Singapore International Water Week

SINGAPORE INTERNATIONAL WATER WEEK 2024

THE GLOBAL PLATFORM TO SHARE AND CO-CREATE INNOVATIVE WATER SOLUTIONS

18 – 22 June 2024

Sands Expo & Convention Centre
Marina Bay Sands, Singapore

SIWW2024 WATER CONVENTION CALL FOR PAPERS

Water Convention is jointly organised by:

IWA the international water association

PUB SINGAPORE'S NATIONAL WATER AGENCY

www.siww.com.sg

MESSAGE FROM THE CO-CHAIRS OF THE SIWW2024 WATER CONVENTION PROGRAMME COMMITTEE

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Singapore International Water Week 2024 returns next year, from 18-22 June 2024, at the Sands Expo and Convention Centre in Singapore. As one of the leading global water events in the world focused on urban water innovation and solutions, SIWW2024 will once again host global leaders, experts and practitioners from water utilities, agencies, governments, cities, industry and academia to share and co-create innovative solutions to solve the world's urban water challenges.

As one of the key flagship events of SIWW, the Water Convention provides the platform for the sharing of innovations, advanced technologies, and best practices among researchers, practitioners, and technology providers in the water industry. In the 2022 edition, the Water Convention attracted more than 1,200 delegates from 52 countries and featured over 300 oral and poster presentations across 6 Hot Issues Workshops and 47 technical sessions.

Co-organised by PUB, Singapore's National Water Agency, and the International Water Association, the 2024 Water Convention invites experts and practitioners to share their newest and latest innovation, technologies, best practices and case studies in six themes covering the urban water cycle. These themes reflect the urgent issues and challenges facing urban water practitioners, such as ensuring the sustainable production and supply of safe and clean drinking water, the effective and efficient collection and treatment of used water, resiliency and adaptability of urban cities to climate change, floods and sea-level rise, and resource efficiency and circular economy for the water sector.

It is our wish for the papers presented at this Water Convention to inspire and foster collaborations amongst various stakeholders within the global water community, and contribute to meaningful action to build a sustainable global water future for all. On this note, we invite you to submit your abstracts and share your valuable ideas and experiences with peers from around the world.

We look forward to meeting you in Singapore at the SIWW2024 Water Convention.

ABOUT THE CO-ORGANISERS

INTERNATIONAL WATER ASSOCIATION (IWA)

The International Water Association is the organisation that brings together science and practice of water management in order to reach a world in which water is wisely managed to satisfy the needs of human activities and ecosystems in an equitable and sustainable way.

The IWA is a global knowledge hub and international network for water professionals and anyone concerned about the future of water. We bring together know-how and expertise to instigate ground-breaking solutions.

PUB, SINGAPORE'S NATIONAL WATER AGENCY

PUB is a statutory board under the Ministry of Sustainability and the Environment (MSE). It is the national water agency, which manages Singapore's water supply, water catchment, and used water in an integrated way. From April 2020, PUB also took on the responsibility of protecting Singapore's coastline from sea-level rise as the national coastal protection agency.

PUB has ensured a diversified and sustainable supply of water for Singapore with the Four National Taps (local catchment water, imported water, NEWater, desalinated water). PUB leads and coordinates whole-of-government efforts to protect Singapore from the threat of rising seas and the holistic management of inland and coastal flood risks.

PUB calls on everyone to play a part in conserving water, in keeping our waterways clean, and in caring for Singapore's precious water resources. If we all do our little bit, there will be enough water for all our needs – for commerce and industry, for living, for life.

SIWW2024 WATER CONVENTION PROGRAMME COMMITTEE

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THEMES FOR SIWW2024 WATER CONVENTION

The Water Convention is a platform for gathering professionals and technology providers from around the world to share their knowledge, practical experiences, and novel technologies to address the current and emerging water challenges under the following themes:

1. Delivering Water from Source to Tap (Network)
2. Delivering Water from Source to Tap (Treatment)
3. Effective and Efficient Wastewater Management
   a. Treatment
   b. Conveyance
4. Cities of the Future and Coastal & Flood Resilience
5. Water Quality and One Health
6. Nexus and Circularity

The Water Convention technical programme focuses on spurring knowledge sharing, fruitful discussions and engaging debates among water leaders and practitioners through high quality presentations on technological innovations, management strategies and best practices.

