifuge scaling Dinesh Gehani, *Germany*

Recycling of sewage sludge ash to produce artificial coarse aggregate for the construction industry MD Rafiqul Islam, *Bangladesh*

Formation and operations of faecal sludge management enterprises: A case study in an informal peri-urban settlement in Lusaka, Zambia Shotaro Goto, *Japan*

T2.8
Session 3 | Technical

Tuesday 9 December
Room MR109 (A+B)

Emerging contaminants and microbial and microplastic risks in wastewater: Monitoring, mitigation, and molecular insights

Chair: Amir Gholipour, *Denmark*
Co-chair: Claudia Hledik, *Austria*

This session highlights the latest research on the fate, transformation, and health risks of emerging contaminants in wastewater systems. Presentations cover antibiotic resistance in plastispheres, microplastic contamination in sludge, and seasonal variations affecting environmental safety. Innovative monitoring tools such as nanoplate digital PCR and molecular-level EPS analysis are showcased alongside advanced treatment strategies using biochar, nanomaterials, and UV/PAA disinfection. The session also explores the impact of treatment processes like anaerobic digestion and constructed wetlands on microbial diversity and pollutant degradation. Together, these studies inform safer, smarter wastewater reuse and risk mitigation practices.

Seasonal variation of microplastics in wastewater treatment plant sludges and implications for agricultural use Banu Ormeci, *Canada*

Tracking the transformation of EPS during the UV/PAA disinfection process: A molecular-level analysis Yizhe Ding, *China*

Application of nanoplate-based five-plex digital PCR to simultaneous detection of pathogenic viruses and bacteria in wastewater Soichiro Hirai, *Japan*

Smart nanomaterials for advanced micropollutant degradation Andrea Veciana, *Australia*

Back to basics: Exploring the fundamental challenges of analysing microplastics from wastewater treatment plants Joycelyn Bempong, *United Kingdom*

T2.9
Session 3 | Technical

Tuesday 9 December
Room MR101

Policy and economic tools for sustainable waste and water management

Chair: Virtuous Igbodika, *Nigeria*
Co-chair: Akhilesh Ramesh, *India*

This session focuses on the critical role of policy frameworks and economic instruments in advancing sustainable waste and water management. Presentations will explore tools such as life cycle assessment, cost-benefit analysis, and market-based incentives that drive effective decision-making and resource allocation. Case studies from diverse governance contexts will illustrate how integrated policies and economic strategies can promote circular economy practices, improve service delivery, and ensure environmental compliance. The session aims to foster dialogue on aligning regulatory mechanisms, institutional capacity, and financial models to support resilient, inclusive, and environmentally sound waste and water management systems worldwide.

Environmental impact and economic performance analysis of two faecal sludge treatment plants in Beijing: A life cycle perspective Shikun Cheng, *China*

Ten years of THP AAD for biosolids management in Beijing – Strategies and performance Julien Chauzy, *Norway*

Strength and gap analysis using CWIS mentor city indicators for sustainable sanitation in Bangladesh Asef Redwan, *Bangladesh*

Evaluating the sustainability of a wastewater treatment facility upgrade in Metro Manila: A life cycle perspective on nutrient removal Angelica Euara Manrique, *Philippines*

Sustainable wastewater treatment in Pakistan: Advancing the reed bed system for water management Muhammad Keryo, *Pakistan*

Wastewater collection and treatment projects and a river restoration program in Hanoi City, Vietnam Viet-Anh Nguyen, *Vietnam*

T2.10
Session 1 | Technical

Wednesday 10 December
Room MR109 (A+B)

Transforming sanitation through decentralized and non-sewered systems

Chair: Karoly Kovacs, *Hungary*
Co-chair: Angelica Euara Manrique, *Philippines*

This session highlights innovative approaches and practical strategies for implementing and scaling non-sewered and decentralized sanitation systems. With growing interest in resilient and locally adaptable solutions, the presentations cover a range of topics including population-based system design, climate-adapted technologies, and data-driven monitoring techniques. Case studies from India, South Africa, and beyond explore governance frameworks, performance assessments under extreme conditions, and the role of container-based and on-site systems in improving sanitation access.

The novel in-situ pathway for carbon reduction, pollution mitigation, and efficiency enhancement in high-density urban wastewater treatment: an empirical study on the AOA-MBBR process Ma Hanqing, *China*

The resilience of container based sanitation Alison Parker, *United Kingdom*

Comparative analysis of climate-adapted on-site sanitation technologies: Performance and suitability under extreme environmental conditions Tatchai Pussayanavin, *Thailand*

Governance of decentralised water reuse in Bengaluru, India Abishek Narayan, *India*

Scaling water-efficient and non-sewered sanitation systems in South Africa: Lessons from the WRC's SASTEP demonstration programme Phillip Majeke, *South Africa*

Measuring TSS and TDS inside septic tanks to inform fecal sludge treatment plant design in Rural India Monisha Naik, *Canada*

T2.11
Session 1 | Technical

Wednesday 10 December
Room MR102

Enhancing wastewater treatment through emerging technologies and artificial intelligence

Chair: Marina Prisciandaro, *Italy*
Co-chair: Hadi MokariSouth Africadeh, *Canada*

This session highlights advanced and cutting-edge technologies aimed at significantly enhancing the performance, sustainability, and resource recovery potential of wastewater treatment systems. The featured presentations, spans applications of artificial intelligence and machine learning for operational optimization as well as the deployment of novel treatment technologies beyond traditional frameworks. These studies demonstrate the technical feasibility and environmental relevance of next-generation treatment technologies aligned with circular economy and decarbonization goals.

Demonstration test of AI guidance technology to support advanced operation of wastewater treatment plants Yoshihiro Ishii, *Japan*

High-performance bio-digester (HPBD-2) for efficient and sustainable blackwater treatment: Optimization and performance evaluation Anurag Tomar, *India*

Efficient wastewater treatment by combined low-temperature plasma and ultrathin graphitic carbon nitride nanoflakes Frantisek Zazímal, *Czech Republic*

A machine learning approach to chemical dosing optimization in WWTPs Viktoria Yavorska, *Norway*

Integrating anaerobic membrane bioreactors with hydroponic controlled environment agriculture: Advancing urban wastewater treatment and food production Seungkwan Hong, *Republic of Korea*

AKYAS's nanobubble effluent treatment system (NETS) Ching Man Mui, *United Arab Emirates*

T2.12
Session 1 | Technical

Wednesday 10 December
Room MR101

Cutting-edge nitrogen removal strategies in wastewater treatment

Chair: Nirakar Pradhan, *Hong Kong, China*
Co-chair: Orisa Coombs, *United States*

This session highlights cutting-edge advances in nutrient removal and recovered resource use aimed at enhancing the sustainability and efficiency of wastewater treatment systems. Presentations will explore both biological and material-based innovations for optimizing nitrogen and phosphorus management. Topics include microbial competition strategies that stabilize mainstream partial nitritation-anammox systems, development of high-efficiency phosphate adsorbents from wastewater-derived magnetite, and utilization of sewage sludge–derived biochar for phosphorus removal and sludge granulation enhancement. Collectively, these studies demonstrate integrated pathways toward circular resource use, reduced environmental impacts, and improved operational performance in modern wastewater facilities.

Biochar enhanced sludge granulation and microbial growth in anammox systems: Insights from EPS and interface thermodynamics Jingwei Fu, *China*

Evaluating the sustainability of direct potable reuse from advance tertiary treatment of wastewater in Mumbai to meet United Nations SDG6 goal Ajit Savadi, *India*

Revolutionizing water and sanitation: Nanotechnology, decentralized systems, and greywater reuse Maisha Morshed, *Canada*

T2.13
Session 2 | Technical

Wednesday 10 December
Room MR109 (A+B)

Decentralized sanitation innovations and scalable solutions for inclusive urban-rural wastewater management

Chair: Aasim Mohammed Yunus Mansuri, *India*
Co-chair: Philadelphia Ngobeni, *South Africa*

This session explores transformative approaches to urban and rural sanitation through innovative technologies, system optimization, and inclusive policy models. Topics include codigestion strategies for enhanced sludge treatment, onsite urine repurposing, urban-rural sanitation convergence, and the role of locally fabricated FSM technologies. Case studies from Kenya, Nepal, and across Asia highlight efforts to standardize septic systems, scale sanitation enterprises, and reduce overflows through smart sewer infrastructure controls. Together, these initiatives offer actionable pathways for cost-effective, eco-friendly, and sustainable sanitation services in the Global South.

Impact of pretreatment on codigestion of sbr sludge and municipal solid waste
Ashish Sahu, *Norway*

Process design, system development, and performance evaluation of an integrated onsite urine repurposing technology Sangeetha Vivekanandan, *India*

Urban-rural convergence: A proactive approach to reinforce the existing sanitation situation in asian context Harshi Sirisena, *Thailand*

Optimising existing sewer infrastructure controls to reduce overflows Pascal Lang, *United Kingdom*

RCC Prefabricated septic tanks: A cost-effective and eco-friendly approach to onsite sanitation Sasikumar Easwaramurthy, *India*

Standardization of septic tanks in Mahalaxmi Municipality: An Initiative for low-cost sustainable decentralized sanitation approach in Global South for wastewater management Suban Maharjan, *Nepal*

T2.14
Session 2 | Technical

Wednesday 10 December
Room MR101

Understanding microbial interactions for enhanced treatment performance

Chair: Yongmei Li, *China*
Co-chair: Haroun Bangura, *Sierra Leone*

This session delves into the microbial and ecological processes at the heart of wastewater treatment systems. Presentations highlight the role of microbial consortia, stress responses, and spatial patterns in treatment performance across various systems and strategies. By deepening our understanding of microbial and community-level dynamics, this session supports the development of advanced and resilient treatment solutions for diverse wastewater contexts.

Microbial community dynamics and septic tank performance in Kazakhstan: A case study from a cold region Aiman Uteyeva, *United Kingdom*

Development of microalgae-bacteria consortia for the tertiary treatment of wastewater Yogita Gupta, *India*

Investigating the dynamics, formation, and degradation of sulfamate in wastewater systems and implications for treatment strategies Claudia Hledik, *Austria*

Bioaugmentation for enhanced nitrogen removal in wastewater treatment: A sustainable and cost-effective solution for climate-resilient wastewater treatment Dirk Westensee, *United Kingdom*

Evaluation of enzymatic pre-treatment coupled with expanded granular sludge bed reactor (EGSBR) for dairy wastewater remediation Moses Basitere, *South Africa*

Effect of functional microbes outcompeting NOB in mainstream nitritation-anammox systems Daehee Choi, *Republic of Korea*

T2.15 Session 3 | Technical

Wednesday 10 December
Room MR109 (A+B)

Decentralized and inclusive wastewater solutions: Low-energy innovations for resilient sanitation systems

Chair: Phillip Majeke, *South Africa*
Co-chair: Chelsea Hayward, *Cambodia*

This session presents pioneering approaches to decentralized and community-scale sanitation, combining technical innovation with social equity. Topics include solar-powered septic systems, modular phytoremediation for urban drains, humus bioreactors, and mobile septage treatment units. Papers also explore advanced processes such as sulphur autotrophic denitrification and solar photocatalysis for persistent pollutants. A case study from Indonesia links toilet access with income and education, highlighting behavioral and equity considerations. Together, these presentations offer holistic, scalable solutions to improve sanitation in resource-constrained and underserved settings across Asia and beyond.

