NEWS

WRC welcomes new CEO

The Water Research Commission (WRC) has welcomed Dr Jennifer Molwantwa as its new CEO from 1 April 2022. She is the first black woman to serve as head of the organisation, which is the main funder of water-related research in South Africa.

Dr Molwantwa hails from Kagiso Township, Mogale City, Gauteng. She holds a PhD: Biotechnology and a Postgraduate Diploma in Enterprise Management from Rhodes University. She is a Registered Professional Natural Scientist (***Pr. Sci. Nat.***) with the South African Council for Natural Scientific Professionals (SACNASP) as well as a member of the Institute of Directors SA (IoDSA).

Her career started at Pulles Howard & de Lange (later incorporated into Golder Associates Africa) as a research assistant and water resource consultant, respectively before joining Digby Wells Environmental as a Unit Manager. She joined the Water Research Commission (WRC) in 2014 as a Research Manager responsible for water resource quality prior to being appointed Executive: Water Resource Management at the Inkomati-Usuthu Catchment Management Agency (IUCMA) where she served for five years (2016 to 2022).

She gained extensive governance experience from serving on the Governing Board of IUCMA, and the council of the University of KwaZulu Natal (UKZN) where she also represented Council on the University Senate. At present, she serves on the boards of the Water Institute of Southern Africa (WISA) and the Environmental Assessment Practitioners Association of South Africa (EAPASA). She is also a member of the Department of Fisheries Forestry and the Environment (DFFE) Sub-Committee appointed to develop the National Implementation Plan (NIP) for the management of chemicals in South Africa.

Dr Molwantwa served as a commissioner on the on the First National Planning Commission (2010-2015), an advisory body to the President, that developed the National Development Plan (NDP) and Vision 2030 for the Republic of South Africa.

Her passion is capacity building, skills development, and inclusion of Historically Disadvantaged Individuals (HDI) in the mainstream science and technology careers and economy of which water and land are integral. She believes: "the way for women to participate at all levels of the economy, science and technology, knowledge generation and business depends on the opportunities created by women before them."

Global report emphasises increasing threat of wildfires

The United Nations Environment Program (UNEP) has released a landmark report calling for a radical change in government spending on wildfires, shifting investments from reaction and response to prevention and preparedness. The report is titled, ***Spreading like wildfire: The rising threat of extraordinary landscape fires.***

Canadian researchers have also highlighted the growing challenge of wildland fires globally, concluding that the last decade saw the worst records in eight successive years for wildland fires across the globe.

Meanwhile in the Western Cape, the Department Forestry, Fisheries and the Environment, and the Expanded Public Works Programme funded Working on Fire (WoF) programme has attended to more than 70 fires already in the summer fire season (1 December to date).

The UNEP report, produced by more than 50 international researchers, including South Africans, estimates that the risk worldwide of highly devastating fires could increase by up to 57% by the end of the century, primarily because of the rate of global climate change. The report calls for governments to dramatically shift their approach to preventing, rather than only focusing on fighting, fires, which they said would be more effective.

"There isn't the right attention to fire from governments," according to fire expert at the University of Cape Town and an author of the report, Glynis Humphrey. "We have to minimise the risk of extreme wildfires by being better prepared: invest more in fire risk reduction, work with local communities, and strengthen global commitment to fight climate change."

To access the UNEP report, ***Spreading like wildfire: The rising threat of extraordinary landscape fires***, Visit: https://www.unep.org/resources/report/spreading-wildfire-rising-threat-extraordinary-landscape-fires

Work underway to repair damaged water infrastructure

Water and Sanitation Minister, Senzo Mchunu, says work is underway to repair damaged water and sanitation infrastructure in communities affected by the recent floods in KwaZulu-Natal.

Mchunu, together with the mayors from the affected municipalities, including eThekwini Metropolitan Municipality, iLembe District Municipality and uMgungundlovu District Municipality, briefed the media on 24 April to provide updates on repairs to water and sanitation infrastructure.

Mchunu said the main damage is at the pipeline that supplies raw water to Durban Heights Water Treatment works in eThekwini. This has led to the eThekwini Metro losing about 280 megalitres of water, and that has resulted in water reduction to communities.

However, Mchunu said Umgeni Water has made improvements on the water supply side with an additional 50 megalitres per day, and made procurement of the pipelines for repairs.

The estimated cost of damage to pipelines include R63 million at iLembe District Municipality, R12 million at uMgungundlovu District Municipality and R1 billion at eThekwini Metropolitan Municipality.

The Minister assured the affected communities that the department, working in collaboration with the Executive Mayors in the affected Municipalities, is working with speed to remedy the situation.

"Most of these affected municipalities were already in deficit in terms of their ageing infrastructure. Our approach therefore is to take advantage of this situation to not only repair damaged infrastructure, but also to renew these ailing infrastructures. We are making immediate interventions by repairing damaged infrastructure, but at the same time we are embarking on a renewal programme of water and sanitation infrastructure in KwaZulu-Natal province," Mchunu said.

