

# Programme

*22<sup>nd</sup> WaterNet/WARFSA/GWP-SA Symposium on:*

## **Integrated Water Resources Management for Sustainable Development in Eastern and Southern Africa**

A Blended Event to be held virtually and  
at the Elephant Hills Resort

Victoria Falls

Zimbabwe

**20<sup>th</sup> – 22<sup>nd</sup> October 2021**

### **Jointly convened with:**

International Association of Hydrological Sciences (IAHS),

Southern Africa Centres for Water Excellence (SANWATCE),

The Local Organizing Committee led by the National University of Science and  
Technology (NUST), Zimbabwe

*With support from the Government of Zimbabwe*



# Integrated Water Resources Management for Sustainable Development in Eastern and Southern Africa

Elephant Hills, Victoria Falls, Zimbabwe and Online

Virtual link: [22nd WaterNet/WARFSA/GWPSA Symposium \(dryfta.com\)](https://dryfta.com/22nd-WaterNet-WARFSA-GWPSA-Symposium)

20<sup>th</sup> – 22<sup>nd</sup> October 2021

Programme Manager: Eng. Samson Mhlanga

## Tuesday 19 October 2021

14:00 - 20:00

Registration of Participants  
Venue: Glass Office

## Wednesday 20 October 2021

06:30 – 08:00

Registration of Participants / Welcome with tea  
Venue: Glass Office

### Sessions starts

| 08:00 – 10:00 | Changing hydro-climatic regimes and planning tools for climate resilient pathways | Poster Session                                 | BRECCIA Special Session   |
|---------------|---|--|---|
|               | Venue: Kalala   | Venue: Matetsi                                 | Venue: Kazuma   |
|               | Chair: Prof. Zacharia Katambara<br>Rapporteur: Mr. Hubert Samboko                 | Chair and Rapporteur: Dr. Reniko Gondo         | Chair: Prof. Joy Obando<br>Rapporteurs: Ms. Hope Mpata & Ms. Tariro Pfupa   |
| 08:00         | Omonge P, Herrnegger M, Olang L & Schulz K  | Matambo E & Makaya E                           | <b>Water, Energy and Food Security for Sustainable development in East and Southern Africa Programme</b><br><b>Video presentation</b><br>Brief introduction and welcome to the session: <i>Prof. Justin Sheffield</i><br><b>Pitch Presentations:</b><br>Facilitator: <i>Prof. Mawuli Dzodzomenyo</i><br>All poster presenters<br><b>Power Point Presentations:</b><br>Facilitator: <i>Dr. Charlene Gaba</i> |
| 08:15         | Gagnon A, Mpala S, Quirós E, Mansell M & Hussey S                                 | Mazrui N, Setomba B, Kenalemongwe K & Mogobe O |   |
| 08:30         | Ngwenya N, Ndlovu S & Bongani B   | Majongwe T.R & Makaya E                        |   |

|               |  |  |                           |   |  |
|---------------|--|--|---------------------------|---|--|
| 08:45         | Muchaka A.F,<br>Gumindoga W,<br>Mabvira-Meck M.L &<br>Gwitira I              | Landslide and flood modeling in Eastern part of Zimbabwe: A case study of Nyahode and Buzi sub-catchment.          | Chimhundi G &<br>Makaya E | Estimation of Leakage in Water Distribution Network Based on System Indicators to Leakage in Rujeko Suburb in Masvingo, Zimbabwe.                               | <p><b>Assessment of groundwater resources in the transboundary Tuli Karoo Basin:</b><br/><i>Primrose Tinonetsana</i></p> <p><b>Climate change impact on flood events of Pungwe River Basin:</b><br/><i>Moises Mavaringana</i></p> <p><b>Irrigation performance assessment using remote sensing-based Surface Energy Balance Techniques at Hurungwe Prisons Farm and Vambe Commercial Farm (Chinhoyi):</b><br/><i>Tawanda Bangwayo</i></p> <p><b>Modelling water availability and consumption in the Manyame Basin:</b><br/><i>Frank Chindomu</i></p> <p><b>Questions and Feedback from the presentations</b></p> <p><b>Poster Presentations-Concurrent display</b></p> <p><b>Session of BRECCIA SRP and LRP Policy Recommendations</b><br/>Facilitator: <i>Prof. Jean-Marie Kileshye Onema</i></p> <p><b>Characterization of dry spells for agricultural application in Malawi:</b><br/><i>Ellasy Gulule Chimimba</i></p> <p><b>Impacts of vegetation dynamics on pasture and water in Lagha-Bor catchment, Wajir County in Kenya:</b><br/><i>Moses Muriuki</i></p> <p><b>Assessment of small scale irrigation cropland using drone technology – Case of Lake Chilwa Basin, Malawi:</b><br/><i>Patrick Likongwe</i></p> <p><b>Food policy, nature and people in sub-Saharan Africa:</b><br/><i>Dr. Fiona Ngarachu</i></p> <p><b>The Nexus between Policies, Water and Food Security in Dry lands of Malawi:</b><br/><i>Eunice Shame</i></p> <p><b>Panel Discussions on BRECCIA SRP and LRP Policy Recommendations</b><br/>Facilitator: <i>Prof. Joy Obando</i></p> <p><b>Panelists:</b><br/><i>Prof. Cosmo Ngongondo, Prof. Jadu Dash &amp; Dr. Fiona Ngarachu</i></p> <p><b>Closing Remarks:</b><br/><i>Prof. Jean-Marie Kileshye Onema</i></p> |
| 09:00         | Molamodi D.O,<br>Rimuka Bloodless<br>Dzwairo R.B, Singh<br>S.K & Kanyerere T | Modelling potential climate change consequences on sediment output in the Rietspruit sub-basin, South Africa.      | Kadhila A.N               | Inventory and qualitative assessment of the groundwater monitoring strategies and networks in the Karst Aquifer: A source to the Central Area of Namibia (CAN). |  |
| 09:15         | Chisadza B,<br>Gwate O<br>Ncube F &<br>Moyo N                                | Detection of Land Surface Water Changes Upper Mzingwane catchment area using water indices.                        | <div>End Of Session</div> |   |  |
| 09:30         | Ndemere K,<br>Gumindoga W &<br>Makurira H                                    | Modelling flood hazard in Eastern Highlands of Zimbabwe.   |                           |   |  |
| 09:45         | Lotsima R.B &<br>Pole C.S  | Hydrogeochemical study and therapeutic effects of Kaswa Mahagi thermal waters in the Democratic Republic of Congo. |                           |   |  |
| 10:00 – 10:30 |  |  |                           |   | Tea Break  |