Solar-activated tin oxide for photocatalytic treatment of oil sands process water: Degradation of naphthenic acids and toxicity reduction Hadi Mokarizadeh, *Canada*

High-performance sulphur autotrophic denitrification from low-C/N wastewater using novel suspended Bio-S0 Filters in short-process Rashmi Koju, *China*

Advancing solar septic tank technology: Performance evaluation and technical validation in Southeast Asia Tatchai Pussayanavin, *Thailand*

Modular biofilm-phytoremediation system for urban drain remediation: A low-energy solution in resource-constrained settings Ligy Philip, *India*

Innovations in sanitation for underserved communities Ednick Msweli, *South Africa*

T2.16 Session 3 | Technical

Wednesday 10 December
Room MR101

Harnessing Nature-based Solutions for resilient and sustainable wastewater management

Chair: Geetha Palayil Kumaran, *Malaysia*
Co-chair: John Pepard Rinchon, *Philippines*

This session explores the evovling role of nature-based solutions (NbS) in tackling water and wastewater management challenges, particularly in decentralized, rural, and resource-constrained environments. Through a series of diverse application, presenters will showcase innovative approaches such as macrophyte-assisted vermifiltration, bio-carrier systems using microalgae for micro/nano plastic removal. The session will also feature a case of over two decades of global implementation experience to highlight best practices and key lessons learned in designing and sustaining NbS in low- and middle-income countries. Collectively, the presentations illustrate how NbS can contribute to environmental sustainability, community resilience, and circular economy goals.

Nature-based wastewater treatment for resilient communities in Himalayan Region: A demonstration project at the District Police Line, Leh, Union Territory of India Ansu Susan Cherian, *India*

Nature-based approach to close the E-cycle and keep water safety Bruno Henriques, *Portugal*

Anabaena 418 as a bio-carrier for micro/nano plastic removal: Adsorption mechanisms and adaptive responses Baiyun Lu, *China*

Nature-based solutions for wastewater treatment in low- and middle-income countries: lLessons learnt from 25 years of IRIDRA's worldwide experience Anacleto Rizzo, *Italy*

Treatment wetlands, third edition (free open-access textbook) Jaime Nivala, *France*

T2.17
Session 1 | Technical

Thursday 11 December
Room MR102

Innovative membrane and adsorptive technologies for sustainable wastewater reuse and resource recovery

Chair: Tjandra Setiadi, *Indonesia*

This session showcases cutting-edge advancements in membrane science and adsorptive materials to tackle membrane fouling, enhance wastewater treatment, and recover valuable resources. Topics include biochar-assisted fouling mitigation in high-solids AnMBRs, novel vertical green wall systems for low-cost water reuse, and membrane enhancements for biochemical recovery and lithium extraction. Emerging strategies such as limited-aeration MBRs, thermodynamic modeling, and ionic liquid membranes are also explored. Insights from CFD, material engineering, and interface thermodynamics provide a multi-scale understanding of water-energy nexus challenges and solutions.

Multi-scale mechanisms of biochar-driven membrane fouling mitigation in high-solids AnMBRs: Insights from CFD and interface thermodynamics Chengfan Jiao, *China*

Applications of novel adsorptive media in vertical green wall system (VGW) as a low-cost water reuse technology in municipal wastewater treatment systems Chawalit Chaiwong, *Thailand*

Shaking with limited air: A novel strategy for effective membrane fouling control in membrane bioreactors Jiale Wang, *China*

Enhancement of polyvinyl alcohol adsorbent membrane via crosslink with citric acid and lysin for biochemical recovery from food processing waste streams Thu Hang Duong, *Veitnam*

Design considerations and operational variations of a pond-wetland system for polishing treatment and wastewater, emergency control at a steel complex Viet-Anh Nguyen, *Vietnam*

Efficiency of constructed wetlands for microplastic removal from municipal wastewater: A lab-scale study Majed Alsubih, *Saudi Arabi*

T2.18
Session 2 | Technical

Thursday 11 December
Room MR102

Emerging solutions for toxic metal and contaminant removal

Chair: Marco Zeppilli, *Italy*
Co-chair: Maki Phindile Mahlangu, *South Africa*

This session explores emerging solutions for the removal of toxic metals and hazardous contaminants from wastewater systems. Presentations will highlight advanced treatment technologies such as adsorption using novel materials, nanotechnology-based filters, electrochemical processes, and bioremediation techniques. Case studies and experimental findings will demonstrate the effectiveness, scalability, and environmental safety of these innovative approaches in diverse settings. The session will also address the challenges of selectivity, cost-efficiency, and regulatory compliance. By showcasing cutting-edge research and practical applications, this session aims to drive forward sustainable and effective strategies for mitigating the risks associated with heavy metals and persistent environmental toxins.

Enhanced removal of heavy metals using sawdust and rice husk derived biochar from aqueous solutions Abhijit Debnath, *India*

Sorption of rare earth elements by GO-PEI: A sustainable approach for water purification, Nicole Ferreira, *Portugal*

Harnessing Fe_3O_4-modified G-C_3N_4 and BNNS for cutting-edge microplastic remediation in water treatment Riona Indhur, *South Africa*

Carbon-based electrocatalytic dual-membrane system bolsters singlet oxygen production for ultrafast water decontamination Ni Yan, *China*

*Iron biosorption assessment with Totora (*Schoenoplectus Californicus*) And Reed (*Phragmites Australis*) as potential non-conventional technology for polluted water in rural area in Bolivia* Paula Soto Rios, *Bolivia*

Biochar-mediated optimization of anaerobic membrane bioreactor: Dose-dependent membrane fouling mitigation and digestion enhancement via scouring-biological synergy Qian Li, *China*

T2.19
Session 3 | Technical

Thursday 11 December
Room MR109 (A+B)

Waste-to-Farm: Enhancing soil health through safe reuse practices

Chair: Sharmistha Debnath, *Bangladesh*
Co-chair: Abidelfatah Nasser, *Israel*

This session highlights the potential of safely reusing treated wastewater, biosolids, and organic waste in agriculture to enhance soil health and support sustainable farming. Presentations will explore innovative treatment methods, risk mitigation strategies, and nutrient recovery techniques that enable the safe application of waste-derived products to land. Case studies from diverse agroclimatic regions will demonstrate improvements in soil fertility, crop yield, and carbon sequestration. The session emphasizes the importance of regulatory frameworks, stakeholder engagement, and monitoring to ensure environmental and public health safety.

Composted sewage sludge application enhances soil health and potentially mitigates greenhouse gas emissions in rice paddies Luc Phung, *Japan*

Municipal anaerobic filter effluent treatment using advanced oxidation processes for crop production Benton Otieno, *South Africa*

Evaluating co-compost produced from integrated faecal sludge treatment plants (FSTPs) in India Shirish Singh, *Netherlands*

Turning human urine into fertilizer using reverse osmosis: A pilot study Njabulo Thela, *South Africa*

Performance assessment of soil conditioner, a byproduct from faecal sludge treatment plant (FSTP) Md Shakhawat Hossain, *Bangladesh*

Micropollutant removal in an innovative earthworm-enhanced sludge treatment reed bed Amir Gholipour, *Denmark*

T2.20
Session 3 | Technical

Thursday 11 December
Room MR102

Tailored treatment solutions for industrial wastewater

Chair: Moses Basitere, *South Africa*
Co-chair: Kripa Singh, *Canada*

This session explores innovative and tailored approaches for treating industrial wastewater, recognizing that each industry presents unique challenges and characteristics. The presentations highlight cutting-edge technologies and full-scale applications, from microbial electrochemical systems and bioremediation to electrocoagulation and selective resource recovery. Case studies cover a range of industrial sectors including textile, mining, and shale gas, demonstrating how specialized solutions can effectively address complex contaminants and support sustainable water management in industrial contexts.

Dye another day: Electrically active microbes in EULand and membranes to the rescue Tjandra Setiadi, *Indonesia*

Bioremediation of fluorinated pollutants by *Pseudomonas* Sp. strain 273 Yongchao Xie, *China*

Integrated co- treatment system for acid mine water and industrial wastewater: An innovative approach Thobeka Makhathini, *South Africa*

Treatment of the spin cycle effluent using electrocoagulation and granular activated carbon Shamik Prabhu Chodnekar, *India*

Characterization of microbial electrolysis cell's bioanode performances through potentiostatic and potentiodynamic techniques Marco Zeppilli, *Italy*

Application of Pinus Patula *biochar for enhancing palm oil industry wastewater treatment* Ainhoa Rubio-Clemente, *Colombia*

Technical Sessions **Theme 3**

Smart Water Management: Integrated approaches for effective water management and planning

T3.1
Session 1 | Technical
Tuesday 9 December
Room MR106

Resilient infrastructure & tackling non-revenue water loss

Chair: Joe Dalton, *Ireland*
Co-chair: Christina Betty Taylor Koranteng, *Ghana*

Highlights strategies for non-revenue water (NRW) reduction, infrastructure efficiency, and smart utility management.

Taiwan Water Corporation's NRW reduction journey – High road or low road?
Joe Lim, *Chinese Taipei*

24x7 water supply in Rajkot : A water security plan Prerna Jadhav, *India*

Pipe failure prediction in water transmission lines using interpretable machine learning with imbalanced data Taegon Ko, *United Kingdom*

From 54% to 12% of NRW – Strategies and tools of an excellence program of Porto to increase efficiency & sustainability Flávio Oliveira, *Portugal*

Enhancing water management efficiency through a centralized operation control center: The Semarang Water Utility success story Ardian Wiedilaksono, *Indonesia*

Leak localization in water distribution systems: A graph theory approach Raghavarshith Bandreddi, *United Kingdom*

T3.2
Session 1 | Technical
Tuesday 9 December
Room MR102

From data to drops: AI in smart water management

Chair: Murari Lal Gaur, *India*
Co-chair: Jayanga Kodikara, *Japan*

Focuses on AI, machine learning, and digital twin technologies for flood prediction, leak detection, and water system optimization.

Integrating flood risk modeling into urban digital twins: A framework for real-time assessment, decision-making and public engagement Lars Backhaus, *Germany*

A model predictive control framework for smart predictive digital twins in water supply systems Ana Luísa Reis, *Portugal*

Building resilient water systems with AI-enhanced WASH data Rajit Ojha, *Nepal*

InnoWave: The power of digital and artificial intelligence in water efficiency
Flávio Oliveira, *Portugal*

T3.3
Session 2 | Technical

Tuesday 9 December
Room MR102

Connected communities: Digital platforms for inclusive engagement

Chair: Darko Joksimovic, *Canada*
Co-chair: Narasamma Nippatlapalli, *India*

Features digital tools, public engagement, and data-driven decision-making for water management.

Collaboration between water users and water utilities using smartphone apps
Kazuya Naito, *Japan*

Wastewater masterplanning tools at settlement, regional, and global scales reduce costs to realize SGD 6 Alexandria Achieng Baraza, *Germany*

Evaluating the effectiveness of smart water management systems in enhancing the resilience and sustainability of water infrastructure in developing countries
Saravanamuthu Vigneswaran, *Australia*

Automatic fault detection in water-quality sensors using predictive machine learning models
Wedahitha Yapa, *Sri Lanka*

DREINCAM: New intelligent drainage management system in Madrid Region
Antonio Lastra de la Rubia, *Spain*

AQUAWATCH: Groundwater monitoring and data-driven decision making through advanced research Sushanta Roy, *Bangladesh*

T3.4
Session 1 | Technical

Thursday 11 December
Room MR111 (A+B+C)

Navigating flood hazards: Enhancing urban resilience

Chair: Alison Parker, *United Kingdom*
Co-chair: Thabo Ncala, *South Africa*

Addresses flood risk assessment, climate-adaptive drainage, and nature-based solutions for urban resilience.

