

WATER REUSE

Experts gather at international water reuse conference in Cape Town

Water scarcity and sustainable water management are pressing global challenges, with demand for water expected to rise dramatically – particularly in sub-Saharan Africa – by 2050. In response, the 14th International Water Association (IWA) International Conference on Water Reclamation and Reuse brought together leading experts, researchers, policymakers, and industry professionals from around the world to explore innovative solutions and advancements in water reuse. Article by Kim Trollip and Lani van Vuuren.



Minister of Water and Sanitation, Pemmy Majodina, emphasised the importance of the role of water reuse in ensuring national water security.

Jointly organised by the IWA Specialist Group, the Water Research Commission (WRC) and the Water Institute of Southern Africa (WISA), the conference was held in Cape Town from 16 to 20 March. Held biennially, the conference unites water leaders worldwide, connecting top professionals from various countries to shape the future of water reclamation and reuse. This year saw no less than 699 people from 42 countries attend the conference.

As the largest and most influential forum in water reclamation and reuse, the IWA Reuse Specialist Group continues to champion the safe and sustainable implementation of water reuse practices. By fostering dialogue through its international

knowledge network, publications, and conferences, the group plays a pivotal role in shaping policies and technologies that contribute to a water-wise future. Water reclamation is the process of treating wastewater (like sewage or industrial runoff) to make it reusable for various purposes, while water reuse is the actual use of that reclaimed water. In essence, reclamation is the treatment, and reuse is the application of the treated water.

Against this backdrop, the 14th edition of the conference aligned with the IWA's broader change agendas – Digital Water, Basins of the Future, Cities of the Future, and Water and Sanitation Services. These initiatives drive sustainable water management worldwide, ensuring that innovations presented at the

conference have a lasting impact on both local and global water security.

In her introduction during the opening ceremony, conference host, Suzie Nkambule, CEO of Nafasi Water Technologies, laid the foundation for the discussion: "The primary objective of this gathering...is to answer one critical question: What will it take to scale [up] sustainable water reuse? The strain that continues to affect the water resources industry is not only a depleting supply availability, but also the usability of some water resources is becoming more strained."

In her opening address, Minister of Water and Sanitation, Pemmy Majodina, emphasised the urgency of the water crisis, reiterating that access to water is a fundamental human right. She also highlighted President Cyril Ramaphosa's designation of water as a national priority.

The minister outlined the national water strategy, which includes sustainable groundwater use, seawater desalination, treated wastewater return flows, and water reclamation and reuse. She identified critical areas for the conference's focus, namely financing, project delivery models, operations and technological innovation.

Water Global Practice Director of the World Bank, Saroj Kumar Jha, presented a sobering global perspective, noting that water demand already exceeds supply in many regions. He stressed the need for robust policies, advanced technologies and substantial financing to address the crisis – interventions that are currently lacking. Jha highlighted water reuse as a viable option, contingent upon proper regulations and standards to ensure safety and public acceptance.

Conference chair, Jay Bhagwan of the WRC, emphasised that



Water Global Practice Director of the World Bank, Saroj Kumar Jha, delivering his address at the conference.

water reuse is no longer optional – it is essential. "Hosting [this conference] in South Africa is both timely and significant. As we recover from Cape Town's wake up call, we are also witnessing bold steps being taken. The City of Cape Town is now planning of the world's largest water reuse facilities, while leading South African examples – from Emalahleni to Beaufort West and Mossel Bay – showcase practical successes in reuse for industry, agriculture and domestic supply."

The conference explored several key themes, including:

- Decentralised and small-scale solutions: Sessions focused on decentralised wastewater treatment systems, such as membrane bioreactors and nature-based solutions, which are crucial for addressing water scarcity in rural and peri-urban areas.
- Risk management: Discussions centred on health risk assessment and management in water reuse systems, ensuring public safety and confidence in reused water.
- Industrial reuse: Presentations highlighted successful industrial water reuse projects, emphasising efficiency and sustainability in sectors such as mining and manufacturing.
- Innovative technologies and application: The latest advancements in water treatment technologies, such as advanced oxidation processes and membrane filtration, were showcased.

In addition to technical sessions, the conference featured nine workshops covering topics from policy frameworks to innovative technologies. These interactive sessions provided attendees with hands-on experience and insights into practical implementation strategies.

The role of the WRC

As a co-host of the conference, the WRC plays a pivotal role in



WRC senior manager and conference chair, Jay Bhagwan with Minister of Water and Sanitation, Pemmy Majodina, and WRC Board member, Dr Harrison Pienaar.



During her address, WRC CEO, Dr Jennifer Molwantwa, noted that research had to translate into either policy influence, into new knowledge, and/or into supporting government spheres in order to find answers for the country's complex water challenges.

promoting sustainable water management practices in South Africa. The WRC supports research and development in water reuse, informing policy- and decision-making processes. By collaborating with international partners, such as IWA, the WRC contributes to the global dialogue on water security and resilience.

WRC CEO, Dr Jennifer Molwantwa, said that research has to translate into either policy influence, into new knowledge, and/or into supporting government spheres in order to find answers for the country's complex water challenges. "In this issue around water reclamation and reuse, we know that the WRC has been in this business for a very long time. However, it is remarkable that when names of those countries that have pioneered this or that are leading in these technologies are mentioned, South Africa is not mentioned...and we are here to change that."

Key takeaways from the conference

- **Recognition of southern Africa's leadership in water reuse** – Southern African experts emphasised the nation's significant contributions to water reuse technologies and practices. Dr Molwantwa highlighted the need for South Africa to be acknowledged globally for its advancements in the field: "We are here to say that we need to be counted, we need to be acknowledged...we here to also teach others a lot."
- **Diversification of water sources** – Cape Town's experience with the 'Day Zero' crisis underscored the importance of diversifying water sources. MMC for Water in the City of Cape Town, Dr Zahid Badroodien, discussed the city's shift from reliance on surface water to incorporating desalination and water reuse. He mentioned the development of the Faure New Water Scheme, one of

Africa's largest water reuse projects, as a testament to this commitment.

- **Emphasis on collaborative approaches** – The conference highlighted the necessity for multi-agency collaboration in implementing successful water reuse initiatives. Experts noted that cooperation among water and wastewater agencies, along with clear policy frameworks, is essential for scaling up water reuse projects effectively.
- **Addressing public perception challenges** – Public acceptance remains a significant hurdle in the adoption of recycled water for potable use. Discussions at the conference stressed the need for comprehensive public education and transparent communication to overcome misconceptions about water reuse. Examples from Namibia and Singapore were cited, where public engagement strategies have successfully facilitated the acceptance of recycled water.
- **Integration of advanced technologies** – The adoption of state-of-the-art technologies is crucial for producing high-quality treated wastewater. Sessions focused on innovative treatment methods, such as advanced oxidation processes and membrane filtration, which are essential for ensuring the safety and reliability of reclaimed water. However, it was acknowledged that these technologies require significant investment and expertise.

The way forward

The conference underscored the global urgency of adopting water reuse practices and showcased Cape Town's proactive measures as a model for other regions facing similar challenges. Sydney, Australia, was announced as the host of the 15th Water Reuse Conference in 2027.