Programme for the 22<sup>nd</sup> WaterNet/WARFSA/GWP-SA Symposium



| 10:30 – 13:00 | Changing hydro-climatic regimes and planning tools for climate resilient pathways                    |   | IAHS Special Session   | Joint IHE, GWP-SA and UKZN Open Special Session  |
|---------------|--|---|--|--|
|               | Venue: Kalala  |   | Venue: Matetsi   | Venue: Kazuma  |
|               | Chair: Prof. Zacharia Katambara<br>Rapporteur: Mr. Frank Chindomu                                    |   | Chair: Prof. Hubert Savenije<br>Rapporteurs: Mr. Fusi Mokhesuoe & Eric Tshitende   | Chair: Prof. Tafadzwa Mabhaudhi<br>Rapporteur: Ms. Tsitsi Bangira  |
| 10:30         | Chomba I.C, Banda K.E, Winsemius H.C, Makungu E, Hughes, Nyambe D.A, Sichingabula H.H & Hrachowitz M | A Fully Coupled Spatially Distributed Hydrologic-Hydrodynamic Model for the Barotse Floodplain, Upper Zambezi Basin.  | <b>IAHS Session</b><br><br><b>Welcome remarks:</b><br><i>Committee on Africa of IAHS</i><br><br><b>IACRR presentation: Setting the scene:</b><br><i>Shuqing Yang</i><br><br><b>IACRR presentation: The Gambia case:</b><br><i>Landing Bojang</i><br><br><b>IACRR presentation: The Mozambique case:</b><br><i>José Sengo</i><br><br><b>IACRR discussions</b><br><br><b>23 UPH presentation:</b><br><i>ICWRS-IAHS</i><br><br><b>Focused discussions on 23 UPH from Africa:</b><br><i>ICWRS-IAHS</i><br><br><b>Closing remarks</b> | <b>Water-Energy-Food Nexus Tools to support sustainable and inclusive socio-economic development in the SADC and MENA regions</b><br><br><b>Programme</b><br><br><b>WEF nexus in SADC</b><br><i>*IHE/*UKZN) (15 min)</i><br><br><b>SADC WEF Nexus Dialogue</b><br><i>(*GWP); (45 min pres) + (15 min disc)</i><br><br><b>Break</b><br><i>(15 min)</i><br><br><b>Linking the WEF nexus approach to support sustainable and inclusive socio-economic development in the SADC and MENA regions.</b><br><br><b>Case studies:</b><br><br><b>Songwe River Basin</b><br><i>(*IHE/*UKZN) (10 min)</i><br><br><b>Limpopo River Basin</b><br><i>(*IHE/*Dabane trust) (10 min)</i><br><br><b>Algeria</b><br><i>(*IHE/ Bureau d'Études, Consulting dans le domaine Agricole) (10 min)</i><br><br><b>Jordan</b><br><i>(*IHE/* The Hashemite University) (10 min)</i><br><br><b>Discussion (30 min)</b><br><b>WEF Nexus Master Class feedback and future events (*IHE/*UKZN (20 min)</b> |
| 10:45         | Juma B, Olang, Luke Mohammed Hassan, Joe Mulligan & Paul Shiundu                                     | Simulation of flood peak discharges and volumes for integrated flood risk management in the ungauged urban informal settlement of Kibera, Kenya.  |  |  |
| 11:00         | Tshitende E.K, Kileshye Onema, J.M & Gumindoga W   | Changes in landuse, landcover and changes in runoff and sediment in the Kasai catchment of the Congo River Basin.   |  |  |
| 11:15         | Ngwenya N, Ndlovu S & Mpofu B  | Assessment of Groundwater Potential in Alluvial Aquifers using Remote Sensing and GIS, Shashani and Semukwe Rivers.   |  |  |
| 11:30         | Banda V, Dzwauro B, Singh S & Kanyerere T  | Separating Anthropogenic and Climate Contributions to Streamflow Trends - Case of Rietspruit Sub-Basin, South Africa.   |  |  |
| 11:45         | Hungwe MG, Kusangaya S, Mujere N, Ngwenya N, Sakhile Ndlovu S & Mpofu B                              | Validation of Satellite-Derived Rainfall for Mazowe Catchment, Zimbabwe.<br>Assessment of Groundwater Potential in Alluvial Aquifers using Remote Sensing and GIS, Shashani and Semukwe Rivers. |  |  |
| 12:00         | Chigiya N.G, Gwate O & Chisadza B  | Impacts of Land use landcover change on evapotranspiration and runoff in the Middle Manyame Subcatchment, Zimbabwe.   |  |  |
| 12:15         | Manda G, Chidya R & Ngoma W  | Spatial Assessment of Groundwater Quality under Changing Climatic Conditions in Rural Areas of Nkhata Bay, Malawi.  |  |  |
| 12:30         | Tladi T, Ndambuki J & Salim R  | Meteorological drought monitoring in the Upper Olifants sub-basin, South Africa.  |  |  |
| 12:45         | Pfupa T, Gumindoga, W & Misi, S  | An assessment of the impacts of climate change on the water quality of Lakes Chivero and Manyame, Zimbabwe.   |  |  |
| 12:45– 14:00  | Lunch Break  |   |  |  |