Case study on carbon reduction in a water cycle city based on water reuse Soon Buhm Kwon, *Republic of Korea*

Resilient urban drainage systems: Towards cost-effective and climate-adaptive solutions Darko Joksimovic, *Canada*

A framework for selecting and assessing Nature-based Solutions for soil erosion control in water resource management in Addis Ababa, Ethiopia Kimberly Wang, *Netherlands*

Understanding the MNF for DMAs: How much night water consumption is contained?
Qiang Xu, *China*

A virtual reality visualization of urban flooding simulation coupled with the SWMM
Jiye Park, *Republic of Korea*

Naturalization of rivers to prevent flooding in urban areas Siti Murniningsih, *Indonesia*

T3.5
Session 1 | Technical

Thursday 11 December
Room MR101

Rural water security through small-scale, localized & decentralized solutions

Chair: Joe Lim, *Chinese Taipei*
Co-chair: Regina Souter, *Australia*

Showcases decentralized, rural, and community-led water/sanitation solutions.

The story of the Matsu Islands – Transforming for smart and resilient water systems Menghsu (Andrew) Yu, *Chinese Taipei*

Water to cherish in urban landscapes in the Global South – Nature-based Solutions for climate resilient water design in low income neighorhoods in South-Africa and Nambia Martin Knuijt, *Netherlands*

Can solar disinfection of harvested rainwater improve access to safe water in healthcare centers in Rural Malawi? Kevin McGuigan, *Ireland*

Digital platforms supporting Mahalaxmi Municipality in standardizing sanitation system Irisa Shrestha, *Nepal*

Multi-layer root zone soil moisture prediction with a one-dimensional convolutional neural network and satellite data for climate-resilient irrigation Jayanga Kodikara, *Thailand*

T3.6
Session 3 | Technical

Thursday 11 December
Room MR111 (A+B+C)

Climate-resilient water security: Strategies for a changing world

Chair: Tim Marjoribanks, *United Kingdom*
Co-chair: Poly Das, *Bangladesh*

Examines climate adaptation, water security, and hydrological modeling in vulnerable regions.

Resource recovery through stormwater reuse: Enhancing water security in the Himalayan ridge town of Darjeeling Suvajit Dey, *India*

The effect of wildfires on soil hydraulic properties and groundwater recharge in San José de Chiquitos, Bolivia Mónica Guzmán-Rojo, *Bolivia*

Adaptation to water insecurity in the Vietnamese Mekong Delta: A case study of Soc Trang Province David Rodgers, *Australia*

Integrated spatial planning design with NbS for critical infrastructure protection against multiple climate driven hazards Carme Machí Castañer, *Austria*

Bridging Nature-based Solutions, smart technologies, and traditional wisdom for sustainable water management Murari Lal Gaur, *India*

T3.7
Session 1 | Technical

Friday 12 December
Room MR106

Regenerative water management: Sustainable & circular approaches

Chair: Sushanta Roy, *Bangladesh*
Co-chair: Sangeetha Vivekanandan, *India*

Explores circular economy approaches, resource recovery, and sustainable technologies for water treatment.

Sustainable approach for waste management: advancing circular economy in wastewater treatment Narasamma Nippatlapalli, *India*

Mitigate urban floods caused by extreme rainfall using Nature-based Solutions Kairong Lin, *China*

Sustainable activated carbon production from agricultural waste for climate change mitigation and water treatment Hayat Raza, *Canada*

Advancing off-grid water self-sufficiency on household level Devi Buehler, *Switzerland*

Utilising UAVs in turbidity measurement and catchment management planning Gabriel Njokaphiri, *Malawi*

T3.8
Session 1 | Technical

Friday 12 December
Room MR103

Navigating the industrial water crisis: Technologies and best practices

Chair: Loga Veeraiah, *Malaysia*
Co-chair: Noel Kwamivi, *Ghana*

Tackles industrial/mining wastewater challenges, metal recovery, and advanced monitoring.

Establishing sulfate concentration limits for integrating secondary battery wastewater to public wastewater treatment plants in South Korea Sang Yeob Kim, *Republic of Korea*

Carbon source dosage intelligent determination using a multi-feature sensitive back propagation neural network model, Aijiao Zhou, *China*

Optimizing hydropower generation in cascade reservoirs: A climate-resilient approach to achieve Indonesia's renewable energy goal Angeline Kusumaningrum, *Indonesia*

Green solutions for acidic mining waters: seaweed-based removal and recovery of critical metals Thainara Viana, *Portugal*

Messages from the electrical sensing zone (ESZ): A novel approach to characterizing particulate matter in water environment Kang Xiao, *China*

Integrating artificial intelligence for sustainable irrigation and water management in Assam's Tea Gardens Chiradip Barua, *India*

T3.9
Session 2 | Technical

Friday 12 December
Room MR111 (A+B+C)

From ideas to impact: Innovating policy and governance

Chair: Kazuya Naito, *Japan*
Co-chair: Sifiso Dhlamini, *United Kingdom*

Covers policy frameworks, governance tools, and SDG-aligned planning for water systems.

Circular economy and wastewater reuse: A comparative analysis between india and global practices Manikprabhu Dhanorkar, *India*

Ensuring safe drinking water: Climate-resilient water resource management in small island states – Lessons from Timor-Leste Mario Santos, *Timor-Leste*

GIS-driven strategies for sustainable and smart water resource management and climate adaptation Abhaye Mahajan, *India*

Application research of model-driven based adaptive scheduling in water distribution systems Dai Xiong Qi, *China*

A systemic approach to urban water and sanitation planning in heterogeneous contexts in low- and middle-income countries Simon Ross, *Australia*

Enhancing water safety in Porto: Integrating risk assessment and major strategic projects Flávio Oliveira, *Portugal*

T3.10
Session 2 | Technical

Friday 12 December
Room MR106

Water integrity: Advanced solutions for quality preservation and pollution reduction

Chair: Kwanrawee Sirikanchana, *Thailand*
Co-chair: Xinyu Pan, *China*

Investigates water pollution, contaminant detection, and remediation strategies for safe water.

Comprehensive detection of ARGs in wastewater, river, and seawater in Thailand using HT-qPCR Thitima Srathongneam, *Thailand*

Spatial assessment of microplastic and heavy metal pollution in Deepor Beel: An urban Ramsar Wetland in Northeast India Sumantra Chaudhuri, *India*

Tracing the footprints of land use land cover changes on water quality in The Delhi Stretch of the Yamuna River Neenu Neenu, *India*

Technical Sessions
Theme 4

Enhancing utility management and operations for sustainable growth

T4.1
Session 2 | Technical

Tuesday 09 December
Room MR106

Equity & access in water distribution

Chair: Yoji Matsui, *Japan*
Co-chair: Annabella Nyakaisiki, *Uganda*

The session explores equitable water access, service benchmarking, and inclusive solutions for underserved communities.

Development of an innovative water services institutional model through licensing and regulation – A South African experience Jayant Bhagwan, *South Africa*

Leveraging customer feedback for sustainable water service improvement: A case study of PDAM Semarang Ardian Wiedilaksono, *Indonesia*

Enhancing energy efficiency in water utilities: Challenges and opportunities in low-income countries Jonas Aabe-Ere, *Ghana*

Empowering urban water services through south-south collaboration: Insights from Ghana and Sierra Leone Faustina Boachie, *Ghana*

How can we improve capacity development support to urban water utilities? Learnings from multi-country implementation of a utility strengthening framework Sam Drabble, *United Kingdom*

T4.2
Session 1 | Technical

Wednesday 10 December
111 (A+B+C)

Urban water resilience & infrastructure

Chair: Denis Taremwa Kamugisha, *Uganda*
Co-chair: Maria Anjelica P. Ancheta, *Thailand*

The session addresses urban water resilience, flood prevention, digital transformation, and infrastructure management in cities.

Decentralized sewage interventions: comparative study of the water quality of two streams in the São Francisco basin in the rural area of the municipality of Ouro Branco Jackson Oliveira, *Brazil*

Improving implementation of water safety plans through policy establishment Induka Werellagama, *New Zealand*

Effect of customized LID techniques on urban flood damage reduction considering urban regeneration area characteristics – Focused on infoworks ICM simulation study GeonHo Jin, *Republic of Korea*

Predicting future surface runoff patterns under climate change using the GSSHA model Ahmed Al-Areeq, *Saudi Arabia*

Performance assessment system for monitoring urban water and sanitation service levels in India: Outcomes, achievements, and lessons learned Dhruvkumar Bhavsar, *India*

Learning-enhanced smart predictive digital twins for drinking water supply optimization António Andrade-Campos, *Portugal*

T4.3
Session 2 | Technical

Wednesday 10 December
Room 110 (A+B+C)

Sustainable water management & circular economy

Chair: Si Tuan Vo, *Vietnam*
Co-chair: Thomas Da Jose, *Australia*

The session focuses on sustainable water management and circular economy practices like zero liquid discharge, nutrient recovery, circular economy models, and sludge management to enhance water system sustainability

Sustainable consumption towards zero liquid discharge – The case of Air Selangor Nurul Sa'dah Bahar, *Malaysia*

Innovative approach to sewage sludge anaerobic digestion for energy recovery maximization Andrea Capodaglio, *Italy*

Advanced anaerobic digestion at Polish sludge treatment center achieves high throughput and energy efficiency Ashish Kumar Sahu, *Norway*

Treated municipal wastewater fertigation for circular nutrient recovery and greenhouse gas mitigation in rice cultivation Jittrera Buates, *Japan*

The Wat(t)er FabLab: Pioneering 3D printing for a circular economy in water management Joana Fonseca, *Portugal*

A performance indicator for quantifying and benchmarking inequity in water distribution for utilities Ashish Nair, *India*

T4.4
Session 2 | Technical

Wednesday 10 December
Room MR102

Data-driven water management

Chair: Keshvinder Singh, *Singapore*
Co-chair: Steffie Bes, *Netherlands*

The session highlights data analytics, smart metering, and digital tools for efficient water utility operations and NRW reduction.

A Rosetta Stone approach to understanding inter-relationships between real loss KPIs Kate Stanton-Davies, *United Kingdom*

Optimizing pipeline management: Tackling leaks, non-revenue water, and operational challenges at Ghana Water Limited (GWL) Christina Betty Taylor Koranteng, *Ghana*

Evaluating water supply services in Pokhara, Nepal: Insights from NWASH-MIS data Noboru Ozaki, *Japan*

Development of an optimized tariff modelling in support of 'Fair Water Billing For All' within EThekwini Municipality, Durban Ismail Banoo, *South Africa*

Accountability mechanisms and initiatives for utility management Arwa Bharmal, *India*

Comparison of smart meter effectiveness through mechanical and ultrasonic meter installation in Pokhara City, Nepal Koji Nakashima, *Japan*

T4.5
Session 1 | Technical

Friday 12 December
Room MR111 (A+B+C)

Rural & climate-resilient solutions

Chair: Mónica Guzmán-Rojo, *Bolivia*
Co-chair: Jacob Amengor, *Canada*

The session covers rural water resilience, informal settlement challenges, and climate adaptation in developing regions.