THEME 1: DELIVERING WATER FROM SOURCE TO TAP (NETWORK)

Digital transformation has empowered water utilities to leverage advanced technologies and data gathered from multiple sensors to improve their network planning and design. This enables water utilities to achieve an efficient and resilient network. The wealth of network information supports operators in proactive maintenance of their assets, leak detection, condition assessment, valve operations and mains flushing. This informed approach ensures smooth and uninterrupted water supply. The proliferation of digital twins and smart water meters also betters our understanding of the network's behaviour and enables more effective water conservation strategies. However, it is important to note that digital transformation should prioritise people, and digital solutions should be relevant to and embraced by both operators and customers. This theme welcomes abstracts on the latest innovations, technologies, best practices, and case studies on water supply network management. Topics of interest include:

1.1 Planning, Design and Implementation

1.1.1 Master planning and water demand predictive management tools
1.1.2 Sustainable and resilient networks
1.1.3 Key performance indicators for network management
1.1.4 Networks in developing countries

1.2 Efficiency of Operations

1.2.1 Tools for overall efficiency optimisation
1.2.2 Towards "low disturbance networks": minimising nuisances during network repairs
1.2.3 Innovative solutions for cleaning of networks
1.2.4 Tools for optimising field services: workforce management, reducing time and cost

1.3 Asset Management and Network Renewal

1.3.1 Preservation of ageing infrastructure
1.3.2 Anticipation of network residual lifetime
1.3.3 Tools for network renewal CAPEX optimisation
1.3.4 Proactive pipe and asset condition monitoring and assessment
1.3.5 Advanced leak detection and management
1.3.6 Fast and trenchless pipe rehabilitation technologies
1.3.7 Innovative pipe materials
1.3.8 Impact of network materials on water quality (and vice versa)
1.3.9 3D mapping of underground services

1.4 Metering

1.4.1 Metering policy
1.4.2 Asset management and renewal strategy for meters
1.4.3 Technological innovations in Advanced Metering Infrastructure (AMI)
1.4.4 Transformation of smart metering business models
1.4.5 Next generation meters with intelligent features

1.5 Smart Water

1.5.1 Advanced sensor technologies
1.5.2 Digital solutions for network modelling
1.5.3 Real time simulation and real time control using metering and other data
1.5.4 Digital twin and its finetuning using live sensor data
1.5.5 Machine learning algorithms for enhanced detection and prediction (data science, advanced alarms)
1.5.6 Open networks/virtual DMA for water balance accounting
1.5.7 Real-time monitoring of water quality indistribution systems
1.5.8 Water safety, security and quality incident management
1.5.9 The real cost of smart infrastructure (maintenance of sensors, databases)
1.5.10 Role of Data-as-a-Service in the water sector
1.5.11 Human factor in digital transformation

1.6 Water Conservation and Efficiency Measures

1.6.1 New regulations for sustainable water cycle management (resource scarcity, incentives for Water-wise Cities)
1.6.2 Strategies, approaches and new technologies for reduction of water usage in household and industries
1.6.3 New services to manage and reduce water consumption for customers using AMI data
1.6.4 Network efficiency and non-revenue water: flow and pressure monitoring and management, real-time monitoring of NRW
1.6.5 Methods and tools for water loss reduction and sustainable water consumption
1.6.6 Private installations and networks, plumbing systems
1.6.7 Environmental impact of water distribution

THEME 2: DELIVERING WATER FROM SOURCE TO TAP (TREATMENT)

Cities worldwide face the challenge of limited freshwater supply, prompting them to diversify their water sources to become more resilient. As treatment technologies continue to advance, there is an increasing focus on making the process more sustainable by reducing energy requirements, exploring beneficial reuse of brine, and harvesting energy from waste streams. Additionally, these technologies have to be adaptable to the future impacts of climate change, for instance by designing treatment processes that can cope with changing water quality. While ensuring a sufficient and sustainable water supply is critical, it is equally important to ensure that the water supplied is of the highest possible quality. To this end, water utilities are applying advanced technologies that can effectively treat and remove contaminants of emerging concern and specific groups of contaminants that are resistant to conventional processes. Water utilities are also exploring the use of innovative sensors and digital solutions to support them in plant operations, maintenance, and optimisation. This theme welcomes abstracts on innovative and smart water treatment technologies and solutions in the following areas:

2.1 Basic and Advanced Water Treatment Processes

2.1.1 Characterisation, impact and removal of natural organic matter and heavy metals in drinking water
2.1.2 Treatment of emerging pollutants
2.1.3 Waste minimisation and management in water treatment
2.1.4 Advanced oxidation processes
2.1.5 Advances in membrane technologies and applications
2.1.6 Challenges in adoption of treatment technologies in rural communities and in low-income countries

2.2 Innovations in Desalination

2.2.1 Breaking desalination cost and energy barriers
2.2.2 One Water – joint desalination and reuse
2.2.3 Brine concentration and beneficial reuse
2.2.4 Advances in brackish groundwater treatment
2.2.5 Recent planning and implementation experience
2.2.6 Pre- and post-treatment and other process innovation
2.2.7 Process innovations by membrane technology
2.2.8 Industrial wastewater desalination
2.2.9 Case studies for low energy desalination

2.3 Augmenting Water Supplies by Water Reuse

2.3.1 Innovations in direct and indirect potable reuse
2.3.2 Ecological water reuse
2.3.3 Non-potable urban reuse
2.3.4 Planning and implementation of water reuse projects
2.3.5 Process intensification and improvement by membrane technology
2.3.6 Efficient groundwater management (e.g., management of artificial aquifer recharge and well)
2.3.7 Sustainable water reuse

2.4 Brine Concentration and Mining

2.4.1 Innovative technologies for membrane brine concentration
2.4.2 Zero and near zero liquid brine discharge systems
2.4.3 Extraction of valuable minerals from brackish and seawater brines
2.4.4 Case studies for brine concentration and mining

2.5 Digitalisation of Water Treatment Plants

2.5.1 Advancement in real-time water quality monitoring of source and product water
2.5.2 Predictive and corrective automated process operation and optimisation
2.5.3 Asset management with smart technologies
2.5.4 Artificial intelligence systems for remote monitoring and control
2.5.5 Application of virtual/augmented reality systems in plant operations and training

2.6 Technological Innovations in Response to Climate Change

2.6.1 Water treatment technologies for achieving net-zero CO_2 emission
2.6.2 Adaptation of water treatment systems to climate changes in the future
2.6.3 Drinking water production from unconventional water sources (e.g., humidity in the air)
2.6.4 Process design innovations for mitigation of source water scarcity and quality deterioration

THEME 3A: EFFECTIVE AND EFFICIENT WASTEWATER MANAGEMENT (TREATMENT)

In our pursuit of a sustainable future, the perception of wastewater has changed from being something unwanted to a beneficial resource. This shift drives the desire to extract as much water, energy, and valuable materials from wastewater as possible. A growing number of technologies have been developed to enhance energy generation during wastewater treatment. Meanwhile, to mitigate climate change, attempts are made to reduce the overall carbon footprint of wastewater management including nitrous oxide and methane emissions. There is an upward trend in recovering and reusing material resources from waste streams. For the remaining wastewater effluent, a high quality is targeted for reuse applications, potentially in part through the use of membrane technologies and processes. Besides looking into new innovations, efforts are also placed in improving the efficiencies of existing processes to enhance sustainability. This theme welcomes abstracts examining best practices and innovative technologies for sustainable and economically viable centralised or decentralised treatment and management of wastewater and the resources embedded therein.

