

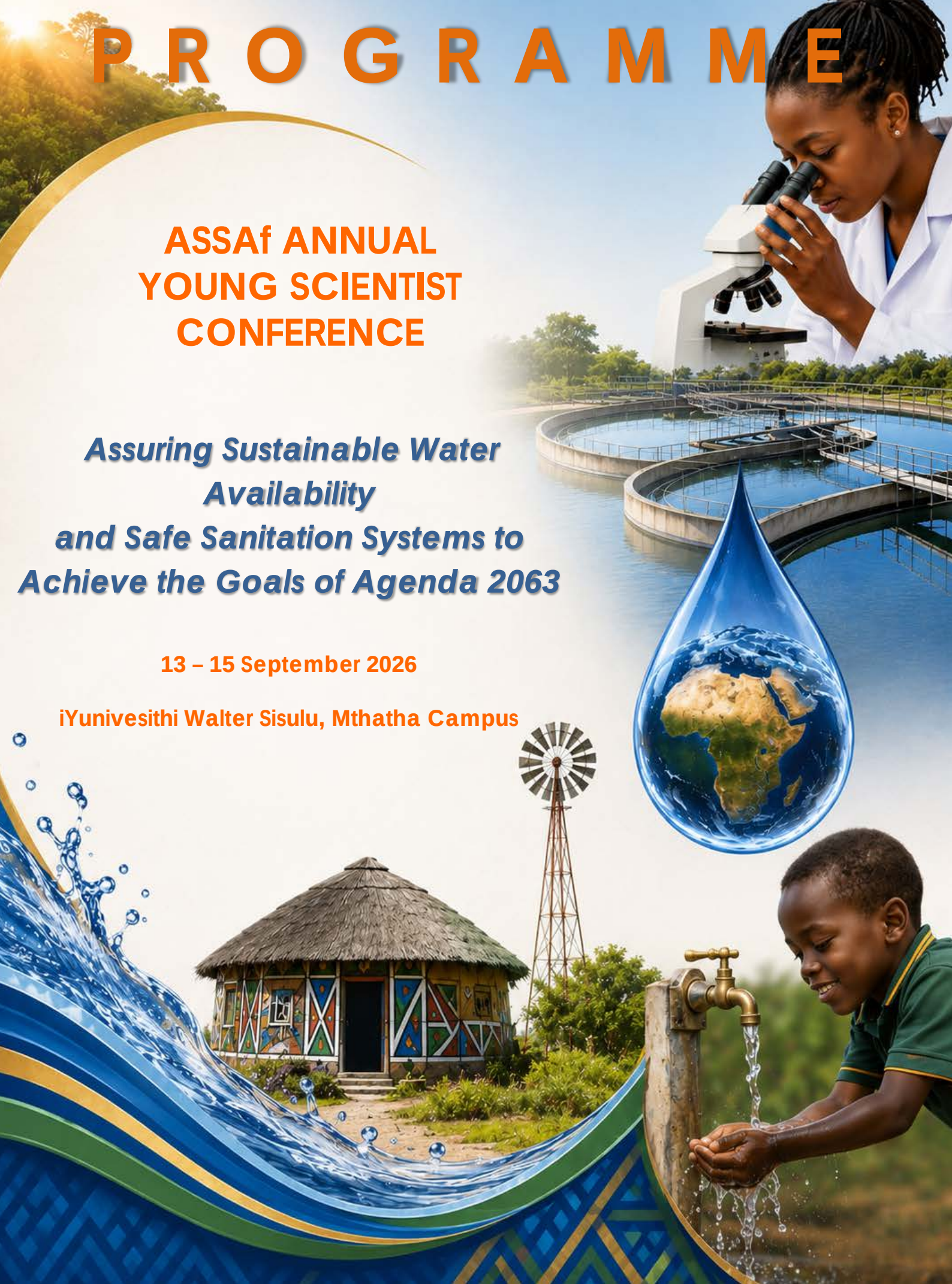
PROGRAMME

ASSAf ANNUAL YOUNG SCIENTIST CONFERENCE

***Assuring Sustainable Water
Availability
and Safe Sanitation Systems to
Achieve the Goals of Agenda 2063***

13 – 15 September 2026

iYunivesithi Walter Sisulu, Mthatha Campus



O.R. TAMBO
DISTRICT MUNICIPALITY



SANSA
SOUTH AFRICAN NATIONAL
SPACE AGENCY



SAYAS
South African Young Academy of Science



**science, technology
& innovation**

Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA



iYunivesithi
Walter Sisulu
In pursuit of excellence



Welcome Message from Prof Himla Soodyall Executive Officer, Academy of Science of South Africa (ASSAf)

Dear Young Scientists,

It is my great pleasure to welcome you to this year's ASSAf Annual Young Scientists' Conference.

