

RRIP LAUNCH NEWSLETTER 2024



RRIP

REORIENTING RESEARCH,
INNOVATION AND
PRACTICE

TO ADDRESS FUTURE WATER
CHALLENGES IN AFRICA



Let's recap

Thursday, 27 June : Launch and Symposium

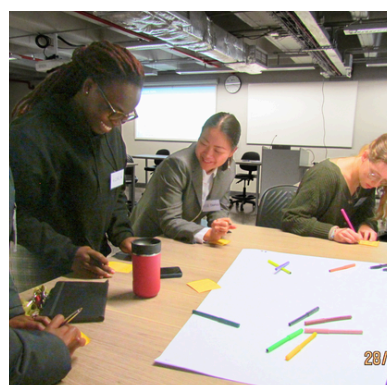
The RRIP launch event opened with a welcome from A/Prof. Kirsty Carden, Director: Future Water, and Dr. Linda Mtwisha, Executive Director: Research at UCT. Dr. Mtwisha introduced UCT's Vision 2030 Grand Challenges Program, which aims to drive research advancements beyond academic boundaries and strengthen inter/transdisciplinary partnerships. She highlighted that RRIP covers 11 Sustainable Development Goals (SDG's).

A/Prof. David Ikumi, Principal Investigator, and Dr. Amber Abrams, Co-Principal Investigator, provided an overview and discussion of the RRIP project. Dr. Valerie Naidoo from the Water Research Commission then shared insights on the water sector in South Africa in her keynote address. The event featured a panel discussion with Ntombizanele Bila-Mupariwa (DWS); Geoff Du Toit (Zutari); Jane Reddick (Greencape) and A/Prof. Kevin Winter (UCT), followed by a reflection and Q&A session. **The Research Symposium** concluded the event, by showcasing ongoing and completed postgraduate student research.



Friday, 28 June: Sandpit

The RRIP Sandpit focused on developing future projects, exploring further research, and fostering collaborations around key themes. The session also focused on identifying additional funding mechanisms and planning future research collaborations. Participants mapped themselves to the various workstreams with key themes including: Governance and Economics towards degrowth, Water Reuse and Recovery towards net-zero water use and degrowth, Integrated Systems Management towards net-zero water use, and Knowledge and Perceptions to address future water challenges in Africa.



RRIP Launch Take-aways



“We need to understand the system we work in; the stakeholders; establish expected outcomes; generate research; and innovation that effects change by changing practices and behaviour” (V. Naidoo)

- South Africa struggles with integrating new knowledge and technologies in the water sector - degrees often do not adequately prepare people for the societal challenges faced by municipalities.
- Recognizing and addressing additional issues brought by urbanization, particularly in water supply and service delivery requires innovative approaches to integrated systems and interventions that dismantle governance silos, with increased support from the private sector, community-based organizations, and NGOs.
- Promoting water-sensitive cities includes equipping communities with knowledge to reduce climate change vulnerabilities.
- Long-term commitments and collective action are crucial for embracing new strategies. Innovations in smart agriculture, wastewater treatment, stormwater management, and green buildings are essential for building climate resilience.
- Mapping water services involves considering factors like water quality, climate change, digital transformation, the economy, societal agreements, relations through water, and evolving engineering and research paradigms.
- Applied research should bridge the gap between knowledge and action, fostering a collaborative approach with citizens, and in neighborhoods, empowering people to make informed decisions. Transparency and effective public communication from municipalities are vital.
- Bridging industry and academic research is needed, including developing partnerships for continued growth; and identifying funding partnerships that support research which can fill industry gaps.
- RRIP offers seven workstreams that work together, exploring opportunities to collaborate with industry while working across disciplinary and political silos to consider (i) existent governance and gaps in current policy, (ii) challenges with conventional approaches to water resource management, (iii) technological innovations, (iv) peoples' relations regarding water and (v) future potential risks related to water.
- RRIP uses a multi-pronged, processual and transdisciplinary approach that focuses efforts towards achieving the 'net zero water' concept, which aims to reduce water demand, maximise alternative water sources, and minimise waste, whilst ensuring investment in people, meeting local interests and promoting equity and justice in water management.



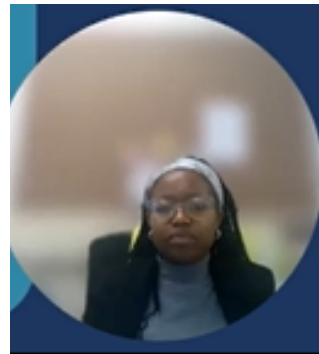
Meet the Symposium Presenters



Sizwe Nkambule,
Exploring and
advancing sustainable
solutions to household
pharmaceutical
disposal practices: A
Co-design approach for
interventions in Cape
Town



Miriam Arinaitwe,
Leveraging IoT
Technologies to
Assess the Impact
of Climate Change
on Groundwater
Vulnerability



Lethabo Makgoba,
Scoping review of the
presence and health risks
of microplastics and toxic
metals - exploring
interventions to improve
water quality in relation to
toxic metals in South
Africa



Max Baard,
Urban Water Burden-
Sharing Preferences
Across the Global
South



Tariro Marekwa,
Using a living lab
approach to determine
pathways towards a
water sensitive campus
– University of Cape
Town as a case study



**Lauren Marsha
Grootboom,**
Implementation guideline
for managed aquifer
recharge (MAR) in
combination with blue-
green infrastructure (BGI)
at local settlement level:
Linking policy to local BGI
interventions: An analysis
of associated policy in
Cape Town, South Africa



Lindsey Daniel,
Adaption amidst
extremes. Reviving
traditional
practices: A way
forward for water-
centric design
systems in future
South Africa.



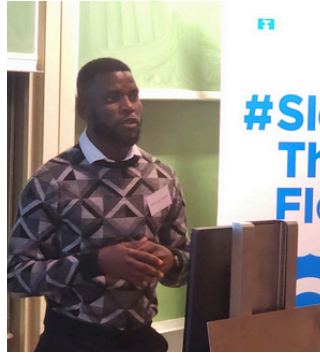
Ebbe Rabie,
Unearthing
architecture fragments
of the past.
Materialising time,
space, and
archaeological
significance through
architecture at
Diepkloof Rock Shelter,
Western Cape



Meet the Symposium Presenters



Nompumelelo Mnisi,
Low-cost IoT
Network for
Stormwater Pond
Monitoring



Shalongo Angula,
Digital Twins for
Wastewater
Reclamation and
Reuse



Jason Minnie,
Development of a
Realistic Integrated
Activated Sludge -
Secondary Settling
Tank Model



**Kalpana Maraj &
Emily Nicklin,**
Temporal Water
Quality Trends in
Surface Water
Polluted by an
Informal Settlement:
ARV Detection and
Quantification



**Caitlin Courtney
& Njabulo Thela,**
Human urine
collection for
fertilizer
production



**Rachelle
Schnewly,**
Using soil to
filter stormwater



Teboho Mofokeng,
Estimating the
influence of pro-
environmental
behaviour (PEB) on
stated preference for
using alternative
water sources in
flushing toilets



Nhlanhla Hlongwa,
(PhD) Fate and removal
of emerging
contaminants during
the chlorination of
drinking water.
(PDRF) Advancing
water treatment
strategies

If you're interested in learning more about our post-graduate researchers, visit our webpage (RRIP Webpage - <https://bit.ly/4bbXiiv>) or scan the QR code for more details.



Sandpit Take-aways



The framework of the sandpit discussion encouraged attendees to assign themselves to workstreams/themes they best resonate with. In the various themed groups, research project ideas, funding mechanisms, actors, outputs, outcomes and expected impacts were discussed.

Water Reuse and Recovery:

Project ideas arose around implementing urine diversion in one of UCT's residence halls, and studying the effect of low flush toilets; exploring options for stormwater management on campus; and modelling wastewater treatment at the proposed UCT lower campus 'green precinct'. Additional project ideas included assessing risks of wastewater reuse; investigating contaminants of emerging concern; separating wastewater streams; and applying systems thinking and circular economy principles. Outputs included raising awareness, launching pilot projects, and graduating students with expertise in the field. The expected outcomes were creating sustainable cities and UCT demonstration sites and fostering water sensitivity and resilience. The expected impacts included connecting young researchers to networks, avoiding silos by integrating efforts, developing resources needed by the CoCT, addressing multiple SDGs, strengthening community relationships and promoting behavioural change towards water conservation.

Knowledge, Perceptions and Practice

The groups proposed projects around science engagement through living labs; developing curricula; establishing water hubs; and creating public messaging and policy inputs. The outputs included establishment of living labs, gamification to address complex issues, citizen science initiatives, and educational materials aiming to empower the public to influence policy and improve communication. Groups noted the need to reintegrate urban spaces with water systems, and enhance communication between government and the public, breaking down traditional silos in water management practices through systems thinking and integrated co-design in living labs. Impacts may include behavioural change, simplified, low-tech solutions, visual and tactile learning, and effective public engagement while being cognisant of different styles of communication and language when communicating science.

Sandpit Take-aways



Governance and Economics

The research proposed involves creating a governance landscape map and reviewing integrated development plans and spatial development plans, as well as identifying research projects to align with city plans, leveraging tax incentives and government funding. Partners could include the WRC, the South African Sanitation Technology Enterprise Programme (SASTEP), DBSA, Department of Science and Innovation (DSI) and IWM. Additional research activities included establishing extension officers and developing business cases around innovative sanitation technologies and creating position papers. Outputs focus on influencing policy, government funding and relevant implementation of water and sustainability projects. Key areas of focus included knowledge integration, and links and partnerships to civic organisations and education.

Integrated Systems Management

Research projects include modeling nature-based solutions; studying the bioaccumulation of contaminants of emerging concern (CECs) and their health impacts; creating resource recovery buildings independent of municipal sources; establishing living labs; and assessing water reuse risks. Outputs will be geared towards a broader goal of designing integrated water and sanitation systems, exploring advanced treatment technologies, addressing nitrogen and phosphorus uptake and/or mobility, promoting circular economy, exploring sustainable water reuse, student development, publications, and developing new standards and guidelines - with outcomes targeting a new green building model that is low-cost and low-tech. The expected impact includes enhanced community engagement, increased efficiency, and sustainable practices through behavioural change.



Interested in continued collaboration?

Thank you for attending our launch event. As we move forward, we are excited to explore opportunities for continued collaboration. Please let us know your areas of interest by completing the google form: [Click here to collaborate with RRIP](#) (example questions below for context).

1. Are you interested in linking your research/ innovation/ project efforts with our program? *

☐ Yes

☐ No

☐ Other: _____

2. Would you like to collaborate on practice and policy development with us? *

☐ Yes

☐ No

☐ Other: _____

3. Are you interested in offering work experience opportunities for our students (work place learning)? *

☐ Yes

☐ No

☐ Other: _____

4. Do you have any specific ideas or suggestions for collaboration? *

Your answer _____

5. Please provide your contact details for further discussion *
(Name, organisation, email, cell number)

Your answer _____

STAY IN TOUCH

Website:

futurewater.uct.ac.za

[RRIP Webpage -](#)

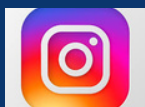
<https://bit.ly/4bbXiiv>

Email:

FutureWater@uct.ac.za

Social Media:

@futurewateruct



PROUDLY SUPPORTED BY:

UCT Vision 2030 Grand Challenges