3a.1 Basic and Advanced Wastewater Treatment Processes

- 3a.1.1 Treatment of emerging chemical (e.g., PFAS and microplastics) and microbial contaminants (including ARG and ARB)
- 3a.1.2 Membrane technologies
- 3a.1.3 Advances in nutrient removal technologies
- 3a.1.4 Advanced oxidation processes as tertiary treatment
- 3a.1.5 The use of improved primary and preliminary treatment technologies (e.g., grit and screenings) to protect downstream processes
- 3a.1.6 Sludge treatment and biosolids management

3a.2 Process Intensification/ Innovation for Efficient Use and Recovery of Resources

- 3a.2.1 Novel integration and combinations of processes to achieve process intensification (e.g., aerobic granular sludge and biofilm processes)
- 3a.2.2 Reducing carbon footprint (e.g., control of N_2O and CH_4 emissions, chemical consumption, energy balance)
- 3a.2.3 Resource-efficient treatment processes supported by the recovery of water, energy, and nutrients

3a.3 Climate Change and Resilience: Process Impacts and Implications

- 3a.3.1 Treatment of overflow from conveyance systems
- 3a.3.2 Lessons learned from extreme weather events (e.g., emergency preparedness, post-event recovery, operation reinstatement, etc.)
- 3a.3.3 Designing a climate resilient plant (e.g., climate-resilient power system, wet weather flow management)
- 3a.3.4 Next-generation green-infrastructure systems for overall system resilience

3a.4 Asset Management

- 3a.4.1 Ageing infrastructure
- 3a.4.2 Efficient management and maintenance of existing and future assets
- 3a.4.3 Management of vertical assets

3a.5 Monitoring and Measurement of Wastewater Contaminants

- 3a.5.1 Real-time detection and identification of VOC/SVOC
- 3a.5.2 Wastewater based epidemiology
- 3a.5.3 Omics-based monitoring tools for process operation and control
- 3a.5.4 Methodologies and monitoring of emerging compounds (e.g., PFAS, microplastics)
- 3a.5.5 Biosensors and other novel tools (e.g., biological and chemical fingerprinting) for discharge quality management
- 3a.5.6 Role of sensors in plant monitoring and operation

3a.6 Next Generation of Intelligent Plant

- 3a.6.1 New sensing and simulation approaches and models for process monitoring and control (e.g., digital twins)
- 3a.6.2 Artificial intelligence, machine learning and data analytics for process optimisation
- 3a.6.3 Integrated control of conveyance and treatment plant
- 3a.6.4 Workforce engagement, retention, staff training, capacity building, current and future skills related to digital transformation
- 3a.6.5 Data management, governance, and cyber security

3a.7 Wastewater Treatment and Management in Developing Countries

- 3a.7.1 Integrated approach to enhance water reuse
- 3a.7.2 Integration and augmentation strategies for WWTPs within existing infrastructure: relevance to developing countries
- 3a.7.3 Wastewater based epidemiology
- 3a.7.4 Treating non-sewage and other complex wastewater and waste streams

3a.8 Decentralised Wastewater Treatment for Addressing Rapid Urban Growth

3a.8.1 Design and innovation of non-sewered sanitation technologies
3a.8.2 Integration of decentralised wastewater treatment facility with direct and indirect potable reuse
3a.8.3 Factors affecting the design of decentralised wastewater treatment facility (e.g., adequacy of isolation from residential areas, odour control, etc.)

3a.9 Water Reuse

3a.9.1 Implementation and challenges of
3a.9.2 Zero Liquid Discharge (ZLD)
3a.9.3 Wastewater treatment oriented to
3a.9.4 water reuse
Brine management and discharge
Decentralised treatment of wastewater for reuse in green urban areas

THEME 3B: EFFECTIVE AND EFFICIENT WASTEWATER MANAGEMENT (CONVEYANCE)

Sewers are vital for the sanitary conveyance of wastewater to treatment facilities. To ensure that sewers can carry out their function well, proper operation and maintenance are necessary. Utilities are taking a more proactive approach in these areas with the help of digitalisation and intelligent technologies. In sewer operation, analytics and management tools are employed with real-time sensors and meters for detecting and predicting blockages, inflows, and infiltrations. It is equally important to examine the quality of the wastewater discharged into sewers as it affects downstream treatment processes. In maintenance, advanced inspection equipment is deployed for sewer inspection, cleaning, and rehabilitation. The necessity for cutting-edge technologies becomes more apparent as large sewers are laid more deeply in the increasingly urbanised cities. Such deep tunnel sewage systems require innovative solutions for monitoring the tunnel's structural integrity and conveyance condition. Abstracts looking into novel technologies, best practices and applied research for wastewater networks in the areas below are welcomed.