Programme for the 22<sup>nd</sup> WaterNet/WARFSA/GWP-SA Symposium


|               |   |
|---------------|---|
| 14:00 – 17:00 | <b>Official Opening</b><br><b>Director of Ceremonies:</b> Dr. William Goriwondo<br><b>Venue:</b> Kalala   |
| 14:00         | All Participants and Guests take seats, Singing of the Zimbabwe National Anthem   |
| 14:05         | <b>Introductions by the 22<sup>nd</sup> Symposium Local Organising Committee Chairperson:</b> <i>Dr. William Goriwondo</i>  |
| 14:10         | <b>Welcome Speech:</b> Vice-Chancellor, National University of Science and Technology, <i>Prof. Mqhele Dlodlo</i>   |
| 14:20         | <b>Remarks by the Victoria Falls Town Mayor:</b> <i>Councillor Somveli Dhlamini</i>   |
| 14:30         | <b>Remarks by the Chairperson of WaterNet Trust:</b> <i>Prof. Hodson Makurira</i>   |
| 14:40         | <b>Remarks by the Minister of Higher and Tertiary Education:</b> <i>Hon. Prof Amon Murwira</i>  |
| 14:50         | <b>Remarks by the SADC Secretariat, Director of Infrastructure and Services:</b> <i>Ms. Malapao Mokoena</i>   |
| 15:00         | <b>Official Opening of the 22<sup>nd</sup> WaterNet/WARFSA/GWPSA Symposium, Lands, Agriculture, Water and Rural Resettlement:</b> <i>Hon. Minister, Dr Anxious Masuku</i> |
| 15:20         | <b>Keynote Address:</b> Director, Institute for Water Studies, University of the Western Cape: <i>Prof. Dominic Mazvimavi</i>   |
| 15:40         | Group Photo<br>Tour of Exhibition Stands<br>Tea / Coffee  |