Climate resilience of urban water supply and sanitation systems: A case study of urban water resources and infrastructure operations in Bangkok, Thailand Maria Anjelica Ancheta, *Thailand*

Development and piloting of the rural water supply climate-resilience monitoring tool (RWS-CRMT) in Indonesia D. Daniel, *Indonesia*

Driving climate resilience through inclusive water services Faustina Boachie, *Ghana*

Employing smart metering for climate-smart water management and resilience: A case study of Ghana Water Limited (GWL) Christina Koranteng, *Ghana*

Bridging gaps and reducing losses: How expanding water access to low-income communities strengthens utility performance Josephine Turkson, *Ghana*

T4.6
Session 2 | Technical

Friday 12 December
Room MR103

Industrial & health risk mitigation

Chair: Aiman Uteyeva, *United Kingdom*
Co-chair: Roshan Shrestha, *United States*

The session examines industrial wastewater risks, health impacts of contamination, and sanitation solutions for vulnerable groups.

Investigating WASH Systems for industrial migrant workers: The case of Surat Ishank Mishra, *India*

Evaluating simplified sewerage in Sub-Saharan Africa: A multi-case study approach Matthew Jackson-Koufie, *United Kingdom*

The servicing of container-based sanitation users and its impact on quality of life Alison Parker, *United Kingdom*

Risk analysis of fecal contamination in the residential area around a communal domestic wastewater treatment plant Andri Gumilar, *Indonesia*

Life cycle and human health risk assessment of water treatment sludge disposal alternatives Alisher Alibekov, *Kazakhstan*

Emergency response in industrial wastewater management Viet-Anh Nguyen, *Vietnam*

Technical Sessions **Theme 5**

Strengthening governance and financial systems for long-term development

T5.1
Session 3 | Technical

Tuesday 9 December
Room MR106

Financing & economic approaches

Chair: Yang Villa, *Philippines*
Co-chair: Patience Wema, *Kenya*

Explores financing mechanisms, cost recovery models, and economic strategies to achieve sustainable and inclusive WASH services.

Financial strategy for inclusive onsite sanitation in low-income communities in urban centers in Bangladesh Dilruba Farzana, *Bangladesh*

Cost of universal access to WASH services: Learning from a comprehensive WASH plan in a coastal sub-district of Bangladesh Md Golam Rasul, *Bangladesh*

Creditworthiness assessments – An approach for Indian cities Dhruvkumar Bhavsar, *India*

Investment challenges in water infrastructure: An initial policy review of public-private partnership (PPP) reforms in the Philippines John Pepard Rinchon, *Philippines*

Sustainable WASH financing for low-income households Mingma Sherpa, *Nepal*

The cost of inaction: Assessing impacts of inadequate WASH funding in Bangladesh Ramkrishna Paul, *India*

T5.2
Session 3 | Technical

Wednesday 10 December
Room 110 (A+B+C)

Environmental health & circular economy

Chair: Md Tahmidul Islam, *Bangladesh*
Co-chair: Lillian Naiga Toogo, *Uganda*

Focuses on environmental health risks, circular economy applications, and sustainable practices in WASH systems.

Multi-stakeholder dialogues for safe wastewater reuse in urban agriculture: Opportunities and limitations David Galibourg, *United Kingdom*

The hidden costs of water sachet waste Elizabeth Cullen, *United Kingdom*

The SCS SAP project actions toward land-based pollution management in the South China Sea and Gulf of Thailand Si Tuan Vo, *Vietnam*

Do household water connection procedures influence the SDG 6? Evidence from Indian municipalities Pranesh Muthuchami, *India*

Securing safe and affordable water under the economic crisis in South Sudan Ms. Jabe Jermalili, *Japan*

Towards sustainable rural water supply: efficient management of water pump operators Sangram Mane, *India*

T5.3
Session 2 | Technical

Thursday 11 December
Room MR111 (A+B+C)

Climate resilience & adaptation

Chair: Suresh Kumar Rohilla, *United Kingdom*
Co-chair: Ruchika Shiva, *India*

Explores inclusive sanitation solution, gender equity, and approaches to address sanitation challenges in underserved communities.

Impacts of long-term climate change on water- and mosquito-borne diseases: Outcomes from a global scoping review of quantitative research Jesse Limaheluw, *Netherlands*

Bridging water governance gaps in Darjeeling: Addressing Scarcity with inclusive, sustainable solutions in The Himalayas Suvajit Dey, *India*

Evidence of resilience of rural water supplies and household toilets from Southern and Western Africa Anisha Nijhawan, *United Kingdom*

Costing safely managed and climate-resilient rural sanitation systems: A life-cycle analysis in Lao PDR Jeremy Kohlitz, *Australia*

Empowering climate migrants for a resilient future: Addressing WASH challenges for climate migrants in low-income communities of Bangladesh Sonia Shahid, *India*

Tailored business models for Nature-based Solutions: Context-driven value propositions in global urban water management Carme Machí Castañer, *Austria*

T5.4
Session 2 | Technical

Thursday 11 December
Room MR101

Technology & innovation

Chair: Harrison Pienaar, *South Africa*
Co-chair: Nerea Uri Carreno, *Denmark*

Highlights the technological enhancements and innovations including use of digital tools and programmatic approaches to improve WASH service delivery.

Public awareness, trust, and readiness to adopt AI-driven WASH policies
Rathin Biswas, *India*

Strategic sanitation planning in Urban Bangladesh: Leveraging digital tools for targeted investments Sonia Shahid, *Bangladesh*

WASH systems index assessment in Bangladesh: Transformation to strengthen WASH service delivery Md Shakhawat Hossain, *Bangladesh*

Using peer learning to build local government capacity for delivering improved sanitation Jamie Myers, *United Kingdom*

Strengthening external support for more sustainable community-based rural water systems: An analysis of PAMSIMAS program in Indonesia Cindy Priadi, *Indonesia*

Interrogating decision-making for access to sanitation in informal settlements in Bulawayo, Zimbabwe Virginia Roaf, *Germany*

T5.5
Session 1 | Technical

Friday 12 December
Room MR109 (A+B)

Equitable WASH solutions

Chair: Isha Basyal, *Thailand*
Co-chair: Bernhard Schnederle, *Austria*

Explores inclusive sanitation solution, gender equity, and approaches to address sanitation challenges in underserved communities.

Measuring urban sanitation and women empowerment: Exploring the role of governance and finance Rakib Uddin Ahmed, *Bangladesh*

Strategic shift to sustain operation and maintenance for public water and sanitation facilities in Bangladesh MD Azizur Rahman, *Bangladesh*

Inspiring state owned water utilities from low and middle income countries to use alternative project financing: A case study of Tanga UWASA's Green Bond Issuance
Geofrey Hilly, *Tanzania*

Assessment of marginalized populations' in leadership and participation in water and sanitation services: A case study of Hetauda Sub-Metropolitan City, Nepal Srijana Karki, *Nepal*

Bridging the sanitation divide: Innovations for inclusive and resilient urban sanitation in Nepal Hezekia Otieno Pireh, *Nepal*

Is urban governance the key to better water services in rapidly urbanising villages adjoining large cities? May Sule, *United Kingdom*

T5.6
Session 2 | Technical

Friday 12 December
Room MR109 (A+B)

Governance & policy for WASH systems

Chair: Agus Nugroho, *Indonesia*
Co-chair: Virginia Roaf, *Germany*

Focuses on governance models, policy reforms, data systems, and multi-stakeholder approaches to strengthen WASH service delivery and management.

Innovative financing options for infrastructure development in developing countries in the face of declining donor financing: A case of Uganda's National Water and Sewerage Corporation Denis Taremwa Kamugisha, *Uganda*

Sustainable, inclusive, and evidence-based sanitation governance: Lessons from strengthening public data systems in Bangladesh and Uganda Ramkrishna Paul, *India*

Advancing the evidence for water, sanitation, and hygiene (WASH) systems strengthening: A Delphi Study to define research priorities Ruth Sylvester, *United Kingdom*

Sanitation data reformation in Bangladesh: Challenges, coordination mechanisms, and sustainable solutions Shishir Biswas, *Bangladesh*

Improving water supply and sanitation access in Southeast Asia – Addressing climate, economic, and policy barriers Deepa Karthykeyan, *USA*

Navigating challenges & exploring solutions in FSM sector at Paurashavas across Bangladesh: Insights from field visit & CSDA analysis Fahim Ahmad, *Bangladesh*

Workshops

Workshops
Theme 1

Ensure safe drinking water: innovative approaches for treatment and supply

W 1.1
Session 1 | Workshop

Tuesday 9 December
Room MR109 (E+F)

Effecting improved intermittent water supply (IWS)

Chair: Sasikumar Eswaramurthy

Poorly managed Intermittent Water Supply (IWS) exacerbates inequitable water access, affecting both quantity and quality. Variations in supply schedules force households into coping mechanisms that impact demand and widen service disparities. While policy discussions favour Continuous Water Supply (CWS), operational challenges of IWS are often overlooked. This session will explore strategies to improve IWS by regulating water distribution, managing domestic storage, addressing resource constraints, and guiding transition to CWS. Th e session will offer insights from India, Bangladesh and other countries, followed by a panel discussion with experts from government, development, and private sectors.

Speakers: Suresh Kumar Rohilla; Uttam Kumar Saha; Sasikumar Eswaramurthy

W 1.2
Session 1 | Workshop

Wednesday 10 December
Room MR109 (E+F)

Ensuring rural drinking water safety in developing countries: Challenges and opportunities

Chair: Min Yang

The purpose of this workshop is to exchange and explore a drinking water treatment and water supply mode for sustainable rural development by adopting new technologies, renewable energy and IT. In view of the difficulty in supplying safe drinking water in the developing countries, particularly in the rural regions, this workshop will discuss the formation of a new model to ensure safe drinking water by including new technologies, renewable energy, It, etc., developed in recent years, combined with intelligent management and maintenance, industrialization and commercialization, and regional and national cooperation. How China can make a contribution to this will be discussed. It is aimed to assist the low-income countries to achieve SDG6.

Speakers: Kalanithy Vairavamoorthy; Siwatt Pongpiachan; Primal Jinadasa; Pramila Devi Shakya Bajracharya; Baiwen Ma; Yuangsong Wei; Yongming Wang

W 1.3
Session 2 | Workshop

Wednesday 10 December
Room MR109 (E+F)

Strengthening the impact of water safety plan training

Chair: Asoka Jayarante
Co-chair: Kate Medlicott

This interactive workshop explores effective training and capacity building for sustainable water safety plan (WSP) implementation. Since the WSP approach was in introduced in 2004, global training efforts have provided valuable lessons. The session will highlight best practices, challenges, and opportunities in WSP training through case examples, practitioner experiences and expert insights. Participants will explore strategies for adapting training to local contexts, using mixed modalities for diverse audiences, and reinforcing knowledge post-training. Additionally, the workshop will introduce the new WHO & IWA Global WSP Training Package, equipping attendees with practical tools to enhance WSP capacity development worldwide, contributing to more resilient and safe water supply management. Participants will gain knowledge, skills and confidence to effectively localize and deliver WSP trainings, leveraging best practices and new tools for effective and sustainable training outcomes.

Speakers: Thomas Pettersson; Ty Choy; Adam Malik Bin Najri; Mark T. Ayertey; Dan Daree

W 1.4
Session 3 | Workshop

Tuesday 9 December
Room MR107 (A+B)

HRWM Workshop for pathogen risk management for drinking water consumption

Chairs: Kwanrawee Sirikanchana & **Daisuke Sano**

Health-Related Water Microbiology Specialist Group (HRWM SG) serves as a forum for the exchange of scientific information related to the management of human health risks caused by pathogens contaminating water and the environment. It encompasses a wide range of expertise, including environmental and clinical virology, bacteriology and parasitology, infectious diseases epidemiology, risk assessment methodologies, water treatment engineering, and environmental health practice. One of the key focus areas for HRWM SG is managing human health risks associated with pathogens in drinking water, particularly in developing countries where resources for water quality management is often limited. In this workshop, we will share the state-of-art knowledge on the types of pathogens found in drinking water and strategies for managing the associated human health risks. This will include presentations by leading researchers and a panel discussion.