3b.1 Networks

3b.1.1 Integrated network modelling, understanding the overall system from the network to the receiving water
3b.1.2 Climate change impacts to the sewer network (e.g., rainfall, inflow/infiltration, sea level rise, storm surge)
3b.1.3 Prediction of climate change impacts on asset performance
3b.1.4 Construction materials, automated or mechanised processes for pipe laying

3b.2 Asset Management, Renewal and Rehabilitation

3b.2.1 Next generation of condition assessment, maintenance and pipe rehabilitation technologies
3b.2.2 Innovation in shortening maintenance interventions
3b.2.3 Challenges of upgrading ageinginfrastructure
3b.2.4 No-dig technology

3b.3 Operations

3b.3.1 Data analytics, digital twin, simulations and application tools for forecasting, network planning, optimisation and operations & maintenance
3b.3.2 Next generation of wastewater network management (e.g., machine learning, optimisation, automation)
3b.3.3 Advanced chokage detection capabilities/strategies
3b.3.4 Point source pollution abatement strategies
3b.3.5 Non-point source pollution abatement strategies

3b.4 Deep Tunnel Sewerage Systems

3b.4.1 Tunnel structural integrity and condition monitoring strategies/technologies
3b.4.2 Maintenance and access to deep tunnels
3b.4.3 Large sewer inspection and maintenance using smart technologies

3b.5 Sensors for Wastewater Monitoring in the Network

3b.5.1 Biosensors and other novel sensors (e.g. biological and chemical fingerprinting) for discharge quality management
3b.5.2 Real-time detection and identification of VOC/SVOC
3b.5.3 Real-time monitoring of methane and hydrogen sulphide
3b.5.4 Monitoring of emerging compounds (e.g., PFAS, microplastics)

THEME 4: CITIES OF THE FUTURE AND COASTAL & FLOOD RESILIENCE

Cities and towns are the economic powerhouses. They account for more than 70% of global gross domestic product (GDP). And by 2050, they are expected to accommodate 70% of the world's population. Cities are complex adaptive systems, with multiple interconnected elements converging, concentrating, and exacerbating many of climate change impacts. Over the last decade, SIWW has provided a platform for fostering integrated urban water management across the social-technical domain.

The Cities of the Future Theme of SIWW2024 will focus on **coastal cities and small island states.** While all cities globally are faced with climate change water-related challenges of water scarcity, floods, environmental pollution, and loss of natural capital, to varying degrees, coastal cities are particularly vulnerable to climate change impact on flooding from multiple fronts, i.e. sea-level rise and storm surges, fluvial floods with many coastal cities located within large river basins, and pluvial floods owing to many coastal cities being located on relatively low-lying and flat terrain. Many small island states are also reliant on vulnerable groundwater resources as their primary source of potable water. Coastal pollution, e.g., plastics and more generally waste management – solid or liquid, is also becoming a critical challenge for coastal cities to ensure local water quality as an asset for liveability and citizens engagement on water-related issues, but also to contribute to a wider range of SDGs.

Our focus on coastal cities and small island states is therefore within the context of climate change resilience and adaptive capacity and managing coastal pollution. Emphasis is placed on innovative **coastal and flood resilience** measures which need to be multifunctional (due to land scarcity in small island states) and flexible (to manage the uncertainty in storm surges and sea level rises). Authors are invited to submit abstracts across the following four technical and water governance sub-topics for coastal cities and small island states.

4.1 Reimagining City Masterplans

In exploring contemporary approaches to urban planning and design of coastal cities in their transition to greater resilience and liveability, papers with actual case studies addressing the following issues are invited:

4.1.1 Sustainable urban coastal development, low spatial and carbon footprint, and adaptive flood resilience strategies
4.1.2 Impact and risk of sea level rise on urban water cycle
4.1.3 Infill, reconstruction, land reclamation and city expansion under rising sea level; urban waterfronts, urban shoreline extensions
4.1.4 Linking land-use master-planning with water cycle master-planning
4.1.5 Promoting a water circular economy around multiple water-food-energy-waste nexus
4.1.6 Digitally enabled spatial master-planning for water in cities
4.1.7 Linking cities, their catchments and coastal zones

4.2 Coastal Resilience through Innovations in Hybrid Infrastructure

4.2.1 Multi-functional and systems approach to coastal resilience
4.2.2 Adaptable coastal protection measures for staged defences of future increase in sea level rise
4.2.3 Green, blue and grey infrastructure for coastal, fluvial and pluvial flood management in coastal cities
4.2.4 Enhancing marine environment while ensuring coastal flood resilience
4.2.5 Protecting groundwater resources

4.3 Digital Developments for Water Management of Coastal Cities and Small Island States

4.3.1 Internet-of-things for integrated urban water management
4.3.2 Digital land-use information/digital twin for spatial water system design and management
4.3.3 Digital tools for community-deliberative decision making, system transparency and water-sensitive behaviour
4.3.4 Sensors, AI, data analytics, and application tools for rain/weather forecasting, flood prediction, early warning, network planning, optimisation and operations & maintenance
4.3.5 Sensors, AI, data analytics, and application tools for coastal monitoring, modelling and forecasting of storm surge events
4.3.6 Automation of flood prevention measures and predictive maintenance

4.4 Institutional Reform for Effective Governance

4.4.1 Model for co-investment in infrastructure and integrated urban water services
4.4.2 Building social resilience at the community and institutional levels
4.4.3 Preparing for and learning from emergency responses
4.4.4 Quantifying and monetising non-market values of hybrid infrastructure and water quality improvements
4.4.5 Valuing and planning for future optionality

THEME 5: WATER QUALITY AND ONE HEALTH

Global climate change has led to an increased focus on water quality and its impact on human, animal, and ecosystem health. Recent progress in the application of genomics has opened up new possibilities for water quality surveillance and management. Wastewater-based epidemiological surveillance (WES) has attracted attention worldwide during the pandemic as a real-time monitoring method for SARS-CoV-2; it has great potential to be applied to monitoring the emergence of new virus variants, antimicrobial resistance (AMR) and pathogens at large, as well as medicine and drug use in communities. Innovative sensors for detecting pollutants and contaminants in drinking water are becoming more sensitive and specific which raises concerns if hazardous concentration standards are driven by the ever-increasing resolution of detection techniques (shifting from parts per trillion to parts per quadrillion) rather than based on proven health risks. The current debate on PFAS highlights the growing divergence between standards across the world. Water quality is also increasingly crucial in the context of medical care; the quality of recreational waters is another issue of concern. Effective communication between sectors and to communities is crucial for the successful promotion of One-Water/One-Health but remains a challenge. This is a Call for Papers directed at policy-and decision-makers, planners, practitioners, and researchers dealing with one or more of the sub-topics listed below:

5.1 Global Climate Change, Water Quality and Health

5.1.1 Impacts of extreme weather events on human, animal and ecosystem health (e.g., excessive rainfall and floods, lasting droughts and water scarcity, heat waves, droughts and more frequent associated wildfires)

5.1.2 Setting and refining water quality criteria for prioritisation in the continuum of mitigation, adaptation, and resilience building for One Health in specific settings

5.1.3 Lessons learned from recent research in climate-relevant action in water resources development and management, and in the operations of drinking water, wastewater, and sanitation service providers

5.1.4 Influence of climate change phenomena on the links between human, animal, and ecosystem health on short, medium and long-term

5.1.5 Environmental management approaches in mitigation and adaptation (e.g., spatial planning, urban rural connections, livestock distribution management, safe decommissioning of boreholes)

5.2 Recent Progress in the Application of Genomics in Water Quality Management

5.2.1 Recent developments, progress in and application of whole genome sequencing and other genomics methods and techniques in water quality surveillance and management for human and tanimal health

5.2.2 Innovations in antimicrobial resistance (AMR) diagnostic methods

5.2.3 Innovations in the detection of microbial contaminants in irrigation water to protect and enhance food safety

5.2.4 Improving access to genomics technologies and techniques to monitor the quality of irrigation water in low- and middle-income countries in support of food safety