| Thursday 21 October 2021 |  |   |  |   |   |
|--------------------------|--|---|--|---|---|
| 08:00 – 10:00            | Water governance for sustainable, equitable and affordable water services            |   | Water, Ecosystems and the Environment  |   | SANWATCE Special Session  |
|                          |     | Venue: Kalala   |     | Venue: Matetsi  | Venue: Kazuma   |
|                          | Chair: Prof. Barbara Ngwenya<br>Rapporteurs: Ms. Melissa Mavhenge & Ms. Tariro Pfupa |   | Chair: Prof. Cosmo Ngongondo<br>Rapporteur: Ms. Primrose Tinonetsana                 |   | Chair: Dr. Nico Elema<br>Rapporteur: Sue-Vickey Brandt  |
| 08:00                    | IUCN   | Building River Dialogue and Governance (BRIDGE).  | Mwanake H, Mehdi-Schulz B, Schulz K, Nzula Kitaka, Olang L & Herrnegger M            | Spatio-temporal distribution of water quality characteristics in an Agricultural transboundary catchment of East Africa.  | <p><b>Contributing to the SADC Water Research Agenda through Postgraduate student research Programme</b></p> <p><b>Welcome:</b><br/><i>Dr. Nico Elema, Executive manager SANWATCE Secretariat</i></p> <p><b>Opening address:</b><br/>SADC representative, Dr Patrice Kabeya, Senior Programme Manager, SADC Water</p> <p><b>Remarks from South Africa Department of Science and Innovation:</b><br/><i>Chief Director: Multilateral Cooperation and Africa, Multilateral Cooperation and Africa, South Africa Department of Science and Innovation</i></p> <p><b>The SADC Water Research Agenda:</b><br/><i>Prof Piet Kenabatho, Professor in Water Resource Management, University of Botswana</i></p> <p><b>Presentation 1: Mapping seawater intrusion in a basaltic layer using geophysical techniques:</b><br/><i>Mr. Parvesh Balloo – PhD Student (University of Mauritius)</i></p> <p><b>Presentation 2: Unpacking 'Problem Representations' in the policy and politics of the Philippi Horticultural Area (PHA).</b><br/><i>Ms Katherine Morrison – PhD Candidate (Stellenbosch University)</i></p> <p><b>Presentation 3: The potential of WA+ in databased decision making on sub-catchment scale:</b><br/><i>A case study in the Lunsemfwa catchment Zambia: Mr. Micheal Phiri. PhD Student (University of Zambia)</i></p> <p><b>Presentation 4: Decision-Support Tool to Enable Effective Planning and Management of Water Resources in Namibia (DSS for WRMP - Namibia):</b><br/><i>Mr. Raimbert Namukuwa – MSc Student (Namibia University of Science and Technology)</i></p> <p><b>Presentation 5: Assessing the effects of urbanisation on water quality in the Segoditshane River Catchment, Botswana:</b><br/><i>Ms Kgabisang Puni Gaboutloeloe – MSc Student (University of Botswana)</i></p> <p><b>Closure:</b><br/>Dr Nico Elema</p> |
| 08:15                    | Hambira W.L & Kolawole O.D   | Enhancing adequate water supply through collective action in rural communities: The case of Molepolole in Kweneng District, Botswana. | Hoko Z, Gumindoga W, Clarence Mapenzauswa C, Chikwiramakomo L, Chipfunde L & Mtisi S | Taking stock of environmental management practices and arrangements in Zimbabwe.  |   |
| 08:30                    | Mndzebele D  | Understanding the Art of Regional Water Planning in the Southern African Development Community Region.                                | Chiumia A., Thengolose A & Tembo D   | A critical analysis for potential uptake of liquefied petroleum gas for cooking in Malawi.  |   |
| 08:45                    | Mpofu N & Mawanza W  | Bulawayo metropolitan's willingness to accept pre-paid water meters: What are the household socio-background barriers?                | Nkabinde N, Dzwairo B, Singh S & Kanyerere T   | Rietspruit sub-basin's boundary conditions and projected downstream ecosystem impacts.  |   |
| 09:00                    | Dzwairo K & Dzwairo R.B  | A voice for the voiceless.  | Li C, Wright J, heffield J, Asamoah M & Dzodzomenyo M                                | Increased flood area and exposure in the White Volta river basin, Ghana revealed from satellite imaging.  |   |
| 09:15                    | Zulu N, Dzwairo R.B, Singh S.K & Khanyarere T  | Establishing the adaptive capabilities of the Rietspruit sub-basin to climate change-induced variable conditions using SWAT analysis. | Mutopa M., Chinyama A., Makaya E & Ndlovu S  | Enhanced treatment of textile wastewater  |   |
| 09:30                    | Kheswa N, Dzwairo B & Singh S.K  | Water resource management in South Africa: A dream to be realised or a ticking time bomb?   | Muvango R, Hoko Z, Gumindoga, W & Nthiatiwa T  | Application of GIS and remote sensing techniques in water quality monitoring for Lake Mutirikwi, Zimbabwe.  |   |
| 09:45                    | Soetaert F, Wanke H, Iain Dupuy A & Francesch M                                      | Towards sustainable use of groundwater springs: A case study from Namibia.  | Gukushu P, Mabiza C, Nyakutsikwa B & Madyiwa   | An Evaluation of the status and potential revitalisation of Irrigation Schemes under the Smallholder Irrigation Revitalization Program (SIRP) in Masvingo Province, Zimbabwe. |   |
| 10:00 – 10:30            |  |   |  |   |   |
| Tea Break                |  |   |  |   |   |