Speakers: Nattawut Intorn; Sirapat Khodseewong; Takayuki Miura; Kate Medlicott; Gang Liu

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W 1.5
Session 3 | Workshop

Thursday 11 December
Room MR109 (E+F)

Innovative DX solutions for sustainable water supply

Chair: Aoki Hidetaka

This workshop will explore how digital transformation (DX) technologies such as smart metering system, satellite monitoring, and predictive analytics can enhance water infrastructure resilience. Experts will share overview approach on DX utilizing tools to analyze and identify gaps according to the Digital Architecture of water utilities. Case studies from Bangkok and others, demonstrating satellite-based leak detection, pilot study of introducing DX approach in Tanzania will be presented. Discussions will focus on challenges, successes, and the scalability of these technologies in different contexts. Participants will leave with practical insights on implementing DX solutions in water management.

Speakers: Ruman Dey; Sidonio Freitas; Aoki Hidetaka

W 1.6
Session 2 | Workshop

Friday 12 December
Room MR109 (E+F)

Solving water pollution through youth-led community based water solution framework

Chair: Chotiwat Jantarakasem
Co-chair: Federick Pinongcos

Surface water and groundwater contamination remain critical challenges in many countries, with some regions experiencing severe pollution due to heavy metal contamination. The responsibility for managing and mitigating such contamination falls on multiple stakeholders, including industrial sectors, policymakers, law enforcement agencies, local municipalities, and water supply authorities. However, the overlapping jurisdictions and fragmented accountability among these entities often result in delayed responses, leaving communities exposed to hazardous pollutants in their daily lives. To address this issue, the Youth-Led Community-Based Water Solution Framework was developed to empower local communities in mitigating water pollution. This framework equips water young professionals with alternative methods to enhance water quality management at the community level. The workshop will introduce the key steps of the framework and provide practical guidance on its implementation.

Speakers: Chotiwat Jantarakasem; Federick Pinongcos; Linda Li; Yumeng Zhao

W 1.7
Session 2 | Workshop

Thursday 11 December
Room MR109 (C+D)

Community-based rainwater for drinking: Scalable local actions, policy innovations, and technical solutions for achieving SDG 6

Chair: Mooyoung Han
Co-chair: Mam Sarith

This session aims to showcase how community-based rainwater systems can contribute to achieving SDG 6 by providing safe and sustainable drinking water solutions, particularly in decentralized settings. Through case studies like the Rain School Initiative, participants will explore technical innovations and social strategies for effective implementation. The desired output includes actionable strategies for integrating rainwater systems into schools and healthcare facilities, fostering policy support, and enhancing stakeholder collaboration. Participants will gain insights into best practices and scalable models for local adaptation.

Following the workshop, outcomes will be disseminated through knowledge-sharing platforms, policy recommendations, and collaborative initiatives. The workshop will inspire policymakers, practitioners, and researchers to adopt decentralized rainwater solutions, leading to broader implementation and strengthened partnerships for water resilience. The summarized outcomes will be published as an article in a journal, blog, Source magazine feature, or other media channels.

Speakers: Mooyoung Han; Sarith Mam; Suresh Rohilla; Tulinave Mwamila; Tanuja Ariyananda; Jin Won Yi

Workshops
Theme 2

Advancing wastewater treatment and sanitation services: Sustainable solutions for all

W 2.1
Session 3 | Workshop

Tuesday 9 December
Room MR109 (C+D)

Design sprint: Building future water-sensitive cities

Chair: Maryam Imani
Co-chair: Balaji Narasimha

This interactive design sprint will challenge participants to develop innovative strategies for integrating Water-Sensitive Urban Design (WSUD) into city planning. Using a multi-criteria decision-making (MCDM) approach, teams will collaborate to create actionable urban water resilience plans that incorporate Blue-Green Infrastructure (BGI), Sustainable Drainage Systems (SuDS), and Nature-Based Solutions (NBS). Participants will explore real-world case studies, assess trade-offs, and propose solutions that balance flood mitigation, biodiversity, public health, and socio-economic factors. The sprint will conclude with rapid-fire presentations, peer feedback, and discussions on policy integration. Outcomes will contribute to a workshop summary report, fostering further research and potential pilot projects.

Speakers: Maryam Imani; Balaji Narasimhan; Suresh Rohilla; Bhallamudi Sreenivasa Murty (B.S.Murty); Nathalia da Mata Mazzonetto Pinto; Arun Rajasekaran Sankarbalaji; Elanchezhiyan Duraisekaran

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W 2.2
Session 2 | Workshop

Wednesday 10 December
Room MR109 (G+H)

Pre-assessment for carbon finance: Evaluating wastewater & sanitation project eligibility for carbon finance

Chair: Heinz-Peter Mang
Co-chair: Marie Reysset

This session aims to provide practical guidance on conducting an initial eligibility assessment of wastewater and sanitation projects for carbon finance. At the end of the session, the participants will be able to 1) identify main indicators and have the proper references to allow initial evaluation of their projects against main carbon finance mechanisms, 2) train the colleagues on the same.

Speakers: Martin Dilger; Heinz-Peter Mang; Marie Reysset

W 2.3
Session 3 | Workshop

Wednesday 10 December
Room MR107 (A+B)

Empowering communities through resource-oriented sanitation

Chair: Devi Buehler
Co-chair: Guenter Langergrabe

This workshop explores the potential of resource-oriented sanitation (ROS) to enhance community resilience and autonomy by decentralising water and sanitation management. Many communities face challenges due to an over-reliance on centralized infrastructure, limiting their capacity for independent action. Through short case study presentations from various global contexts, the workshop will highlight real-world experiences in implementing ROS. Participants will engage in moderated roundtable discussions to explore key themes, including opportunities, risks, operational challenges, and best practices for successful adoption. Insights from these discussions will be synthesized to inform future applications and policy recommendations.
The session is designed for water and sanitation professionals, researchers, policymakers, and community leaders interested in sustainable, decentralised solutions.

Speakers: Hideori Harada; Paula Paulo; Philip Majeke; Abishek Sankara Narayan

W 2.4
Session 3 | Workshop

Wednesday 10 December
Room MR109 (E+F)

Transformative water practices in the Circular Economy

Chair: Sandra Sikkema
Co-chair: Johann Poinapen

The workshop brings together practitioners and experts to explore innovative approaches to water reclamation, reuse, and resource recovery. It will highlight practical experiences from ongoing projects, emphasising scalable solutions and the integration of circular principles in water management. The session will address key enablers such as policy frameworks, infrastructure readiness, and digital technologies, while also tackling challenges like public perception, regulatory gaps, and institutional capacity. Through presentations and interactive discussions, participants will gain insights into fostering cross-sectoral partnerships, building public trust, and promoting inclusive stakeholder engagement. As investment in water and sanitation infrastructure grows, this workshop provides a platform to share strategies for accelerating sustainable, climate-resilient, and socially accepted water practices in the Global South.

Speakers: David Bergmann; Johann Poinapen; Jay Bhagwan; Nupur Bahadur

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W 2.5
Session 3 | Workshop

Thursday 11 December
Room MR106

The science you need to understand: Emissions from non-sewered sanitation

Co-chairs: Linda Strande; Caetano Dorea & **Barbara Evans**

A timely global discussion around greenhouse gas emissions from non-sewered sanitation is taking place, which is important for climate mitigation. However, due to the urgent nature of climate change, the cart is often coming before the horse, with published emission values coming prior to scientific understanding. In this workshop, we will explore the required science to understand greenhouse gas measurements, biological activity during storage of wastewater in containments that contributes to greenhouse gasses (aka faecal sludge in pit latrines and septic tanks), and difficulties in scaling up highly variable results to city-wide or regional scales. Direct transfer of concepts from sewer-based sanitation, such as population equivalents and anaerobic degradation, has led to misconceptions in understanding GHG emissions in urban, non-sewered sanitation.

Speakers: Kelsey Shaw; Tania Gomez Borraz; Baba Ngom; Nopa Dwi Maulidiany

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W 2.6
Session 2 | Workshop

Wednesday 10 December
Room MR107 (A+B)

From climate vulnerability to climate resilience: Innovation and systems change in urban sanitation

Chair: Juliet Willetts
Co-chair: Maria Angelica Sotomayor

The purpose of this session is to catalyse strengthened action on climate resilient sanitation (CRS), bringing together recent evidence, latest practices and integrated thinking on transformative adaptation to reduce risks and vulnerabilities, mitigation opportunities and support wider water resilience. The workshop will share research, leading examples, tools and practices to support professionals in rethinking and reconfiguring sanitation services in support of wider urban water mitigation and adaptation. It will bring together global sanitation, environmental, research, funding and development experts in expresso lightning inputs followed by a World Cafe format, to showcase and discuss diverse experiences and perspectives for scaling CRS approaches in an active and participatory way. The session will conclude with a summary of key insights and distillation of priority actions that can be assimilated into the conference Sanitation Forum, and future work of IWA and Climate Resilient Sanitation Coalition.

Speakers: Maria Angelica Sotamayor; Sanyu Lutalo; Kate Medlicott; Miller Camargo Valero; Leanne Casey; Cindy Priadi; Freya Mills; Nadira Khawaja; Jeremy Kohlitz; Dinda Fauzani

W 2.7
Session 1 | Workshop

Friday 12 December
Room MR109 (G+H)

Development of global database for faecal sludge characteristics

Chair: Konstantina Velkushanova
Co-chair: Damir Brdjanovic

The Book Methods for Faecal Sludge Analysis marked a major step in standardizing the approach of faecal sludge analysis and data generation globally, across regions and organizations. Building on this momentum, Phase 2 of this project was launched, jointly with the Global Partnership of Laboratories for Faecal Sludge Analyses (GPLFSA) comprising of over 12 laboratories worldwide. The activities of Phase 2 were focused on verifying and validating key analytical methods of the Book, across diverse geographical and contextual settings. Additionally, the project was focused on developing of an open-access global database through a web-based platform to systematically share data generated through faecal sludge analysis. Participants joining this workshop will have the opportunity to shape the faecal sludge research field, strengthening global collaborations, and contributing to a robust, open-access global database for sanitation practitioners, decision-makers, and researchers worldwide.

Speakers: Konstantina Velkushanova; Damir Brdjanovic; Thammarat Kootatep

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W 2.8
Session 3 | Workshop

Thursday 11 December
Room MR101

Bridging the gap: Overcoming implementation barriers to scale sustainable sanitation solutions

Chair: Preyan Arumugam
Co-chair: Mei Yee Chan

There have been numerous technological advances to produce and commercialise sustainable sanitation solutions globally. However, wide-scale implementation has been slow. This workshop is designed to highlight these challenges from real-world experiences, especially in South Africa, and TuVSuV expertise on regulatory and standardization barriers. The workshop will culminate in a "Sanitation Debate" where participants will gain a practical understanding of the hurdles and explore differing perspectives on potential solutions after listening to the key sanitation challenges from world-wide experts. It is anticipated that these learnings will then allow for participants to develop strategies to navigate implementation hurdles and accelerate the adoption of sustainable sanitation solutions within their respective regions.