The Minister also raised a concern about the pollution of rivers due to sewer spillages caused by damaged sanitation infrastructure in the affected municipalities. "We need to act fast to ascertain the amount of damage to sanitation infrastructure and to determine the way forward to address the problem of contamination of our water resources by these sewage spillages."

The mayors from affected municipalities also proclaimed their commitment to improve water supply to the communities.

Source: SAnews.gov.za

Local-international research collaboration results in new early warning tool

Researchers from North-West University (NWU) and Universität Duisburg-Essen in Germany have developed an early warning tool for metal pollution in freshwater systems worldwide.

This research achievement is a collaboration between the Water Research Group, the NWU led by Prof Nico Smit and Prof Victor Wepener and the Universität Duisburg-Essen's Aquatische Ökologie (Aquatic Ecology) Group, led by Prof Bernd Sures and Dr Sonja Zimmerman.

The project is funded by the National Research Foundation and the Federal Ministry of Education and Research.

Prof Smit says the collaboration was informed by the fact that South Africa is the world's main supplier of platinum group elements, and some of the most productive platinum mining operations are located in the Bushveld Igneous Complex near Rustenburg in the North West province. "As with all intensive mining activities, there is always the potential that these activities can result in metal pollution in nearby rivers, thus a proper monitoring mechanism is needed to serve as an early warning tool."

Following a five-year collaboration, these researchers have now designed and validated a passive sampling device – an artificial mussel – that works perfectly to monitor platinum pollution in freshwater environments. Their results – which were published in the international journal, ***Environmental Sciences Europe***, showed that under laboratory conditions there is a high correlation between the uptake of platinum in artificial mussels (AMs) and the concentrations in the water.

"These laboratory tests were also validated under real field conditions in the North West province's Hex River, clearly showing the suitability of AMs for South African rivers. These AMs are inexpensive, easy to make and have the potential to become the tool of choice for water managers worldwide," says Prof Smit. "An additional benefit of the AM is that it allows the determination of bio-accessible metal fraction in water bodies in an ethical manner without using animals, which in the past has been the main standard operating procedure.

"According to the recent International Union for Conservation of Nature report almost one third of all freshwater biodiversity faces extinction, with pollution being one of the main driving factors. Taking this into account, together with human health issues related to water pollution, this new tool comes at just the right time," concludes Prof Smit.

GLOBAL

Chlorinated water doesn't disrupt kids' gut bacteria

Using chlorine to treat drinking water in Dhaka, Bangladesh didn't disrupt the normal population of bacteria in the digestive tract of children, research finds.

The addition of the chlorine also reduced diarrhoea and antibiotic use, according to the study published in ***Nature Microbiology***.

More than 2 000 children die every day around the world simply because they lack clean drinking water, according to the US Centres for Disease Control. Engineers have devised simple, low-cost ways to purify water in low-income countries using chlorine, but a common concern is that adding chlorine to water could harm the beneficial bacteria in children's developing gut microbiomes, which play an important role in keeping health intact.

The children's microbiomes – tested from stool samples collected one year after the dispensers were installed – had a similar diversity and abundance of bacteria as children who didn't receive chlorinated water. Some slight differences were observed, including the enrichment of beneficial bugs and increases in the presence of some antibiotic resistance genes, but those changes were small and the overall make-up of their microbiomes were similar.

While chlorine inactivates microorganisms present in water during storage, transport, and delivery through the tap, this study suggests that it is not killing the good bacteria after the chlorinated water is consumed. "No doubt further studies may be helpful for understanding all the long-term health effects of drinking chlorinated water," notes Maya Nadimpalli, research assistant professor in civil and environmental engineering at Tufts University, "but this study makes it clear that the microbiome is protected after at least one year of exposure, so that the benefits of water chlorination – which can save hundreds of thousands of lives each year – continue to outweigh diminishing concerns about its safety."

To view the original study,
Visit: https://www.nature.com/articles/s41564-022-01101-3

Asia's coastal cities 'sinking faster than sea level-rise'

Manila and several other coastal Asian cities are sinking faster than the rate of sea level rise, says a study which calls for strict regulatory measure to reduce groundwater extraction, identified as a major cause for land subsidence.

Since 1993, sea level rise has been happening at a rate of around three millimetres per year, according to the Intergovernmental Panel on Climate Change.

However, the Philippine capital saw land subsiding by more than 2 centimetres per year between 2015 and 2020, almost seven times faster than the average sea level rise, increasing the likelihood of flooding. The phenomenon of land sinking faster than sea level rise is more pronounced in Asian cities than elsewhere, says the study published April in ***Geophysical Research Letters***.

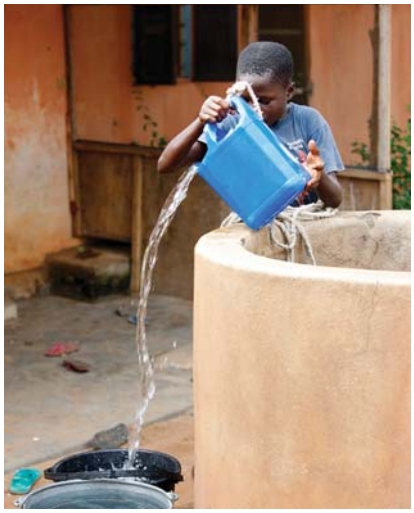
The study covered 99 coastal cities all over the world, 33 of which have areas or parts that have subsided by more than a centimetre per year. Researchers Pei-Chin Wu, Matt Wei and Steven D'Hondt from the Graduate School of Oceanography at the University of Rhode Island used satellite-based Interferometric Synthetic Aperture Radar to identify 'fast-subsiding areas'.

The study said excessive groundwater extraction is most likely the reason for the sinking of some areas in these cities – potentially affecting 59 million people. Past studies have cited rapid population increase, expanding industrial and agricultural production, absence of water treatment and poor water quality of available surface water due to pollution are among the major reasons for increasing reliance on groundwater.

"In most cities, part of the land is subsiding faster than sea level is rising," the study said. "If subsidence continues at present rates, these cities will be challenged by flooding much sooner than projected by sea level rise models. The most rapid subsidence is occurring in South, South-East, and East Asia. However, rapid subsidence is also happening in North America, Europe, Africa, and Australia."

Source: SciDev.Net

New report points to Africa's vast groundwater reserves



There is enough groundwater under the continent of Africa for most countries to survive at least five years of drought – and some, more than 50 years – according to research by WaterAid and the British Geological Survey (BGS) released earlier this year.

But gross underinvestment in services to get the water out of the ground and to those who need it most and untapped or poorly managed resources means millions of people don't have enough safe, clean water to meet their daily needs, let alone face the impacts of the climate crisis, WaterAid and BGS warn in a new report, titled ***Groundwater: The world's neglected defence against climate change***.

Groundwater – which exists almost everywhere underground, in gaps within soil, sand and rock – has the potential to save hundreds of thousands of lives and be the world's insurance policy against climate change, the organisations assert. It could help communities cope not only with slow onset impacts like drought and irregular rainfall, but also provide resilience to rapid onset impacts like floods by ensuring safe water is available for all, including in schools and hospitals, according to the report.

WaterAid and BGS produced a series of maps which chart current access to drinking water across Africa and drought resilience based on potential useable groundwater at national level. It reveals:

- Most countries in Africa have sufficient groundwater for people to not only survive but thrive – in some cases for more than 50 years.
- This includes Ethiopia and Madagascar – where only around half the population have clean water close to home – and large parts of Mali, Niger and Nigeria.
- Every African country south of the Sahara could supply 130 litres of drinking water per capita per day from groundwater without using more than 25% of the long-term average recharge , and most less than 10%. This means groundwater could provide a buffer against climate change for many years to come, even in the unlikely event that it doesn't rain.

To access the report, Visit: https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/2022-03/Groundwater%20The%20world%E2%80%99s%20neglected%20defence%20against%20climate%20change.pdf

Diary

Aquatic science
26-30 June 2022
The Southern African Society of Aquatic Scientists (SASAqS) is holding its annual conference with the theme 'Valuing our river systems: source to sea'. The conference is hosted by the University of the Free State and will be held at the Amanzi Private Game Reserve (Brandfort).
Visit: https://sasaqs.wixsite.com/sasaqs-2022

Water history
29 June – 1 July 2022
The International Water History Association is hosting a hybrid conference in Stellenbosch. This conference aims to bring together specialist water historians, sociologists, political scientists, civil engineers and scientists, as well as water sector experts in academia and professional water sector leaders and researchers to discuss the serious issue of water shortages of Anthropogenic climate change.
Visit: https://www.iwha2022.org/

Global water sector
23 August – 1 September 2022
World Water Week will be held online and in Stockholm, Sweden under the theme 'Seeing the unseen: The value of water'.
Visit: https://www.worldwaterweek.org/

Global water sector
11-15 September 2022
The International Water Association's World Water Congress and Exhibition will be held in Copenhagen, Denmark.
Visit: www.worldwatercongress.org

SA water sector
28-30 September 2022
The biennial conference of the Water Institute of Southern Africa is taking place virtually and at Sandton Convention Centre under the theme 'Navigating the course'.
Visit: https://wisa2022.co.za/

Wetlands
25-28 October 2022
The National Wetlands Indaba will be hosted by the Free State Wetland Forum (FSWF) and supported by the SA Wetland Society with the theme 'Wetlands action for people and nature'.
Visit: https://indaba.org.za/

Municipal engineering
2-4 November 2022
The 85th conference of the Institute of Municipal Engineering in Southern Africa will be held at Birchwood Hotel and Conference Centre in Gauteng.
Visit: www.wisa.og.za