| 10:30 – 13:00 |   | Water governance for sustainable, equitable and affordable water services   |   | Water, Ecosystems and the Environment   |   | GWPSA Open Special Session  |  |
|---------------|---|---|---|---|---|---|--|
|               |   | <div><div>Venue: Kalala</div></div> |   | <div><div>Venue: Matetsi</div></div>  |   | <div><div>Venue: Kazuma</div></div>   |  |
|               |   | <div><div>Chair: Prof. Barbara Ngwenya</div><div>Rapporteurs: Ms. Melissa Mavhenge &amp; Ms. Tariro Pfupa</div></div>   |   | <div><div>Chair: Prof. Cosmo Ngongondo</div><div>Rapporteur: Mr. Moises Mavaringana</div></div>                             |   | <div><div>Chair: Amy Sullivan</div><div>Rapporteur: Annah Ndeketeya</div></div> |  |
| 10:30         | Chitata T, Kemerink-Seyoum J, Mudereri B & Parichi M  | More than human transformers: The materiality of infrastructure and ecological crises facilitate water conflict transformation.   | Mphahlele I.J & Dlamini L.N   | Synthesis and characterization of Ce/Gd-WS2 with potential photocatalytic degradation of organic pollutants in wastewater.  | <div>Gender Equality in water security and climate resilience building in Eastern and Southern Africa</div> <div>Programme</div> <div>Welcome and introductions:<br/>Andrew Takawira, GWP SA/Africa CU</div> <div>Gender inequalities in water security and climate resilience building:<br/>Ms. Litumelo, GWP SAF/Africa CU</div> <div>Questions for clarification:<br/>All</div> <div>Integrating gender equality in policies, plans, programs-experience from Zambia, Southern Africa:<br/>Dr. Nawa/Dr. Mkhuzo, GWP SAF</div> <div>Integrating gender equality in policies, plans, programs-experience from Uganda, Eastern Africa:<br/>Gerald/Caroline, GWP EAF</div> <div>Questions for clarification:<br/>All</div> <div>Facilitated discussions:</div> <div>What needs to be done to increase the level of understanding and appreciation on gender inequality issues related to water security and climate resilience building?</div> <div>How can we scale up the on-going lessons from Zambia and Uganda to the Eastern and Southern Africa regional levels?</div> <div>Do we need to:<br/><div>(a) Conduct studies/research to document gender inequality issues?</div><div>(b) Organize regional learning events/capacity development programs?</div></div> |   |  |
| 10:45         | Mukwirimba G, Abdoulahi A, Koop S, Van Leeuwen K, Ovenga G, Grekonzy V, Ozoani H, Marekwa T, Hofman J, Berthelot M & Ndlovu S | Identifying priorities for achieving water-secure African cities: City Blueprint Approach.  | Magure M, Gumindoga W, Makurira H & Rwasoka D   | Wetland fragmentation and hydrologic implications on Zimbabwe's highveld: A case of Manyame, Nyagui and Macheke catchments. |   |   |  |
| 11:00         | Mutogo K, Kativhu T & Nunu W  | An analysis of the effectiveness of water treatment interventions used as a response to Cyclone Idai Disaster in Chimanimani, Zimbabwe.   | Mokhesuoe F, Gumindoga W & Molete S   | Wetland water balance assessment: Case of Sosa wetland Maseru Lesotho.  |   |   |  |
| 11:15         | Malota M, Senzanje A, Mabhaudhi T & Jewitt G  | Towards bridging the gaps in the Water-Energy-Food (WEF) nexus: A review of existing WEF nexus tools for integrative decision-making across spatial-temporal scale differences.                       | Masiya T  | A WEAP21 model analysis of the impact of industrial effluents on the water quality of Klein Windhoek River, Namibia.        |   |   |  |
| 11:30         | Chitata T, Kemerink-Seyoum J & Cleaver F  | Tinkering to locate groundwater: (Grassroots) Practices of groundwater prospecting and care in Zimbabwe.  | Igwebuike N, Muchingami I, Jovanovic N & Kanyerere T  | Using hydrogeophysics and derivative analysis for improved groundwater security, Western Cape, South Africa.                |   |   |  |
| 11:45         | Marekwa T, Makaya E & Kativhu T   | Sustainable water management for an uncertain future: A case study of the City of Bulawayo.   | Winsemius H, Annor F, Hagenaars R, Wim Luxemburg, Van den Munckhof G, Heeskens P, Dominic J, Waniha P, Mahamudu Y, Verver G & Van de Giesen N | OpenRiverCam - open-source operational discharge monitoring with IP cameras.  |   |   |  |
| 12:00         | Mukwirimba G, Ndlovu S & Aaron Mukwirimba, A.R  | Assessment of urban integrated water resources management for Bulawayo, Zimbabwe  | Magure M, Webster Gumindoga W, Makurira H & Rwasoka D   | Wetland fragmentation and hydrologic implications on Zimbabwe's highveld: A case of Manyame, Nyagui and Macheke catchments  |   |   |  |