*This is more than an opportunity to share your research - it is a space to **connect, exchange ideas, ask questions and be inspired**. As young scientists, you have an important role to play in shaping solutions to the challenges facing South Africa and our continent.*

Our theme, "Assuring Sustainable Water Availability and Safe Sanitation Systems to Achieve the Goals of Agenda 2063," reminds us of the power of science to make a meaningful difference in people's lives.

*I would like to warmly thank **iYunivesithi Walter Sisulu** for hosting us and for its generous hospitality. We also extend our sincere appreciation to our sponsors and partners, **South African National Space Agency (SANSA)**, **South African Young Academy of Science (SAYAS)**, and **OR Tambo District Municipality**, for supporting this important platform for young scientists.*

*I encourage you to make the most of these few days - **share boldly, listen openly, build connections and enjoy the journey!***

*May you leave inspired, energised and reminded that **your ideas, your research and your voices matter**.*

I wish you a wonderful and memorable conference.



SUNDAY, 13 SEPTEMBER 2026

PRE-CONFERENCE PROGRAMME

15:00 – 16:30	Registration and Arrival
17:00 – 18:00	Capacity Building Session Navigating the Scholarly Publishing Landscape: Identifying and Avoiding Predatory Journals Speaker: Ms Ina Smith, Academy of Science of South Africa (ASSAf)
18:00 – 20:00	Welcome Dinner and Networking Evening Mr Kholani Mbhiza, Programme Director
18:00 – 18:05	Welcome & Introduction Mr Kholani Mbhiza, Programme Director, ASSAf
18:05 – 18:15	Official Welcome Prof Himla Soodyall, Executive Officer, ASSAf
18:15 – 18:30	Introduction to the South African Young Academy of Science (SAYAS) Dr Gold Matlou, SAYAS Co-chair from Sefako Makgatho University
18:30 – 18:50	Getting to Know AYSC 2026 Participants – Brief interactive icebreaker Mr Kholani Mbhiza, Programme Director, ASSAf
18:50 – 19:00	Young Scientists' Reflections & Expectations Mr Kholani Mbhiza, Programme Director, ASSAf
19:00 – 19:05	Closing & Looking Ahead to Day 1 – Announcements Dr Khutso Phalane-Legoale
19:05 – 20:00	Dinner & Networking



O.R. TAMBO
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DAY 1: Monday, 14 SEPTEMBER 2026

Venue: Plenary Hall

Session 1: Opening Ceremony

Programme Director: Prof Asabonga Mngeni, iYunivesithi Walter Sisulu

08:30 – 09:00	Arrival and Registration
09:00 – 09:05	Opening Remarks: Prof Asabonga Mngeni , iYunivesithi Walter Sisulu
09:05 – 09:25	Welcome Address: Prof Himla Soodyall , Executive Officer, ASSAf Dr Thandi Mgwebi , Vice- Chancellor, iYunivesithi Walter Sisulu
09:25 – 09:40	Remarks from Partner Organisations Mr Basil Mase , Municipal Manager, O.R. Tambo District Municipality Prof Abel Ramoelo , South African National Space Agency (SANSA) Prof Maurine Musie , SAYAS Co-chair, University of Pretoria
09:40 – 10:00	Keynote Address 1 Ms Lusizo Makhubela , Chairperson of the Portfolio Committee on Science, Technology and Innovation, National Assembly
10:00 - 10:20	Keynote Address 2 Professor Albert Modi , Executive Dean of the Faculty of Natural Sciences, iYunivesithi Walter Sisulu
10:20 – 10:30	Young Scientists' Reflections on the Keynote Addresses Dr Thendo Mutshekwa , Rhodes University Dr Kefilwe Mokwebo , University of Cape Town Lindokuhle Bangani , O.R. Tambo District Municipality
10:30 – 10:40	Group Photograph
10:40 – 10:55	Tea Break, Tree Planting Activity and Networking
10:55 – 11:00	Transition to Breakaway Sessions



DAY 1: Monday, 14 SEPTEMBER 2026

BREAKAWAY 1

Session 2: Oral Presentations

Subtheme 1: Water Resources and Infrastructure

Facilitator: Dr Khutso Phalane, Academy of Science of South Africa (ASSAf)

11:00 – 11:15	<i>An investigation of the occurrence and fate of emerging contaminants in water resources: A case study of the Northern Cape Province</i> Ms Kgothatso Pihlela, Banzi Geotechnics
11:15 – 11:30	<i>Spatial Risk Mapping of Waterborne Zoonotic Contamination in Eastern Cape Rivers Using MCDA-GIS with Field Validation</i> Mr Siyabonga Mazibuko, Rhodes University
11:30 – 11:45	<i>Community Perceptions and Valuation of Ecosystem Services Provided by Small and Ephemeral Wetlands in Buffalo City Metropolitan Municipality, South Africa</i> Mr Loyiso Gabada, iYunivesithi Walter Sisulu
11:45 – 12:00	<i>Examining the Realisation of the Right to Access Sufficient Water in Sebokeng, South Africa</i> Ms Peculiar Dube, North-West University
12:00 – 12:15	<i>An Engineering Characterisation Framework for Integrating Black Soldier Fly Larvae Bioconversion into Sustainable Sanitation Systems</i> Ms Laurah Gutu, University of Cape Town
12:15 – 12:30	<i>Two-layer asymmetrical ceramic membranes modified with Ag-ZnO for enhanced dye removal from water</i> Ms Keotshepile Malebadi, North-West University
12:30 – 12:45	<i>Functionalized electrospun nanofibers for point-of-use water filtration</i> Mr Njabulo Sondezi, University of Johannesburg
12:45 – 13:00	<i>Fabrication of Ag-decorated CuWO₄ nanoparticles for photocatalytic degradation of crystal violet in water</i> Mr Mhlali Ntozonke, North-West University
13:00 – 14:00	LUNCH
14:00 – 16:00	Excursion to Water Treatment Plant



DAY 1: Monday, 14 SEPTEMBER 2026

BREAKAWAY 2

Session 3: Oral Presentations

Subtheme 2: Climate Resilience and Environmental Sustainability

Facilitator: Dr Oliver Duna, iYunivesithi Walter Sisulu	
11:00– 11:15	<i>From vulnerability to resilience: Climate adaptation among smallholder sheep farmers in South Africa’s Drakensberg Grasslands</i> Dr Mhlangabezi Slayi, University of Fort Hare
11:15 – 11:30	<i>Climate-Smart Agriculture and Indigenous Knowledge Systems Role for Resilience Among Bizana Maize Farmers Association of Winnie Madikizela-Mandela Local Municipality, Eastern Cape Province</i> Mr Vuthari Mthombeni, Eastern Cape Department of Agriculture
11:30 – 11:45	<i>The golden kelp Ecklonia radiata promotes macroalgal diversity through epiphytism along the South African East Coast.</i> Ms Alizwa Mdludlu, iYunivesithi Walter Sisulu
11:45 – 12:00	<i>Photocatalytic nanostructured membranes for the removal of emmerging contaminants</i> Ms Valentia Letswalo, University of Johannesburg
12:00 – 12:15	<i>The Contribution of Grazing Height Management to Sustainable Livestock Production and Climate Resilience in Temperate Pastures</i> Ms Nomalungelo Jili, Mangosuthu University of Technology
12:15 – 12:30	<i>Evaluating The Barriers To Adoption Of Climate-Smart Agricultural Practices By Smallholder Vegetable Farmers In The Western Cape, South Africa</i> Mr Chumani Nongogo, Nelson Mandela University
12:30 – 12:45	<i>Ecological Drought Effects on River Biodiversity: Implications for Climate-Resilient Water Resource Management in Eastern Cape River Systems, South Africa</i> Miss Esther Seriki, Rhodes University
12:45 – 13:00	<i>AquaGuard: Smart Robotic Water Leak Detection and Illegal Connection Prevention System for Informal Settlements</i> Mr Prince Mokone, South African Agency for Science and Technology Advancement
13:00 – 14:00	LUNCH
14:00 – 16:00	Excursion to Water Treatment Plant

DAY 1: Monday, 14 SEPTEMBER 2026

BREAKAWAY 3

Session 4 : Oral Presentations

Subtheme: Mix (Interdisciplinary)

Facilitator: Dr Siyamthanda Gxokwe, South African National Space Agency (SANSA)	
11:00– 11:15	<i>Microplastics contamination in Isinuka Springs and CO2 seeping freshwater systems in South Africa: A baseline study</i> Dr Thendo Mutshekwa, Rhodes University
11:15 – 11:30	<i>Modelling The Fate Of Chemicals Of Emerging Concern In Wastewater Treatment: From Mechanistic Models To Hybrid Data Driven Approaches</i> Mr Takalani Phungela, Tshwane University of Technology
11:30 – 11:45	<i>A Systematic Review and Meta-analysis of the Bioaccumulation of Human Pharmaceuticals Discharged in Municipal Wastewater: Effects on Agricultural Soils, Crop Growth, and Human Health</i> Mr Barnabas Oluocho, University of KwaZulu-Natal
11:45 – 12:00	<i>Selective pd (II) recovery by a covalent organic framework with subsequent photocatalytic application of the pd-loaded composite</i> Ms Getrude Netshivhandane, University of Limpopo
12:00 – 12:15	<i>Assessing the Resilience of Groundwater-Dependent Ecosystems in the Lower Orange River Basin Using an Integrated Ecohydrogeological Framework</i> Mr George M'manga, University of the Western Cape
12:15 – 12:30	<i>The Effects of Varying Application Rates of Sugarcane Filter Cake on Growth, Physiological Response, and Antioxidant Potential of Bidens Pilosa L</i> Ms Sbonelo Dlamini, University of Zululand
12:30 – 12:45	<i>Climate Change, Environmental Sustainability, and Resilient Water Systems in Southern Africa</i> Dr Tomiwa Adeleke, University of the Western Cape
12:45 – 13:00	<i>Water monitoring Tool</i> Ms Nasiphi Ngcoliso, South African National Space Agency
13:00 – 14:00	LUNCH
14:00 – 16:00	Excursion to Water Treatment Plant

END OF DAY 1

DAY 2: Tuesday, 15 SEPTEMBER 2026

Session 5: Science, Society and Policy Interface
Venue: Plenary room
Facilitator: Dr Gold Matlou, Sefako Makgatho Health Sciences University

08:30 – 08:35	Welcome Remarks
08:35 – 08:55	Keynote Address Prof Constance Rusike, iYunivesithi Walter Sisulu

Session 6: Oral Presentations
Subtheme 3: Inclusive development, innovation and cooperation

08:55 – 09:10	<i>Design and Functionalization of Fe-MOF@COF-IIP Heterostructured Nano-hybrid Composite For The Removal of Antiretroviral Drug Residues and Heavy Metals from Wastewater</i> Ms Jabulile Nhlabathi, University of Johannesburg
09:10 – 09:25	<i>Integrating Indigenous Knowledge Systems and Digital Innovations for Inclusive Water and Sanitation Governance in Rural Africa: A Systematic Review</i> Ms Thivhulawi Nevhutalu, University of Limpopo
09:25 – 09:40	<i>Assessing existing infection prevention and control measures used by nurses in water-scarce healthcare in a global setting: A scoping review</i> Ms Makhotso Ralehike, University of Pretoria
09:40 – 09:55	<i>Impact of Household Access to Improved Drinking Water on Child School Attendance</i> Mr Abdiaziz Ahmed, University of Cape Town
09:55 – 10:10	<i>Air Quality Monitoring Dashboard</i> Ms Kanya Xongo, South African National Space Agency
10:10 – 10:25	<i>Assessing the commercialization potential of the former Transkei’s land and water resources through an integrated water-land-agricultural nexus in the Eastern Cape Province of South Africa.</i> Fenji Materechera-Mitochi, Rhodes University



10:25-10:45 Tea/Coffee break

BREAKAWAY 4
Session 7: Oral Presentations
Subtheme 1: Water Resources and Infrastructure