5.2.5 Source tracking and elucidating contamination pathways in areas with significant livestock populations

5.3 Wastewater-based Epidemiological Surveillance (WES) beyond SARS-CoV-2

5.3.1 Application of WES in monitoring of new virus variants and of emerging (zoonotic) pathogens

5.3.2 Application of WES in monitoring of antimicrobial resistance (AMR) and understanding the underlying factors for expansion of AMR in the aquatic environment (e.g., interaction between microbes, AMR encoding genes, and mobile genetic elements that act as vehicles for AMR via horizontal gene transfer)

5.3.3 Application of WES to monitor the use of medicines and drugs in communities

5.4 Emerging Technologies and Methods for Water Quality Monitoring and Management

5.4.1 Innovative fit-for-purpose sensors with improved specificity and sensitivity for detecting contaminants and pollutants in drinking water, stormwater, wastewater, irrigation water and recreational water

5.4.2 Factors affecting the standards setting for hazardous concentrations

5.4.3 Progress and new technological developments in water quality measurement, affordable instruments and sensors to support promotion of human and veterinary public health and aquatic ecosystem integrity (e.g., DNA based sensors, toxicological assessments, etc.)

5.4.4 Emerging approaches/lessons learned for water quality management across the water cycle - a context for combining WSP/SSP/WRM

5.5 Water Quality in the Context of Health and Medical Care

5.5.1 Lessons learned from the accelerated strengthening of WASH services in healthcare facilities in low- and middle-income countries: installation, operation and maintenance

5.5.2 Integration of water quality monitoring and management into the essential functions of rural healthcare facilities

5.5.3 Risk mitigation to ensure safe water for medical purposes

5.5.4 Preventive strategies for nosocomial infections in healthcare facilities

5.6 Recreational Water Quality and One Health

5.6.1 Integrated approach to the management of recreational water, prioritizing human, animal, and ecosystem health

5.6.2 Progress in the development and deployment of decision-making tools for the safe management of recreational water (e.g., microbial source tracking, catchment management, land use patterns)

5.6.3 Risk, opportunities, and conflicting economic interests in decision-making of recreational water quality management

5.6.4 Zoonotic pathogens: hazards and risks to recreational water quality and the implications for human and animal health

5.7 Communication between Sectors and to Affected Communities

5.7.1 Models, strategies and frameworks to promote intersectoral communication in One Water/One Health approach: promoting dialogue among different disciplines

5.7.2 Approaches to promote community participation (e.g., water quality literacy, public awareness campaigns) – how to overcome interpretation obstacles to informing communities

5.7.3 Case studies of success and failure in addressing communication challenges

5.7.4 Communication as a critical building block in a systems approach to delivering drinking-water, sanitation and hygiene services

5.7.5 How can policies support improvements in communications between sectors and with communities?

THEME 6: NEXUS AND CIRCULARITY

The water sector has made significant progress in adopting circular economy principles, particularly in the area of closing the water loop through the application of advanced treatment processes. There is now a growing emphasis on closing the resource and carbon loops within and beyond water systems. To achieve this goal, it is essential to adopt a system thinking approach that takes into account not only technological aspects, but also policy and planning, stakeholder engagement, application, marketability, and potential financing solutions. It is also important to adopt a nexus approach that enables systems integration and collaboration with other sectors to fully leverage the benefits of circular solutions. Against this backdrop, this theme welcomes abstracts on sustainable frameworks, strategies, and case studies on next-generation solutions for the water sector to support a circular economy.

6.1 Policy and Planning

6.1.1 Policy, standards, regulations, implementation strategies and incentives needed to achieve circularity (e.g., how to effectively connect waste-derived products to demand)
6.1.2 Sustainability concepts and economic benefits assessment methodologies for water and resource circularity
6.1.3 Policy coherence and institutional coordination needed in the circular economy
6.1.4 Organisational and societal changes to create a circular economy
6.1.5 Water circularity and carbon footprint – balance and optimisation in conflicts
6.1.6 Digitalisation, smart accounting and systems to understand the circular economy

6.2 Stakeholder Engagement and Cross-Sectoral Collaboration in the Circular Water Economy

6.2.1 Developing enabling ecosystem for circularity through multilateral collaborations
6.2.2 Community-based and stakeholder-driven approaches to achieve circular economy
6.2.3 Promoting transition towards nexus and circular economy literacy, public awareness campaigns, capacity building, best practices)

6.3 System of Systems for a Circular Economy

6.3.1 Different combinations of nexus – water, energy, food, waste, land, etc.
6.3.2 Circularity and urban-rural nexus (e.g., economics of sustainable agriculture and rural development)
6.3.3 Integrated management of the water cycle

6.4 Resource Circularity

6.4.1 Applications, economics, and associated risks of water, energy, and nutrient recovery
6.4.2 Testing and environmental standards for waste-derived products (e.g., from sludge)
6.4.3 Zero waste utilities
6.4.4 Increasing self-sufficiency and autonomy through circular solutions
6.4.5 Contribution of a circular water to biodiversity recovery, climate resilience, and advancing SDGs
6.4.6 Extending from water purification to resource mining
6.4.7 Circular design and innovation
6.4.8 Brine mining

6.5 Carbon Circularity

6.5.1 Carbon reduction opportunities and case studies in the water sector
6.5.2 Carbon capture, utilisation, and storage technologies for the water sector – incorporation or synergy with water processes
6.5.3 Net-zero carbon utilities
6.5.4 Monitoring and management of process emissions
6.5.5 Role of the water sector in the transition to a hydrogen economy
6.5.6 Life Cycle Analysis (LCA) of water treatment technologies and processes

6.6 Financing Circularity

6.6.1 Successes and lessons learned on circular financing solutions and business models
6.6.2 Approaches to scale-up circular finance within financial sector
6.6.3 Intersection of circular economy with broader environmental, social and governance investment opportunities, SDGs, and net-zero climate commitments

ABSTRACT SUBMISSION PROCEDURES

- Authors can submit abstracts for either oral or poster presentations.
- Abstracts should be limited to three A4-sized pages including figures, tables and references, and must contain adequate information to allow a sound referee review.
- Submissions should be made online through the submission system. The author must fill in all the information requested by the submission system and attach the abstract using the provided template.
- Further information regarding submission of abstracts, registration for SIWW and paper presentation, is available at https://go.gov.sg/water-convention-2024-call-for-papers
- The deadline for submission of abstracts is **1 October 2023.** The abstracts will be peer reviewed for selection and the authors will be notified about the acceptance of their paper for presentation on **15 December 2023.**
- Selection criteria include high technical quality, relevance to the themes/topics, and high information content. Abstracts which are deemed commercial in nature **will not be accepted.**
- The authors are strongly encouraged to submit the full papers once their abstracts have been accepted. Full papers will be further reviewed and considered for publication in IWA's Journal.

REGISTRATION FEES

All accepted oral and poster presenters are required to register for the Water Convention and pay for the conference registration fees. The presentations will only be listed in the Convention programme upon receipt of the registration fees.

IMPORTANT DATES

Submission deadline for abstracts	1 October 2023
Notification to authors on abstract review	15 December 2023
Deadline for author acceptance	31 January 2024
Deadline for author registration	15 April 2024
Submission deadline for presentation slides and poster softcopies	
SIWW2024 Water Convention	18 to 22 June 2024

CONTACT INFORMATION

For any enquiries, please email the Water Convention Secretariat at: waterconvention@siww.com.sg

Detailed information is also available at:
https://go.gov.sg/water-convention-2024-call-for-papers

Singapore International Water Week

ABOUT SINGAPORE INTERNATIONAL WATER WEEK

Singapore International Water Week (SIWW) is a global premier platform to share and co-create innovative water solutions to meet urban water challenges. As one of the leading global water events, the biennial SIWW delivers a range of flagship programmes and platforms that gathers stakeholders from governments, utilities, academia, and industry to share best practices and solutions, showcase the latest technologies and harness business opportunities. The 10th Singapore International Water Week will be held from 18 to 22 June 2024.

Organised By:
Singapore International Water Week Pte Ltd, a company set up by Singapore's Ministry of Sustainability and the Environment, and PUB, Singapore's National Water Agency.

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