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|---------------|--|---|--|---|--|
| 12:15         | Chitsa G, Hoko Z<br>Gumindoga W & Meck M   | Integrating scientific and indigenous knowledge systems in groundwater exploration. A case of Mudzi District, Zimbabwe  | Muyambo N, Francis<br>Muromo F & Mwafuka J                         | Visible Volumes of Water, Alarming Viral Inequality Traps in Rural Aqua-Agrarian Communities: Where We Are Now As Zimbabweans – And Where We Should Be Going!   | (c) Organize policy/technical dialogues?<br><br>(e) Develop regional programs?<br><br><b>Vote of thanks and closing:</b><br><i>Andrew Takawira, GWP SA/Africa CU</i>   |
| 12:30         | Gondo R  | Water governance, management and access issues in the Okavango Delta Botswana   | Matebese F & Moutloali R.M   | Novel nanocomposite membranes for upgrading metal-containing wastewater.  |  |
| 12:45         | Mwadzingeni L, Mugandani R & Mafongoya P.L   | Water footprint for water saving-decision making in smallholder irrigation schemes of Zimbabwe.   | Kadhila A.N  | Inventory and qualitative assessment of the groundwater monitoring strategies and networks in the Karst aquifer: A Source to the Central Area of Namibia (CAN). |  |
| 13:00 – 14:00 | Lunch Break  |   |  |   |  |
| 14:00 – 16:00 | Water governance for sustainable, equitable and affordable water services  |   | Water, Ecosystems and the Environment                              |   | WWF OPEN SPECIAL SESSION   |
|               |   | Venue: Kalala   | Venue: Matetsi   |   | Venue: Kazuma  |
|               | Chair: Prof. Barbara Ngwenya<br>Rapporteurs: Ms. Melissa Mavhenge & Ms. Tariro Pfupa   |   | Chair: Prof. Cosmo Ngongondo<br>Rapporteur: Mr. Moises Mavaringana |   | Chair: Isabel Mukelabai<br>Rapporteurs: James Mbewe & Lazarous Mwale   |
| 14:00         | Mukwirimba G, Abdoulahi I, Koop S, Van Leeuwen V.K, Ovenga O, Grekonzy V, Ozoani H, Marekwa T, Hofman J, Berthelot, M & Ndlovu S | Identifying priorities for achieving water-secure African cities: City Blueprint Approach.  | Nkabinde N, Dzwauro B, Sudhir Singh & Thokozani Kanyerere          | Rietspruit sub-basin's boundary conditions and projected downstream ecosystem impacts.  | <b>Accelerating Science River Basin management and decision making in the Zambezi Watercourse for enhanced water and energy security and sustainable water resources management.</b><br><br>Programme:<br><br><b>Opening Remarks:</b><br><i>Mrs. Isabel Mukelebai</i><br><br><b>Enhancement of Environmental management regulations by Science Based River Basin Monitoring tools such as the Basin Health Report Card and State of the Basin Report:</b><br><i>Mr. Maxell Nkoya, Director, Information and Research, Zambia Environmental Management Agency</i><br><br><b>Enhancing Catchment Protection, Case Study of the Magoye River:</b><br><i>Mrs. Mayando Kanyata, Senior Environmental Management Officer, Ministry of Green Economy and Environment</i><br><br><b>Rapid Water Assessment in a Water Stressed Lunsenfwa Catchment:</b><br><i>Mr. Douglas Lubaba, Water Resources Management Authority</i> |
| 14:15         | Mapenzauswa C, Hoko Z, Moyo L, Ashiphala L, Kalulu K, Chikuni. A & Ndunguru M  | Assessing status and management of water supply services in selected cities in Sub-Saharan Africa. A case study of Dar es Salaam, Harare, Lilongwe, and Windhoek. | Makaya E, Maphosa M & Ndlovu S                                     | Spatial analysis of groundwater quality: geogenic and anthropogenic contributions.  |  |
| 14:30         | Motho M, Kolawole O.D, Motsholapheko M.R. & Mogomotsi P.K.   | Analysis of household water use behaviour and demand in Ngamiland District, Botswana.   | Moyo G, Makaya E & Chinyama A                                      | Spatial modelling of water distribution pipeline failure: a case of Bulawayo, Zimbabwe.   |  |



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|       |  |  |  |  |
|-------|--|--|--|--|
| 14:45 | Ngarachu F                               | Understanding policy actors' environmental perceptions and behavior for increased water security policy uptake in dryland counties of Kenya. | Zimba, H.,<br>Coenders-Gerrits, M., Banda K.,<br>Hulsman, P., Van de Giesen, N.,<br>Nyambe, I & Hubert Savenije, H | Evaporation in the Luangwa Basin: Performance assessment of satellite data-based evaporation models using the Water balance.   |
| 15:00 | George C, Mashonganyika I.T & Parayiwa T | Marondera Municipality Integrated Urban Water Master Planhydr  | van de Giesen N., Annor F, Hoes O & van Amelrooij E  | Innovative Measurement Methods and Water-Related Geo-Services in the TWIGA Project.  |
| 15:15 | Tea Break                                |  |  |  |
| 15:30 | Gondo R & Oluwatoyin D.K                 | Household water access and COVID-19 in Karoi Town, Zimbabwe.   | King J, Brown C, Alison J & van Niekerk L  | Africa's Living Rivers: a body of work to support sustainable river basin management.  |
| 15:45 | Makota P & Makaya E                      | Water distribution network pipe failure pattern analysis: Application of statistical modelling.  | Muyambo N  | De-colonising and Invigorating the Created Water Resources Management Space: A Quest for Alternative Means of Doing Integrated Water Resources Management in Africa. |
| 16:00 | Manda J, Matamula S, Chidya R & Ngoma W  | An investigation of an impact of community participation on sustainability of Nsaru Wua in Lilongwe, Malawi.                                 | Guzha A, Schenk A, Tedela T, Kayitesi N & Niyotwambaza C   | Managing the Water-Land- Nature --Energy Nexus for Sustainable Development: The Participatory Community Approach in Sebeya Catchment in Rwanda.                      |
| 16:15 | IUCN                                     | BRIDGE Presentation.   | Tapfuma D, Basopo N & Naik Y   | Non-lethal method for the assessment of bioavailable metals in aquatic ecosystems surrounding Artisanal small-scale gold mining activity.                            |
|       |  |  | Dzodzomenyo M, Asamoah M, Li C, Kichana E & Wright J   | Impact of Flooding on Microbiological Contamination of Domestic Water Sources: a Longitudinal Study in Northern Ghana.   |