Speakers: Tanvir Ahmed; Ligy Philip; Kartik Chandran; Meera Mehta

Workshops
Theme 3

Smart Water Management: Integrated approaches for effective water management and planning

W 3.1
Session 1 | Workshop

Tuesday 09 December
Room MR109 (C+D)

Scaling water-sensitive urban NbS for equitable and lasting impact

Chair: Katharine Cross
Co-chair: Teak Seng

This workshop will explore how urban Nature-based Solutions (NbS) such as wetlands, green walls, and water-sensitive urban design can be scaled beyond pilot projects. Focusing on Laos, Cambodia, Vietnam, and Thailand, it will highlight governance, financing, and maintenance strategies needed for long-term success. Through case studies, expert insights, and interactive discussions, participants will identify barriers and co-develop actionable solutions. The session will emphasize inclusivity, ensuring NbS benefit all communities, especially vulnerable groups. Insights will inform an action agenda for integrating NbS into urban planning and climate resilience policies.

Speakers: Aksara Putthividhya; Detchphol Chitwatkulsiri; Ben Furmage; Sasiwan Wongsiriprasert; Lim Ymeng; Nguyen Hieu Trung; Souphanny Singsayyachack; Rosalind Amornpitakpun

W 3.2
Session 2 | Workshop

Tuesday 09 December
Room MR109 (C+D)

Catchment-level approach for climate resilience in water systems

Chair: Dr Hew Merrett *(Chair and Panel Moderator)*

While water challenges are felt at a local level, their solutions often require interventions with multiple stakeholders across an entire catchment area. This session will delve into the partnerships, policies, and technologies that can address water scarcity, water quality, and climate resilience at a catchment level. The session will begin with a moderated discussion among panellists whose experiences span three continents and with backgrounds in water stewardship, urban stormwater drainage, rural water and sanitation services, and nature-based solutions. To begin the workshop session, one inspired-hypothetical case study will be introduced of a district in trouble. Participants will then engage in breakout discussion amongst their tables, guided by the panellists, to ideate technologies, policies and other catchment-level solutions for the case study. The learnings from the session can be taken up by participants to implement climate resilience solutions in their respective catchments.

Speakers: Dr Hew Merrett *(Chair and Panel Moderator)***; Angelica Euara Manrique** *(panelist)***; Radhika Boargaonkar** *(panelist)***; Karl Zimmermann** *(panelist)***; Nathalia da Mata** *(panelist)***; Omi Kumari** *(Workshop facilitator)*

W 3.3
Session 2 | Workshop

Tuesday 09 December
Room MR109 (E+F)

Understanding the NRW water balance

Chair: Gary Wyeth
Co-chair: Kate Stanton-Davies

The Workshop will outline the measurement of Non-Revenue Water (NRW) as a whole and how it can then be broken down into its various components, through the utilisation of the IWA developed NRW Water Balance. The workshop will review each component of NRW, to understand how it is broken down, with the two main components being Commercial and Physical losses. A review will be made of how reducing one of these components, either intentionally or due to lack of data, can affect the other components, but generally not the total NRW. Completing an NRW Water Balance involves a number of estimations, and the workshop will discuss how these estimations are made, and how their uncertainty can affect the accuracy of the water balance. The workshop will also introduce the free EasyCalc NRW Water Balance software, where participants will be invited to download the software on their own laptops and go through a simulation of developing an NRW Water Balance.

Speakers: Gary Wyeth; Kate Stanton-Davies; Anna Bojko

W 3.4
Session 3 | Workshop

Tuesday 09 December
Room MR109 (E+F)

Nature-based Solutions for climate action: The role of water utilities

Chairs: Rob Cunningham & **Douglas Nyolei**

As climate change is altering the water cycle and weather patterns, extreme events are increasing in severity and frequency, posing critical risks to drinking water, wastewater, and stormwater utilities. To address these challenges, water providers must adopt innovative solutions that can complement traditional water management methods. Water utilities play an active role in watershed management and are uniquely positioned to lead advancements in nature-based solutions (NbS) at scale along the urban to rural gradient. NbS can serve as innovative approaches to address the interconnected challenges of climate change, environment degradation and biodiversity loss. They can be an efficient way to complement grey infrastructure by protecting water sources, avoiding damages caused by extreme events, optimizing the design or delaying the need for major capital expenditure while reducing related operation and maintenance.

Utilities will showcase practices in NbS, adaptation and mitigation that are actionable, equitable, and serve as a model for others.

Speakers: Gary Moys; Ardian Wiedilaksono; Alma Abrasaldo; Gijs van Nes; Günter Langergraber

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W 3.5
Session 1 | Workshop

Thursday 11 December
Room MR106

Circular economy as an innovation pathway for resilient, inclusive water and sanitation

Chairs: Avni Kumar & **Naomi Carrard**
Co-chairs: Diego Rodriguez, Dinh Van Dao & **Brooke Yamakoshi**

Speakers: Diego Rodriguez; Avni Kumar

This workshop connects the rapidly evolving topic of circular economy water with innovation. Participants will hear from organisations at the forefront of applying circular economy principles to diverse development contexts and collaboratively chart out promising innovation pathways. In the first half, participants will learn about the relevance and potential of circular economy in diverse urban and rural contexts, and engage with frameworks to guide local application, focusing on Asia and Pacific regions. In the second half, futures thinking methods will guide participants to identify pathways for connecting circular economy to innovation and systems change. The output will be a propositional pathway for applying and scaling circular approaches that drive resilient, inclusive water and sanitation service systems. This output will inform ongoing work on circular economy, including online learning, knowledge exchange, and facilitated processes for local application.

W 3.6
Session 2 | Workshop

Thursday 11 December
Room MR109 (E+F)

Data insights for better utility management: Your path to improvement?

Chair: Marco Aguero
Co-chair: Gerhardus Soppe

This interactive workshop brings together water utility professionals to explore performance benchmarking, management practices assessment, and peer knowledge exchange. Through discussions and exercises, participants will learn the value of data-driven decision-making in water management. Featuring insights from NewIBNET's Data Pioneers--utility professionals excelling in data utilization--the session includes case studies, discussions, and practical exercises. Attendees will gain an understanding of how benchmarking enhances operations, informs strategies, and fosters continuous learning. The workshop outcomes will contribute to ongoing benchmarking efforts, strengthening global collaboration in the water sector.

Speakers: Monika Weber-Fahr; Guillaume Fery; Berta Macheve; Marco Aguero

W 3.7
Session 2 | Workshop

Friday 12 December
Room MR109 (G+H)

Toilet pit to policy pixels: Building data-driven sanitation systems in South Asia

Chair: Rowshan Mamtaz
Co-chair: Rajeev Munankami

Across South Asia, cities are moving from fragmented data systems toward integrated, evidence-based governance. This session combines ITN-BUET's experience with data-driven CWIS implementation (Bangladesh, Nepal) and SNV's regional data governance approach, exploring how data flows—from the toilet pit to the policy cloud—can enhance decision-making, financing, and service sustainability. The session will showcase real systems (SanBoard, IMIS, SBM dashboards) while engaging participants in interactive discussions and problem-solving challenges to design future-ready sanitation data ecosystems.

Speakers: Shishir Kumar Biswas; Rajit Ojha

W 3.8
Session 1 | Workshop

Friday 12 December
Room MR107 (A+B)

Introducing the new IWA Nature-based Solutions Cluster: NbS from Source to Sea

Chair: Rob Cunningham
Co-chair: Anacleto Rizzo

The session will be a world café style workshop covering the myriad of different scales of Nature-based Solutions applicable to IWA members. We want to dig into the details and different topic areas of whats working in NbS, what's not, and what can we do about it. A 2nd workshop submitted by [Katharine Cross] presents the state-of-the-art of NbS implementation in four South East Asian countries (i.e., Thailand, Laos, Cambodia and Vietnam).

Speakers: Guenter Langergraber; Alexandros Stefanakis

W 3.9
Session 2 | Workshop

Tuesday 9 December
Room MR107 (A+B)

Inclusive water and sanitation for circularity and climate-resilient cities

Chair: Sangam Shrestha
Co-chair: Thanapon Piman

Description: Climate change, manifesting as "climate whiplash" with alternating extreme droughts and floods, places unprecedented stress on urban water and sanitation systems. These systems are deeply interconnected: water scarcity threatens sanitation service continuity, while conventional sanitation often wastes valuable water and nutrients, contaminating precious water resources. This linear approach creates a vicious cycle that undermines urban resilience, public health, and the potential for water circularity.

This workshop moves beyond siloed approaches to explore the critical integration of Water Resource Management (WRM) and Citywide Inclusive Sanitation (CWIS) as a foundation for circular and climate-resilient cities. We will investigate how data-driven tools like Urban Water Accounting and integrated modelling platforms (e.g., WEAP with WASH-Flows) can provide the evidence base to unify planning. The session will focus on practical strategies for designing inclusive sanitation solutions that actively contribute to water circularity—such as water reuse, nutrient recovery, and groundwater protection. By closing the loop, we can design systems that are not only equitable but also water-efficient and resilient to climate shocks, thereby safeguarding water quality and quantity for all urban residents.

Speakers: Agus Nugroho; Thanapon Piman; Chadchart Sittipunt; Kazushi Hashimoto; Anjlee Agarwal

Workshops
Theme 4

Enhancing utility management and operations for sustainable growth

W 4.1
Session 2 | Workshop

Tuesday 9 December
Room MR109 (G+H)

Scaling up peer learning partnerships in water and sanitation: A capacity development approach

Chair: Jonsson Asa
Co-chair: Vivek Raman

This workshop session explores how peer learning partnerships, such as Water and Sanitation Operators' Partnerships (WOPs/SWOPs), WOP4resilience programme can be scaled up as cost-effective capacity development approaches. Through a panel discussion, case studies, and an interactive World Cafe, participants will examine policy enablers, financial linkages, and best practices to strengthen water and sanitation service providers. The session will provide actionable insights on integrating WOPs/SWOPs into national strategies, mobilizing investments, expanding partnerships and overcoming implementation challenges. Participants will leave with practical recommendations on leveraging peer learning to enhance resilience, efficiency, and service delivery in the sector.

W 4.2
Session 1 | Workshop

Wednesday 10 December
Room MR109 (G+H)

The state of water and sanitation utilities: Utility and system-level perspectives for transformation?

Chair: John Butterworth
Co-chair: Julie Perkins

Critical reflection on the challenges facing water and sanitation utilities at provider and authority/ national levels, and inspiration from examples of solutions to scale innovations and drive performance?

W 4.3
Session 3 | Workshop

Wednesday 10 December
Room MR109 (G+H)

Unlocking the power of AI to transform operational performance of water utilities

Chair: Deepa Karthykeyan
Co-chair: Moussa Seck

From improving meter reading accuracy to enhancing leak detection with listening sticks, AI is transforming water utilities by driving productivity, cost savings, and smarter decision-making. Agentic AI models, such as Copilot, can seamlessly integrate across workflows--CRMs, asset registries, billing systems, and more--delivering richer insights. However, realizing AI's full potential depends on high-quality data to train reliable models. This requires strategic investments in people, tools, and processes to generate and manage data cost-effectively. This workshop will convene water utilities, lenders/investors, industry associations, and AI/data technology providers to identify the key investments in talent, processes, and technology needed to equip utilities for the AI revolution.

W 4.4
Session 1 | Workshop

Thursday 11 December
Room MR109 (C+D)

Intermittent water supply: The challenge of transitioning to 24|7

Chair: **Raziyeh Farmani**

Technical strategies will focus on the phased reintroduction of continuous service through metering, district metered areas (DMAs), sectorization, infrastructure rehabilitation, and advanced pressure management to ensure efficiency and sustainability. Financial strategies will emphasize restoring 24-hour water supply while ensuring cost recovery, promoting financial sustainability, and fostering a commercial mindset for efficient utility management. Transitioning to a continuous water supply often necessitates complex political and institutional decisions, which many cities are hesitant to undertake due to regulatory, governance, and stakeholder challenges. Case studies- outcomes and lessons learned from similar situations, measurable impacts (such as cost savings, efficiency improvements, or policy changes), and insights that contribute to future decision-making.