Facilitator: Prof Maurine Musie, University of Pretoria

10:45 - 11:00	<i>Sustainable removal of chromium (VI) from contaminated water using Grapefruit peel-derived bio-coagulant</i> Ms Murendeni Ravele, North-West University
11:00 – 11:15	<i>Green-Synthesized Silver Nanocomposite for Rapid Detection of Heavy Metal Contamination in Water</i> Dr Kgotla Masibi, NRF-iThemba Laboratory for Accelerator Based Sciences
11:15 – 11:30	<i>Analysing Equity Dimensions of Water Security Challenges in the Nelson Mandela Bay Metropolitan Municipality, South Africa (Assessing distributive, procedural, and contextual inequalities in urban water governance)</i> Mr Voice Mlonzi, Rhodes University
11:30 – 11:45	<i>Coupling the internet of things (IOT) and machine learning, A step towards on-time decision making in groundwater management</i> Dr Tsholofelo Tladi, Tshwane University of Technology
11:45 – 12:00	<i>Dual-target electrochemical aptasensor based on Mil101(Fe)-CQD-TiO2 ternary composite for Cryptosporidium and cadmium ion detection</i> Ms Indiphile Nompetshehi, University of South Africa
12:00 – 12:15	<i>Valorization of Coal Fly Ash into α-Fe₂O₃-SiO₂ Photocatalysts for Sustainable Organic Dye Removal in Water</i> Dr Lawrence Sawunyama, North-West University
12:15 – 12:30	<i>Spatiotemporal variation in macroplastic abundances along a subtropical Austral river system</i> Mr Ronald Mashamba, University of Mpumalanga
12:30 – 12:45	<i>Post-functionalization of mof-808 with ethylenediaminetetraacetic acid for adsorptive removal of cr(vi) from wastewater</i> Ms Tshireletso Madumo, University of Johannesburg
12:45-13:45	LUNCH

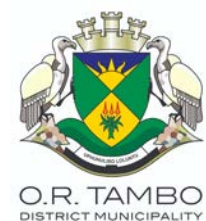


DAY 2: Tuesday, 15 SEPTEMBER 2026

BREAKAWAY 5
Session 8: Oral Presentations
Subtheme 2: Climate Resilience and Environmental Sustainability

Facilitator: Dr Savania Nagiah, Nelson Mandela University

10:45 - 11:00	<i>Influence of roof materials and storage systems on harvested rainwater quality in rural communities of the O.R. Tambo District Municipality, South Africa</i> Ms Tokozani Mangesi-Nxitywa, iYunivesithi Walter Sisulu
11:00 – 11:15	<i>A Circular Economy Business Model for Local API Production in South Africa- Reducing Pharmaceutical Water Footprints and Enhancing Supply Resilience</i> Dr Nsovo Nyeleti Mayimele, Tshwane University of Technology
11:15 – 11:30	<i>Nanotechnology for the removal of heavy metals from surface water in Eastern Cape</i> Dr Mthokozisi Mnguni, University of Johannesburg
11:30 – 11:45	<i>Mapping Agricultural Zones Dependent on Non-Perennial Rivers Using Earth Observation and Explainable AI (XAI) in the Greater Letaba Basin, South Africa</i> Ms Mmasechaba Moropane, University of the Western Cape
11:45 – 12:00	<i>Links between extreme weather events and domestic water abstraction: A case of Maruleng Municipality of Limpopo Province, South Africa</i> Ms Nomcebo Malaza, University of Limpopo
12:00 – 12:15	<i>CRISPR/Cas9 gene editing towards the resistance to banana bunchy top virus (BBTV) in banana</i> Ms Sinethemba Nkosi, University of Zululand
12:15 – 12:30	<i>Current and future potential of cassava (Manihot esculenta) in Southern Africa: a scoping review</i> Mr Conrad Addikah, University of Pretoria
12:30 – 12:45	<i>Green valorization of water hyacinth into nanoparticle-enhanced organic fertilizers for sustainable agriculture</i> Dr Thobo Motlhalamme, University of South Africa
12:45 – 13:45	LUNCH



DAY 2: Tuesday, 15 SEPTEMBER 2026

BREAKAWAY 6
Session 9: Oral Presentations
Subtheme 1: Water Resources and Infrastructure

Facilitator: Dr Malixole Soviti, iYunivesithi Walter Sisulu

10:45 - 11:00	<i>Engineered Bi4O5I2/LiNbO3 Heterojunction Piezo-Photocatalyst with Enhanced Hole Dynamics for Tetracycline Degradation in Wastewater</i> Ms Mercy Ola, University of Pretoria
11:00 - 11:15	<i>Hidden contaminants in rural groundwater: A comparative physicochemical assessment of boreholes, taps and springs in South Africa’s Vhembe District</i> Dr Abigail Nyathi, University of South Africa
11:15 - 11:30	<i>Dual function ZnO/NiO heterostructures for electrochemical detection and photoelectrochemical degradation of levofloxacin in aqueous systems</i> Ms Thompho Ravele, University of South Africa
11:30 - 11:45	<i>Green Synthesis of Copper Nanoparticles from Onion Peel for Wastewater Bacteria Detection and Methyl Orange Degradation</i> Mr Sphamandla Nqunqa, University of the Western Cape
11:45 - 12:00	<i>Integrated Remote Sensing and GIS for Groundwater Potential Mapping in Water-Stressed Semi-Arid Regions of South Africa</i> Mr Ronnie Magakane, University of Venda
12:00 - 12:15	<i>A community-based approach for implementing intervention strategies for effective water supply: A case study of Matatani Village, Musina Local Municipality</i> Ms Shudufhadzo Mukwevho, University of Venda
12:15 - 12:30	<i>Green synthesis of zinc oxide nanoparticles using K. sedentarius biofloculant extract: Biodegradation kinetics, cytotoxicity assessment and application in enhanced dye removal and wastewater</i> Ms Minenhle Sibisi, University of Zululand
12:30 - 12:45	<i>Spring Water Resources and Rural Water Security: Seasonal and Spatial Inequalities in Water Availability and Reliability in South Africa</i> Ms Siyanda Nkwenkwe, iYunivesithi Walter Sisulu
12:45 - 13:45	LUNCH



DAY 2: Tuesday, 15 SEPTEMBER 2026

Session 10: Poster Session
13:45 – 14:45
Facilitator: Prof Muthumuni Managa, University of South Africa

Poster Number	Presenter and Title
P1	<i>Profiling the Spatiotemporal Distribution of Water Availability and Sanitation Across Amathole District Municipality Between 2001 and 2024</i> Dr Lwandile Nduku, Agricultural Research Council (ARC)
P2	<i>Isolation and Characterization of Plastisphere Fungi for Sustainable Management of Microplastic Pollution in Eastern Cape Aquatic Systems</i> Ms Balisa Ngqwala, iYunivesithi Walter Sisulu
P3	<i>The implications of intertidal rock pool morphology on water conditions and seaweed diversity along the South African Southeast Coast</i> Ms Zizipho Mateyisi, iYunivesithi Walter Sisulu
P4	<i>Optimizing TiO₂:ZnO Nanocomposite Ratios for Enhanced Visible-Light Photocatalysis of Rhodamine 6G</i> Ms Chevandre Pringle, Sefako Makgatho Health Science University
P5	<i>Building Climate-Resilient Nations: A Comparative Analysis of Climate Change Adaptation Integration into National Development Planning</i> Ms Bogolo Ntombela, Tshwane University of Technology
P6	<i>Bimetallic Ni@Pd-decorated Graphitic Carbon Nitride Nanocomposite for the Detection and removal of Polyfluorinated Pharmaceutical Residues in the Environment.</i> Dr Kefilwe Mokwebo, University of Cape Town
P7	<i>Spatiotemporal dynamics of water resources under climate variability in the Umzimvubu catchment, South Africa</i> Mr Phindile Shinga, iYuniversity Walter Sisulu
P8	<i>Bioremediation of non-essential toxic elements using indigenous microbes in soil following irrigation with treated wastewater</i> Mr Itumeleng Kekana, University of Limpopo
P9	<i>Surface water quality contamination by selected residues of pharmaceuticals repurposed for Covid-19 treatment</i> Dr Sekato Maremane, University of the Free State
P10	<i>Reimagining social service professions' responses to water disaster-induced housing loss: Harnessing ubudlelane</i> Dr Gcina Mtengwane, University of the Free State
P11	<i>Environmental Fate and Occurrence of Sulfamethoxazole and Trimethoprim in South African Water Systems: Implications for Water Reuse and Sustainable Water Management</i> Ms Sixolile Mini, University of the Western Cape
P12	<i>Nitrosol Seed Priming Enhances Abiotic Stress Tolerance in Lagenaria siceraria</i> Dr Lungelo Buthelezi, University of Zululand
P13	<i>Rainwater Harvesting as a Supplementary Water Source for Rural Domestic Supply</i> Ms Lulama Mandlevu, iYunivesithi Walter Sisulu

DAY 2: Tuesday, 15 SEPTEMBER 2026

Session 11: Science-for-Policy in Action

Facilitators: Dr Melusi Thwala, Dr Khutso Phalane-Legoale, Dr Savania Nagiah

14:45 – 14:55	Session Introduction
14:55 – 15:10	Case Study Introduction
15:10 – 15:40	Group Task: Interactive Policy Challenge
15:40 – 16:10	Group Presentations: Cabinet Briefing
16:10 – 16:30	Panel Discussion
16:30 – 16:45	Summary and closing

18:30 – 19:00

Networking

19:00 – 21:00

Gala Dinner

Conference Closure



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