**Stakeholder engagement in environment flow allocation:***Eng. Rowen Jani***Environmental Flows Assessment - Kafue River:***Kate Brown***Sewer to Water and Energy Projects & Floating Solar PV Projects:***Eng. Michael Sakala***KAZA GROW - Kwando -Zambezi groundwater project:***IWMI***Hydrological modelling for the Cuando River:***Beauty Mbale***Flooding dynamics on the Barotse Floodplains:***Dr. Machaya***The Basin Health Report Card & State of the Basin Report:***Obrian Mwanza***Closing Remarks:***Chairperson, Mrs. Isabel Mukelebai, WWF Chief Conservation Officer*

## Friday 22 October 2021

| 08:00 – 10:00  |   | Water, Land, Energy and Agriculture   |  | Innovative approaches, practices and technologies for affordable water supply, and sanitation services |   | GWPSA Special Session  |  |
|--|---|---|--|--|---|--|--|
|  |   | Venue: Kalala   |  | Venue: Matetsi   |   | Venue: Kazuma  |  |
|  |   | Chair: Dr. Maxwell Mudhara<br>Rapporteur: Ms. Evelyn Taire  |  | Chair: Dr. Anna Matros Goreses<br>Rapporteur: Ntombikayise Dhladhla                                    |   | Chair: Country Representatives (Mozambique and Zimbabwe)<br>Rapporteur: Dr. Pinimidzai Sithole |  |
| 08:00  | Chikwanda O, Mpala C & Chisadza B                                 | An assessment of the drainage system and waterlogging at Silalabuhwa irrigation scheme.   |  | Mapenzauswa C, Hoko Z, Mhizha A & Kerith M   | Investigating Non-Revenue Water management for the City of Mutare.  |  |  |
| 08:15  | Mapira C & Mpala C  | An assessment of three moisture monitoring method to evaluate water use efficiency in the face of climate change and variability at Makhovula Irrigation Scheme in Lupane, Zimbabwe.                        |  | Dhladhla N   | Optimization of non-revenue water management for Manzini Region, Kingdom of Eswatini.   |  |  |
| 08:30  | Kgaphola J, Ramoelo A, Odindi J, Kahinda J.M & Seetal A           | Land use and cover change impacts on land degradation in semi-arid: Case of Greater Sekhukhune District.  |  | Kativhu T, Magdalene G., Mercy Ncube M, Makaya E & Macherera M   | An analysis of the impacts of intermittent water supply on water quality in Bulawayo Council piped water between years 2010 – 2019. |  |  |
| 08:45  | Taire E   | Improving irrigation scheduling and application efficiency in smallholder irrigation systems through adoption of moisture sensor technologies at Musikavanhu and Rupangwana irrigation schemes in Zimbabwe. |  | Sairent B & Makaya E   | Partitioning of Non-Revenue Water in Windsor Park Gweru, Zimbabwe.  |  |  |
| 09:00  | Mwadzingeni L, Mugandani R & Mafongoya P.L                        | Water-nutrient metrics in smallholder irrigation schemes.   |  | Mdolo P & Chipofya V   | Operation and maintenance insights from low-cost wastewater treatment systems: Kauma wastewater treatment works, Lilongwe, Malawi.  |  |  |
| 09:15  | Saidani A, Hamamouche M.F & Kuper M                               | Reinventing the wheel: adapting a traditional circular irrigation system to "modern" agricultural extensions in Algeria's Sahara.   |  | Bhibho T & Chinyama A  | Design of a conventional wastewater treatment plant with less reliance on energy.   |  |  |
| 09:30  | Mureri A, Chitata T, Mudereri B, Masere T.P, Mufute N & Sammie B  | (Re)Illuminating the dynamics of successful irrigated agriculture: Practices and factors of success in National Smallholder Irrigation Competitions in Zimbabwe.  |  | Moyo M.M & Chinyama A  | Opportunities For Upcycling and Recycling in Municipal Wastewater: Case Study Bulawayo; Zimbabwe.                                   |  |  |
| 09:45  | Mpofu B, Ngwenya N & Hussey S                                     | Identification of Suitable Sites for Smallholder Irrigation in the Drylands of Zimbabwe using Weighted Overlay Model.   |  | Mdolo P, Pocock J & Velkushanova K   | Moving towards universal access to improved sanitation. What are the desired attributes?  |  |  |
| 10:00  | Makaya E & Zano T   | Comparative hydraulic performance of small-scale irrigation systems in Manicaland, Zimbabwe.  |  | Ngumbira K, Chidya R, Donkor E & Rankgomo G.T  | An Analysis of Sachet Water Quality and its Impact on Health of Consumers in Lilongwe, Malawi.                                      |  |  |
| 10:15  | Chunga B.A, Marx W, Wieprecht S, Xueliang C, De Clercq & Malota M | Water Allocation using System Dynamic Modelling in the Aquaculture Integrated with Small-Scale Irrigation Systems in Malawi.  |  | Kativhu T, Magdalene G, Ncube M, Makaya E & Macherera M  | An analysis of the impacts of intermittent water supply on water quality in Bulawayo Council piped water between years 2010 – 2019. |  |  |
| 10:30  | Tea Break   |   |  |  |   |  |  |
| Towards strengthening research for development partnerships in transboundary water cooperation – lessons on the Science-Policy-Society Interface           |   |   |  |  |   |  |  |
| Programme  |   |   |  |  |   |  |  |
| Virtual session protocol:<br>GWP-SA  |   |   |  |  |   |  |  |
| Opening remarks and presentation of session objectives and outcomes:<br>Governments of Mozambique and Zimbabwe   |   |   |  |  |   |  |  |
| Overview of processes supporting technical reviews and engagements in joint transboundary studies:<br>ORASECOM   |   |   |  |  |   |  |  |
| Q&A and comments   |   |   |  |  |   |  |  |
| An overview of OKACOM's research for development partnerships and outputs and how the science-policy-society interface has evolved in the basin:<br>OKACOM |   |   |  |  |   |  |  |
| Q&A and comments   |   |   |  |  |   |  |  |
| An overview of the GEF BUPUSA Project and some upcoming research themes:<br>BUPUSA GEF Regional Coordinator  |   |   |  |  |   |  |  |
| Panel discussion on strengthening research for development in transboundary water cooperation  |   |   |  |  |   |  |  |
| Panellist 1: OKACOM  |   |   |  |  |   |  |  |
| Panellist 2: ORASECOM  |   |   |  |  |   |  |  |
| Panellist 3: ZAMCOM  |   |   |  |  |   |  |  |
| Panellist 4: Zimbabwe Research Expert  |   |   |  |  |   |  |  |
| Panellist 5: Mozambique Research Expert  |   |   |  |  |   |  |  |
| Way forward – strengthening partnerships for research for development in transboundary water cooperation:<br>BUPUSA GEF Regional Coordinator               |   |   |  |  |   |  |  |
| Closing remarks:<br>Governments of Mozambique and Zimbabwe   |   |   |  |  |   |  |  |