Speakers: **Raziyeh Farmani; Stuart Hamilton; Jamie Paterson**

W 4.5
Session 1 | Workshop

Friday 12 December
Room MR101

Practical toolkits on gender mainstreaming in water and sanitation

Chair: **Shobana Srinivasan**
Co-chair: **Daniela Bemfica**

Achieving equitable and sustainable water, sanitation, and hygiene (WASH) services requires greater gender diversity and inclusion within the workforce and across institutional practices. Yet, women remain significantly underrepresented – accounting for only 20% of the global water utility workforce (World Bank, 2019) – despite playing critical roles along the sanitation chain, often in informal or vulnerable conditions. Over the past two decades, the WASH sector has increasingly committed to mainstreaming gender equality through policies, institutional frameworks, and operational reforms. Many organisations have adopted gender strategies, inclusion guidelines, and workforce development initiatives to integrate a stronger gender lens in their work. However, the depth and effectiveness of these initiatives vary widely. Many organisations continue to face challenges in institutionalising gender mainstreaming approaches, applying relevant tools, and translating strategies into measurable impact.

Speakers: **Juliet Willets; Emmanuel Uguru; Leticia Ackun; Faustina Boache; Tahmidul Islam; Abhilaasha Nagarajan**

W 4.6
Session 3 | Workshop

Thursday 11 December
Room MR103

Community-driven participatory monitoring for safe, equitable, sustainable and climate resilient water, sanitation, and hygiene services

Chair: **Lajana Manandhar**
Co-chair: **Sashi Stephen**

The session examines industrial wastewater risks, health impacts of contamination, and sanitation solutions for vulnerable groups.

Speakers: **Lajana Manandhar; Sashi Stephen; Gulnaj Khan; Samira Shakya**

W 4.7
Session 1 | Workshop

Friday 12 December
Room MR102

Water operator partnerships & their tangible results

Chair: Anke Verheij
Co-chair: Asa Johnsson

With more than 200 Water Operator Partnerships (WOPs) ongoing, these solidarity-based collaborations are gaining momentum. WOPs aim to strengthen water utilities through peer-to-peer learning, technical cooperation, and capacity building. But what are the actual, measurable results of these collaborations? The purpose of this session will be to explore the tangible outcomes of WOPs, from improved service delivery and efficiency gains to enhanced resilience and financial sustainability of utilities. The first part of the session will feature presentations of concrete WOP results, showcasing case studies from different regions. These examples will highlight how partnerships have led to reduced non-revenue water, better operational performance and increased capacity.

In the second part, a panel discussion with funders and WOP enablers will reflect on these results. What worked well? Where are the gaps? How can WOPs be strengthened to achieve even greater impact? The discussion will provide insights into how to enhance WOP effectiveness even further and ensure long-term sustainability. The outcome of the session can be used to make a strong case for the need to continue with WOPs in the future and make them more effective and impactful.

Speakers: Anke Verheij; Sountala Keoxayyalath; Yudi Indarto selaku Direktur Utama; Adriaan Mels; Subekti; Asa Jonsson; Vivek Raman; Kalanithy Vairavamoorthy

Workshops
Theme 5

Strengthening governance and financial systems for long-term development

W 5.1
Session 1 | Workshop

Tuesday 9 December
Room MR109 (G+H)

WASH system index tool: An opportunity to strengthen WASH service delivery

Chair: **Khairul Islam**
Co-chair: **Patrick Moriarty**

Achieving sustainable and inclusive WASH service delivery requires an adaptive system that ensures long-term functionality, equity, and resilience. The WASH System Index (WSI) Tool provides a structured approach to assess the strengths and weaknesses of WASH systems at various levels, from local governance to national frameworks. This session will introduce the WSI tool, its methodology, and its application in measuring the effectiveness of policies, institutions, financing, service delivery mechanisms, and community engagement. Through case studies and practical insights, participants will explore how the tool can be used to inform evidence-based decision-making, drive targeted interventions, and strengthen WASH systems for sustainable service delivery.

Speakers: **Marieke Adank; Md Shakhawat Hossain; Nadira Khawaja; Olivier Germain; Brian Mulenga; Shadrack Guusu; Satya Narayan Ghosh; Khairul Islam**

W 5.2
Session 3 | Workshop

Tuesday 9 December
Room MR109 (G+H)

Empowerment of women in sanitation enterprises: Innovations for inclusive governance for reaching unserved communities

Chair: **Eheteshamul Russell Khan**
Co-chair: **Uttam Kumar Saha**

Despite Bangladesh's progress in sanitation and economic growth, women remain underrepresented in governance, investment, and entrepreneurship, leading to gender-blind infrastructure and inequities like the "pink tax." While Bangladesh ranks high in political empowerment, significant gaps persist in labour force participation and economic inclusion, especially for women-led SMEs. To promote women-led businesses, DPHE, with support from the Gates Foundation and IsDB, launched the "Women in Sanitation Enterprises" study. Conducted by WSUP Bangladesh in collaboration with GWSC-AIT, Thailand, it identifies barriers women sanitation entrepreneurs face and promotes inclusive policies and practical solutions for an enabling environment. This session will explore the key findings, highlighting the challenges and opportunities for women in sanitation. It will emphasize tailored support mechanisms to empower women-led sanitation SMEs and build an inclusive ecosystem.

Speakers: **Roshan Raj Srestha; Dilruba Farzana; Makfie Farah**

W 5.3
Session 1 | Workshop

Thursday 11 December
Room MR109 (E+F)

Co-designing a CWIS-centric transformative GEDSI framework to advance equitable, safe and resilient WASH systems

Chair: Vineeta Thapa
Co-chair: Srijana Karki

Current WASH systems exclude marginalized groups. Co-designing a CWIS-centric GEDSI framework with diverse stakeholders (sanipreneurs, policymakers, persons with disabilities, Indigenous leaders, utilities, women) prioritizes equity-driven innovations and climate-resilient partnerships. Through structured World Café discussions, participants will:

- Identify systemic barriers (e.g., gender, caste, disability) that hinder inclusive and sustainable WASH access.
- Prioritize inclusive innovations in technology, governance, and financing to advance equitable, climate-resilient water systems.
- Through panel insights and group dialogues, develop actionable strategies for embedding intersectional equity into WASH planning, policy, and service delivery.

The session's key outcome will be a shared blueprint for a CWIS-centric GEDSI framework, which will later evolve into a practical toolkit for implementation. This output will be disseminated through regional WASH networks, advocacy campaigns, and partner platforms to drive policy influence, mobilize funding for at-risk communities, and foster cross-sector partnerships for inclusive, climate-resilient WASH systems.

W 5.4
Session 3 | Workshop

Thursday 11 December
Room MR109 (C+D)

Building bankable urban water investments: What works, what doesn't, and what needs to change?

Chair: Deepa Karthykeyan

Urban water investment is often inefficient, overly infrastructure-heavy, and financially unsustainable. This session brings together investors, market builders, deal structurers, and implementers to dissect why projects struggle and how investment planning can be improved. Using Lagos as a case study, participants will debate key challenges—balancing risk, financing, and operational realities—through interactive small-group exercises. The session will facilitate direct discussions on financing models, tariff structures, private sector engagement, and risk-sharing mechanisms to ensure urban water investments become scalable, effective, and financially viable. The discussion will result in key takeaways on how to streamline investment processes, structure markets for efficiency, and ensure sustainable service delivery.

W 5.5
Session 1 | Workshop

Friday 12 December
Room MR110 (A+B)

Come together: The challenges of an alliance on safe sanitation

Chair: Pramila Devi Shakya Bajracharya
Co-chair: Chiri Babu Maharjan

The Citywide Inclusive Sanitation Alliance Nepal (CWISAN) is an alliance of 22 organizations working on safe sanitation in Nepal with UN-Habitat Nepal as the Secretariat since December 2021. It is the only alliance in the region with two UN agencies as its members -- the other being UNICEF. Likewise, neighbouring Bangladesh and India have similar alliances comprising of like-minded organizations working and safe sanitation. Bangladesh's FSM Network has Practical Action Bangladesh as its Secretariat while India's has National Faecal Sludge and Septage Management Alliance (NFSSM) with dasra as its Secretariat. The session is designed with the purpose for Nepal, Bangladesh and India to share their experiences, discuss challenges and, if possible, chart out a larger network of alliances to cover the South Asia and Asia Pacific Region and beyond. Ministry of Water Supply (MoWS), Nepal will chair this session and supported by UN-Habitat Nepal as the Secretariat of CWISAN.

Speakers: Bhim Prasad Dhungana; Hezekiah Otieno Pireh; Ishrat Shabnam; Dhruv Mitter; Roshan Raj Shrestha; Kalanidhi Devkota

W 5.6
Session 1 | Workshop

Friday 12 December
Room MR110 C

Conflict or cooperation: Exploring water conflict through game theory

Chairs: Hannah Leigh & **Vivien Chow**

This interactive workshop uses a game to explore the dynamics of water conflict, demonstrating how water scarcity can drive both conflict and cooperation. Participants will represent villages that rely on a shared water source, each with unique needs and historical relationships. Villages must decide each round whether to cooperate (sharing water equitably) or compete for a greater share of resources. Decisions are influenced by strategic choices, game theory principles, and "event cards" introducing real-world challenges like climate events or external aid. While cooperation ensures collective survival, competition may bring short-term gains at the expense of others, risking the elimination of vulnerable villages. The session concludes with a debrief linking game decisions to real-world water management scenarios, exploring solutions like collaboration, innovation, governance and practical measures. This activity highlights the complexities of water access and the importance of strategic cooperation for resilience and conflict resolution in water management.

Speakers: Prabal Basnet

W 5.7
Session 1 | Workshop

Friday 12 December
Room MR109 (E+F)

Strengthen institutionalization of marginalized community networks/CBOs in WASH Governance systems

Chair: Bhawana Sharma
Co-chair: Vineeta Thapa

Workshop outcome: What are the systemic barriers that prevent marginalized communities (e.g., sanitation workers, LGBTQIA+ individuals, persons with disabilities) CBOs from receiving leadership roles in WASH governance of the city, and what are the measures that can be adopted to overcome these barriers and improve their advocacy and decision-making influence?
1. Participants will gain knowledge of various institutional avenues for mainstreaming marginalized voices in WASH governance.
2. They will understand effective participatory governance options and learn about successful upscaling strategies.
3. Development partners and mayors will become more familiar with dissemination and replication strategies so that they can implement inclusive governance models in their own cities.

Speakers: Meena Lama; Bimala Aryal

W 5.8
Session 2 | Workshop

Friday 12 December
Room MR110 C

Driving disruptive change in public toilets: Revolutionizing operational models and user behavior across Asia and Africa

Chair: Khairul Islam
Co-chair: Patricia Solorzano

This two-part workshop series, hosted by SNV and WaterAid, will delve into the operational and social dimensions of public toilet systems across Asia and Africa. The first session will focus on the operational challenges public toilets face, including financial sustainability, business models, and public-private partnerships (PPP). It will analyze case studies to understand the barriers to effective operation and discuss strategies for improving maintenance, financing, and long-term success. The second session will address the social aspects of public toilet usage, such as behavior change communication, community involvement, and sanitation etiquette. Participants will explore strategies to engage communities in the design, maintenance, and use of public toilets, ensuring sustainability. Emphasis will be placed on capacity-building initiatives that empower local populations and promote hygiene practices, contributing to healthier and more efficient public toilet systems.

Speakers: Leyla Khalifa; Hasin Jahan; Yemi Patricia Solorzano Leiva; Nadira Khawaja

W 5.9
Session 2 | Workshop

Thursday 11 December
Room MR107 (A+B)

Bangladesh's sanitation journey: 'Access to Safe Management' – Challenges, successes, and ways forward

Chair: Hasin Jahan Jahan
Co-chair: Rowshan Mamtaz

The purpose of the session is to explore Bangladesh's sanitation journey, focusing on key initiatives like Community-Led Total Sanitation (CLTS) to the "Journey to Zero" which celebrated the achievement of open defication free status. The workshop will highlight significant approaches, including the adoption of Faecal Sludge Management (FSM), City Wide Inclusive Sanitation (CWIS), and Safely Managed Sanitation (SMS), towards achieving safely managed sanitation status.
This session will highlight both the successes and challenges Bangladesh has encountered in ensuring safe and sustainable sanitation. The desired outcome is to provide valuable insights into Bangladesh's progress and the lessons learned. These findings will be shared with other countries facing similar challenges, promote the exchange of best practices and informing future sanitation strategies globally.
This session will also share key highlights and outcome from the recent Toilet Conference that was organised in Bangladesh and made a declaration for the acceleration of the attainment of SDG 6.2.

W 5.10
Session 1 | Workshop

Wednesday 10 December
Room MR107 (A+B)

Unlocking mechanisms for sustainable financing for climate-resilient and inclusive WASH

Keynote: Roshan Raj Shrestha

What will it take to mobilize sustainable finance that truly supports climate-resilient and inclusive WASH systems? This session explores how development finance institutions and funding partners are working to bridge the gaps—between climate action, gender equity, and WASH—through innovative, targeted financing. With a focus on low-income and climate-vulnerable regions, we'll look at how new partnerships, blended finance, concessional models, and results-based approaches are being used to strengthen WASH services while advancing climate resilience and social inclusion. Speakers will share on-the-ground experiences, explore challenges in aligning investment flows with climate and gender goals, and highlight what's needed to scale up impact. Policymakers, funders, and practitioners alike will find in this session a space to reflect on what's working, identify where gaps remain, and explore how we can mobilize finance that leaves no one behind.

Session Moderator: Thusitha De Silva
Panel Moderator: Isha Basyal
Panelists: Papa Sy; Massimo Petrone; Amgad Elmahdi; Ping Yean Cheah; Maggie Clout

Cross-cutting and supplementary workshops

SW. 1
Session 1 | Workshop

Tuesday 9 December
Room MR110 C

Sanitation as source-protection infrastructure: Reframing the water-sanitation nexus

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SW. 2
Session 2 | Workshop

Tuesday 9 December
Room MR110 C

Workshop

SW. 3
Session 3 | Workshop

Tuesday 9 December
Room MR110 C

Citywide inclusive sanitation, water in circular economy and resilience, and reuse

Chair: Gerard Soppe
Co-chair: Sanyu Lutalo

This session aims to build capacity in Citywide Inclusive Sanitation (CWIS), Water in Circular Economy and Resilience (WICER), and water reuse by exploring global and regional experiences. Participants will first be introduced to the urgency of the global sanitation crisis and the CWIS approach, which seeks to deliver equitable and sustainable sanitation services for all urban residents through inclusive planning and a mix of service models. The session will then highlight Singapore's pioneering NEWater journey, showcasing how diversification of water sources and innovative reuse strategies have contributed to water security.

Speakers: Gerard Soppe; Sanyu Lutalo; Diego Juan Rodriguez; Ryan Yuen

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SW. 4
Session 1 | Workshop

Wednesday 10 December
Room MR110 (A+B)

Charting the course to water security: The Asian water development outlook 2025

Chairs: Leyre Ibanez & **Fatima M. Bautista**

A clear and usable tool integrated into water-related planning and policy frameworks to drive meaningful actions toward achieving water security across the region and across various dimensions.

Speakers: Vivek Raman; Leyre Ibanez; Fatima M. Bautista; Lachlan Guthrie; Sonia Hoque; Karthikeyan Matheswaran; Regina Souter; William Veerbeek; Fan Zhang; Satoshi Ishii

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SW. 5
Session 2 | Workshop

Wednesday 10 December
Room MR110 (A+B)

Trends in climate resilient water and sanitation systems in Asia and the Pacific

Chairs: Massimo Petrone & **Jitendra Singh**

A snapshot of the status of development of water and sanitation systems in the region in general and a few countries, with reflection on possibilities based on the progress in recent past; identified activities to scale up and replicate.

Speakers: Jitendra Singh; Massimo Petrone; Jeremy Kohlitz; Sangam Shrestha; Samuel Treglown; Graziel Salazar

SW. 6
Session 3 | Workshop

Wednesday 10 December
Room MR110 (A+B)

IWA & Grundfos Youth Action for SDG6 Fellowship - Interactive discussion on enabling community-led solutions for water challenges

Chair: Karl Zimmermann
Co-chair: Ramanuj Mitra

In this session, the IWA & Grundfos Youth Action for SDG 6 Fellows (2025-26 cohort) will facilitate mini-roundtable discussions on locally led solutions for water-related challenges. Representatives from Grundfos and C40 Cities will introduce the session with insights into their activities supporting water sustainability and sustainable urban development.

Speakers: Hadi Mokarizadeh; Emmanuel Nketiah Ahenkorah; Patience Wema; Micheala Chan; Meg Cummins

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SW. 7
Session 3 | Workshop

Wednesday 10 December
Room MR102

Digital tools for evidence-based decision making in CWIS

This session explores how GWSC and its partners have harnessed open-source GIS-based data, systems, and platforms to support evidence-based decision-making in designing and delivering the TAs in sanitation and data. By integrating accessible data sources with existing databases, GWSC has minimized extensive data collection efforts while enhancing municipal operations and sanitation project design. The session will highlight the efficiency and scalability of these digital tools, showcasing the geo-spatial CWIS planning tool and the Integrated Municipal Information System. These tools serve as powerful enablers for evidence-driven decision-making, facilitating the application of citywide inclusive sanitation principles and frameworks. Attendees will gain insights into overcoming challenges associated with digital platforms and learn how GWSC's innovative approaches have successfully supported sanitation planning and operations. Above all, this session aims to demonstrate how supportive digital tools can drive sustainable, inclusive, and scalable solutions in urban sanitation management.

SW. 8
Session 1 | Workshop

Thursday 11 December
Room MR109 (A+B)

Workshop on systems leadership

To promote systems leadership in water and sanitation at all levels * To further develop our collaboration with the IWA community e.g. on systems level issue on topics critical to utility water supply and citywide inclusive sanitation and other themes. This could include formation of a specialist group on systems. * To promote use of the WASH systems academy and its courses (on leadership, on urban asia) and development of a community of practice around systems leadership

Speakers: Doanh Chau; Neeta Pokhrel; Spurthi Kolipaka

SW. 9
Session 2 | Workshop

Thursday 11 December
Room MR109 (A+B)

Beyond biology: New frontiers in household wastewater treatment

Many countries face the challenge of providing safely managed sanitation where centralized sewers are impractical or unavailable. There is growing interest in advanced household treatment systems that can meet stringent water quality standards while enabling safe water reuse and nutrient management. This workshop brings together different developers who are contributing towards two process trains that can treat household wastewater and also the sludge produced by these processes under the IWA Next Generation Sanitation Systems (NGSS) program supported by the Gates Foundation. Each system employs distinct treatment trains combining physical, chemical, and/or electrical processes to treat blackwater and greywater to ISO 30500 standards while addressing nitrogen removal.

SW. 10
Session 3 | Workshop

Thursday 11 December
Room MR110 (A+B)

Smart regulation for resilient and investable water systems

Chair: Gerard Soppe
Co-chair: Sanyu Lutalo

This session will examine the evolving landscape of global water smart regulation. Participants will explore how policymakers and regulators can foster innovation, encourage private sector participation, and attract sustainable finance to enhance resilience and sector performance. The session will also address the challenges and opportunities presented by the digital era, including data governance, cyber-security, AI regulation, and the development of new regulatory tools. Finally, the discussion will delve into the critical role of regulators in public-private partnership (PPP) models, highlighting strategies for designing performance-based frameworks, effective risk allocation, tariff and subsidy design, and ensuring transparency and accountability for long-term sustainability.

Speakers: Gerard Soppe; Sanyu Lutalo; Diego Juan Rodriguez; Ryan Yuen

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SW. 11
Session 1 | Workshop

Friday 12 December
Room MR109 (C+D)

Digital water in emerging economy: Needs, opportunities, and challenges

Chair: Soon Thiam Khu
Co-chair: Robin Wong

Digitization in the water sector has been very much spear-headed and dominated by economies and utilities that are financially well-off. This begs the question whether utilities should invest on digitization in hope of a sound return-on-investment, or whether they should take a more conservative approach. The situation is more complicated for emerging economies facing hydrological, geographical, urban development and social challenges. This session will allow invited speakers from both well-developed and emerging economies to share their experiences, highlight challenges, and demonstrate new technological advances toward digital transformation. Participants will be able to probe the minds of CTOs, senior utility managers, and leading experts on the future of digital water in emerging economies.

Speakers: Robin Wong; Cristina P Alejandro; Adam Saffian Ghazali; Malseni Binti Jamal; Soon Thiam Khu; Qixian Zou

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SW. 12
Session 2 | Workshop

Friday 12 December
Room MR110 (A+B)

Scaling up water & sanitation? What about the critical human capital bottleneck?

Chairs: Regina Souter & **Virgilio (Perry) Rivera Jr**

This workshop will create a space for utility managers to explore one of the most pressing challenges facing the sector: developing a skilled, adaptable, and sustainable workforce to support major infrastructure expansion. Participants will be introduced to frameworks that identify the full spectrum of technical, management, and leadership capabilities required to scale up water and sanitation services. Through structured dialogue and peer exchange, participants will share insights into workforce constraints and solutions, including talent recruitment, retention, and leadership development. The primary output of the session will be a set of shared challenges and practical strategies that utilities are using or considering.

SW. 13
Session 2 | Workshop

Friday 12 December
Room MR109 (C+D)

Integrated water management for fast-developing cities in Asian countries

Co-chairs: Qian Li & **Zhihua Li**

Asia is among the fast-developing regions in the world, symbolized by rapid urbanization, centralized resource/energy consumption, and heavy tasks of pollution control and eco-environmental quality upgrading. To organize a special workshop on integrated urban water management strategies and countermeasures at the IWA Water and Development Congress based on the experiences in Asian countries will support the whole world towards the SDG goals and beyond.

SW. 14
Session 2 | Workshop

Friday 12 December
Room MR102

2025 Recognition Programme of the Climate Smart Utilities

Summits & Forums

Summit — **High Level Summit**

Tuesday 9 December
Room MR110 (A+B)

Forum — **Utility Leaders Forum**

Wednesday 10 December
Room MR110 C

Forum — **International Water Regulators Forum**

Wednesday 10 December
Room MR106

Forum — **IWA Water Efficient Sanitation Solutions (WESS) Forum 2025**

Wednesday 10 December
Room MR109 (C+D)

Forum — **From Land to Sea Forum**

Thursday 11 December
Room MR110 (A+B)

Forum — **Sanitation Forum - IUS**

Thursday 11 December
Room MR110 C

Forum — **Emerging Water Leaders Forum**

Thursday 11 December
Room MR109 (G+H)

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