# Programme for the 22<sup>nd</sup> WaterNet/WARFSA/GWP-SA Symposium

| Adjudicators' Meeting<br>Chief Symposium Rapporteur and Session Rapporteurs' Meeting<br>Venue: Matetsi<br>Closing Plenary<br>Master of Ceremonies: Dr. Alexander Mhizha<br>Venue: Kalala |  |
|--|--|
| 11:00 – 12:10  |  |
| 11:00  | Launch of the Impact of COVID-19 on the EU and SADC Water Research Agendas and Capacity Building Activities – Prospects for increased resilience and effective post-COVID-19 recovery: <i>Prof. Kgabi Nnnesi</i>             |
| 11:15  | WaterNet Phase V Strategy (2022 – 2026) - Strengthening Human and Institutional Capacity for Innovative, Systemic and Sustainable Regional Water Solutions in a Changing Environment: <i>Prof. Jean-Marie Kileshye Onema</i> |
| 11:20  | Remarks and Introduction of the International Scientific Committee and Team of Reviewers by the Chairperson of the International Scientific Committee: <i>Prof. Masengo Ilunga</i>   |
| 11:40  | Overview of the 22 <sup>nd</sup> WaterNet/WARFSA/GWP-SA Symposium presentation by the Chief Symposium Rapporteur: <i>Mr. Webster Gumindoga</i>   |
| 11:50  | Remarks by the Guest Editor of the Special Edition of the Journal of Physics and Chemistry of the Earth: <i>Prof. Cosmo Socrates Ngongondo</i>   |
| 12:00  | Vote of Thanks: <i>WaterNet Board of Trust Member: Prof. Barbara Ngwenya</i>   |
| 12:10  | Announcements: LOC   |
| 12:15  | Lunch  |
| 18:30 – 22:00  | Closing Gala Dinner<br>Venue: Boabab Restaurant  |

NB: Highlighted in grey are young water scientists

## Sponsors logos:



## Special Sessions Conveners:



