FLUID THOUGHTS

Gender equality – Past, present and future

WRC CEO, Dhesigen Naidoo

We are once again in the throes of a familiar predicament.

The year 2020 has, unfortunately, yielded even more reason for the 16 Days of Activism against gender-based violence against women and girls, compared to previous years. This is in spite of it being a milestone year for women empowerment.

September 2020 marked the 25th anniversary of the Beijing Declaration and Platform for Action. It was a landmark achievement. Adopted by 189 countries, it is regarded as the most comprehensive global framework for the rights of women and girls. For a one-year-old democratic South Africa, it heralded a beacon of hope for a non-sexist new South Africa, having just emerged from the apartheid era characterised by racial oppression and patriarchy. Globally, it promised a turning point in the quest for gender equality.

Rollercoaster ride for gender equality

But these past 25 years have been a rollercoaster ride with few highs and too many lows for gender equality worldwide. According to United Nations Women Executive Director Phumzile Mlambo-Ngcuka, while political representation of women has doubled since 1995, men still control 75% of parliamentary seats. One billion women and girls, 15 years and older, have no basic reading and writing skills.

In fact, in 2020, 31% of young women are not in education at all. Unsurprisingly, women between the ages of 25-34 are 25% more likely to live in poverty than their male counterparts. The International Planned Parenthood Federation (IPPF) statistics indicate that two thirds of the 1.4 billion people living in extreme poverty today are women.

This is further exacerbated by the fact that even for educated and capacitated women, the gender gap in labour force participation stands at 31%. And when women finally get in, you have to deal with a series of obstacles and glass ceilings. Incredibly, after you have vertically tunnelled through all of those, women will still be paid less for the same job and levels of productivity.

Bias against women

And, even more shocking, people think that this is okay in the 21st century. According to the 2020 UNDP Gender Norms Index, 90% of a combined cohort of men and women have some measure of bias against women and think that they are justified. The data from 75 countries, covering 80% of the world's population, reveal that 50% of people think that men are better political leaders, 40% herald that men make better business executives and, alarmingly, 28% think that men are justified in beating their wives.

We have for the longest time associated gender inequality with levels of development and the poverty of nations. There were several rude awakenings to this clearly false thesis – one of the more vocal being the #MeToo movement. This visualised for the world that education, wealth and talent did not provide enough protection from gender-based violence.

A global malaise

Further indicators come from the World Economic Forum (WEF). The 2020 WEF Global Gender Gap Index ranks the wealthiest nation on Earth, the United States, at a staggeringly unexpected low 53rd ranking. The year 2020 also marks the 50th anniversary of the UK Equal Pay Act, and all the data indicates that this continues to be an elusive target. In fact, the WEF estimates that the gender gap, at the current rate of change, will only be closed by 2133. This is a global malaise.

It is clear that we come from a difficult past and our current statistics are far from good. What does the future hold? Across the world, we are at various stages of entry into the fourth industrial revolution (4IR). We are on the brink of a future defined by technological innovation, digitalisation, artificial intelligence, virtual reality, and big data. There are clearly great opportunities to put a sizable dent into gender inequality.

Anne-Marie Imafodin, founder of STEMettes (women in science, technology, engineering, and mathematics), sees this opportunity. She offers that as virtual work becomes more dominant, many traditional barriers preventing women from certain jobs should disappear. This is also true for jobs that do not invite women in on the basis of physical strength since in a 4IR world, technological solutions should no longer require humans to be beasts of burden.

4IR workforce – males have a head-start

But it can also easily go the other way. First is the historical factor. Success in the 4IR economy will depend on IT skills, technology prowess and entrepreneurship. The 2019 EIGE (European Institute on Gender Equality) report on the 4IR points out the current gender bias in these skills domains. In Europe, women programmers and developers are 9% of this workforce and they constitute only 19% of the IT and communications labour force

as a whole. Furthermore, women are only 20% of the European technology sector and comprise only 19% of the entrepreneur base. In this 4IR workforce 100 m race, males already have an 80 m head-start.

There are other important challenges. Artificial intelligence and big data rely heavily on historical data sets, almost all of which are biased against women and girls. It has dire consequences as some famous AI HR shortlisting tools automatically exclude women candidates to conform with the current and historical percentages of males in certain jobs. Further threats relate to direct job substitution in women-dominated industries. A 2016 UN International Labour Organization (ILO) report predicts that some Asian nations could lose 80% of their garment industries to 'sewbots', affecting some 9 million working women in the Association of Southeast Asian Nations (ASEAN).

Manase Chiweshe from the South African Institute of International Affairs (SAIIA) makes the case that rural African women have the potential to be the most marginalised in a new digital economy. But, with the right policies, innovator strategies, good support instruments and political will at all levels, a very different future is possible.

Better plan for a better world

In this the centenary anniversary of the final ratification of the 19th Amendment giving women the right to vote in the USA, let us hope that the several nations that go to the polls in 2021 will make the courageous changes needed to take us forward in the struggle of women and the girl child. The US elections has already delivered its first woman vice-president. We have declared ourselves ready to use the opportunity of the current global crisis to emerge from it with a better plan for a better world. Let us indeed work to build back better, build forward greener and build a more gender equal society.

NEWS

Letter to the Editor: Planning and maintenance key to sustainable water infrastructure

Like so many government schemes we read and hear about, all the new and wonderful projects in the coming, but the defects in the current systems are not seen, mentioned nor rectified.

Why do we want to provide drinking water to everybody, sewerage systems to the furthest outposts while the existing systems are falling apart? Raw sewage is pumped into our rivers every day, millions of litres of treated water is leaking out of delapidated pipe systems and water treatment plants are failing.

Money is spent on water projects and then left unfinished and vandalised by the communities. It is no good painting the house if the walls are collapsing.
I am a pensioned DWA employee and have witnessed how things just got completely ruined due to a lack of planning and maintenance in the last 20 years. I was involved in the refurbishment of the Standerton water treatment plant which was in a total mess due to non-maintenance.

It was refurbished at a cost of close on R20 million to good as new condition, but it was taken back to its prior status within a year because no maintenance was done and the operators had no training on running the plant.

I was involved in the De Hoop dam scheme (Olifants Water Resource Development Project) at a cost of close on R5 trillion which is now lying waste and being vandalised to a state of ruin.

Is it necessary to keep on wasting money on half-breed projects and un-maintained systems?

It sounds great to say we must eradicate the bucket system, but if there is not water available or a sewerage system operational what are we actually saying? Our government is making great sounds hoping to be supported at the election polls with votes, but has made no progress on improving the country.

Can we convince the government to spend money on viable and profitable projects?

Johan van Niekerk

South African to lead global water and agriculture body

Felix Reinders of the Agricultural Research Council's Agricultural Engineering group has been elected as the new Chair of the Global Framework on Water Scarcity in Agriculture (WASAG) for a period of two years (2020 to 2022).

Reinders is a professional engineer with a strong expertise in the field of agriculture and civil engineering. He has been President of the International Commission on Irrigation and Drainage (ICID) since 2017.

Water scarcity is one of the greatest challenges of the twenty-first century and agriculture, encompassing crops, livestock, fisheries, aquaculture and forestry, is both a cause and a victim of water scarcity. It accounts for 70% of the global water withdrawals. With the world's population that is projected to reach 9.7 billion by 2050 and as water stress spreads around the globe, ways have to be found of getting more crop per drop to meet our food needs.

The Global Framework on Water Scarcity in Agriculture (WASAG) was established in 2017. It is designed to bring together key players across the globe and across sectors to tackle the collective challenge of using water better in agriculture to ensure food security for all. It is an initiative for partners from all fields and backgrounds to collaborate in supporting countries and stakeholders in their commitments and plans related to the 2030 Sustainable Development Agenda, the Paris Climate Agreement and other plans and programmes related to agriculture and water.

Following his election, Reinders stated: "We need a water-centric approach to embrace water-energy-food-climate change nexus for global developmental endeavours. I firmly believe WASAG should focus global and regionally on awareness raising, followed by project development, then research and training with an emphasis on sustainable agriculture water use and drought preparedness. WASAG succeeds not because it is big or because it has been long established but because there are people building it, who live it, sleep it, dream it, believe in it and build great future plans for it."

Criminal case opened against Mpumalanga coal mine

The Department of Water and Sanitation (DWS) has opened a criminal case against Woestalleen Colliery and its business rescue partner following the pollution of water resources in Middelburg, Mpumalanga.

The department has also suspended the mine's water use licence. According to the DWS, the mine was found to be non-compliant with the conditions of the licence, and has also engaged in unlawful water use activities.

Chief Director of Compliance, Monitoring and Evaluation, Siboniso Mkhaliphi, said the department has been inspecting the mine since 2016. The colliery failed to present to the department concrete plans to stop pollution of water resources.

"Following a site inspection at the mine, it was discovered that there is an unlawful discharge of poor quality from the dam into the Woestalleen Spruit. This poor-quality water contaminates the spruit and also impacts negatively on groundwater resources, aquatic life and agricultural users who rely on the spruit for irrigation purposes," said Mkhaliphi.

The DWS is mandated by the National Water Act of 1998 to enforce proper water management and legislation compliance to the mining sector. Mkhaliphi said the department has conducted its administrative enforcement processes, however it did not receive cooperation from the mine.

"All of our enforcement tools have been exhausted and today we are implementing a process of suspending the water use license. We cannot afford to continue focusing on one mine water user that is non-compliant. This matter stops here and will follow the legal processes to enforce the user to comply," noted Mkhaliphi.

The Chief Director emphasised that the department opens a criminal case against any transgressor, as a last resort. "We have engaged the mine on numerous occasions and they failed to present to us a convincing plan that they will sort the situation out. Our interventions are not punitive in nature but when polluters are not responsive, we seek recourse in our law enforcement agencies in line with National Water Act of 1998."

Cabinet approves measures to address threatened biodiversity

Cabinet has approved the updated National Protected Areas Expansion Strategy and the revised National Biodiversity Framework.

The measures are considered important policy instruments for the protection of South African species and ecosystems. Through the release of the National Biodiversity Assessment by the South African National Biodiversity Institute (SANBI) in 2019, the country is able to better target future protected area expansion. The assessment has also assisted with South Africa's national and international reporting obligations, including the state of environment reporting, and the Convention on Biological Diversity Country Report – reporting against Aichi Targets or the Sustainable Development Goals.

The Revised National Biodiversity Framework has been approved for public comment. The sectoral plan addresses the biodiversity threats identified during the scientific assessment of the state of biodiversity and ecosystems in South Africa by SANBI.

The most critical areas in the assessment report related to freshwater ecosystems – with freshwater fish being the most vulnerable of all the species. "South Africa is a water scarce country, and pressures on biodiversity, such as the illegal trade in species, land degradation, habitat loss and exponential population growth are key factors that risk infectious diseases such as COVID-19," said the Department of Environment, Forestry and Fisheries in a statement.

"Continued investment in healthy ecosystems in terms of management, conservation and restoration of ecosystems and biodiversity is crucial for water, food and energy security, disease and natural disaster control, climate change resilience, and for post-COVID-19 recovery. Strong commitment and cooperation across all spheres of government is essential for the implementation of the National Biodiversity Framework (NBF) as one of the National Development Plan's accelerators."

GLOBAL

Study points to dangers of collecting drinking water

Collecting drinking water in low- and middle-income countries can cause serious injury, particularly for women, according to new research from the University of East Anglia.

The study published in ***BMJ Global Health*** reveals dangers including falls, traffic accidents, animal attacks, and fights, which can result in broken bones, spinal injuries, lacerations, and other physical injuries.

And women are most likely to sustain such injuries – highlighting the social and gender inequities of a hidden global health challenge.

Dr Jo-Anne Geere, from UEA's School of Health Sciences, said: "Millions of people don't have the luxury of clean drinking water at their home, and they face many dangers before the water even touches their lips. Global research on water has largely focused on scarcity and health issues related to what is in the water, but the burden and risks of how water is retrieved and carried has been overlooked until now. We wanted to better understand the true burden of water insecurity."

The new study was led by Northwestern University in the US, in collaboration with UEA, the University of Miami and the Household Water Insecurity Experiences Research Coordination Network (HWISE RCN).

The research team used a large global dataset to understand what factors might predict waterfetching injuries. The work draws on a survey of 6 291 randomly selected households across 24 sites in 21 low- and middle-income countries in Asia, Africa, Latin America, and the Caribbean.

They found that 13% of the respondents reported some sort of injury while collecting water, and that women were twice as likely to be hurt as men.

Dr Sera Young, from Northwestern University, said: "Thirteen percent is a big number, but it is probably an underestimate. It's highly likely that more people would have reported injuries if the survey had more detailed questions."

Prof Paul Hunter, from UEA's Norwich Medical School, said: "This reinforces how the burden of water scarcity disproportionately falls on women, on rural populations, and on those who do not have water sources close to home. It highlights the importance of safe interventions that prioritise personal physical safety alongside traditional global indicators of water, sanitation, and hygiene."

To read the original study, visit: https://gh.bmj.com/content/5/10/e003328

La Niña prediction continues for 2021

The La Niña phenomenon that developed last year is expected to last into 2021, affecting temperatures, precipitation and storm patterns in many parts of the world. This is according to the World Meteorological Organisation (WMO).

This year's La Niña is expected to be moderate to strong. The last time there was a strong event was in 2010/11, followed by a moderate event in 2011/12. La Niña refers to the large-scale cooling of the ocean surface temperatures in the central and eastern equatorial Pacific Ocean, coupled with changes in the tropical atmospheric circulation, namely winds, pressure and rainfall. It usually has the opposite impacts on weather and climate as El Niño, which is the warm phase of the so-called El Niño Southern Oscillation (ENSO).

"El Niño and La Niña are major, naturally occurring drivers of the Earth's climate system. But all naturally occurring climate events now take place against a background of human-induced climate change which is exacerbating extreme weather and affecting the water cycle," said WMO Secretary-General, Prof Petteri Taalas. "La Niña typically has a cooling effect on global temperatures, but this is more than offset by the heat trapped in our atmosphere by greenhouse gases.

"Therefore, 2020 remains on track to be one of the warmest years on record and 2016-2020 is expected to be the warmest five-year period on record," said Prof Taalas. "La Niña years now are warmer even than years with strong El Niño events of the past."

Scientists identify underground water storage potential in Murray-Darling Basin

Analysis by researchers at CSIRO, Australia's national science agency, have found areas in the Murray-Darling Basin suitable for long-term underground water storage and could help build drought resilience.

Water banking – known more technically as managed aquifer recharging (MAR) – is when water is stored underground for later uses, such as irrigation and town water supply. The study, published in the journal ***Water***, found that across the entire Murray-Darling Basin, there were storage opportunities of between two and four cubic kilometres in underground aquifers close to rivers.

Study co-author Dr Declan Page said the recent announcement of a La Niña weather pattern – indicating a higher likelihood of rainfall – was a timely reminder to regional communities that they had opportunities to secure water supplies before the next drought. "Drought resilience starts well before droughts hit – it's planning and preparing by implementing practices that are water efficient and developing infrastructure that enables water conservation and storage."

"Recharging aquifers at times of higher rainfall, storing the water, and discharging them during droughts is a cost-effective way to manage regional water security," Dr Page said. "Water banking allows communities and their industries to potentially limit the economic impacts of a drought, operating at far less restrictive levels, for far longer."

The paper identified water banking opportunities for regions in the Murray-Darling Basin area, including the Warrego River, Condamine-Culgoa Rivers, Darling River, Macquarie-Bogan Rivers and Namoi River. Each have the potential for more than 200 gigalitres of regional underground storage.

"Dams and more recently water desalination are often seen to be the main option for increasing water security," Dr Page said. "However, in areas where the topography, climate or environmental impacts don't make dams suitable, or towns are too far away from the ocean for desalination, water banking can be a cost-effective opportunity for regional Australian towns to improve their water security against times of drought."

Ancient Maya built sophisticated water filters

Ancient Maya in the once-bustling city of Tikal built sophisticated water filters using natural materials they imported from miles away, according to the University of Cincinnati.

University of Cincinnati (UC) researchers discovered evidence of a fillter system at the Corriental reservoir, an important source of drinking water for the ancient Maya in what is now northern Guatemala.

A multidisciplinary team of UC anthropologists, geographers and biologists identified crystalline quartz and zeolite imported miles from the city. The quartz found in the coarse sand along with zeolite, a crystalline compound consisting of silicon and aluminium, create a natural molecular sieve. Both minerals are used in modern water filtration.

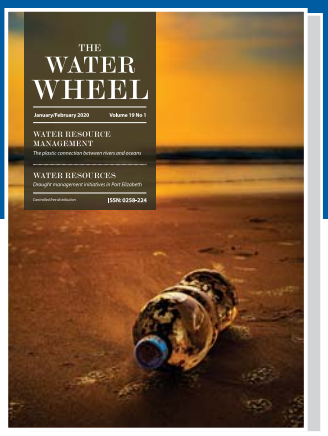
The filters would have removed harmful microbes, nitrogen-rich compounds, heavy metals such as mercury and other toxins from the water, said Kenneth Barnett Tankersley, associate professor of anthropology and lead author of the study.

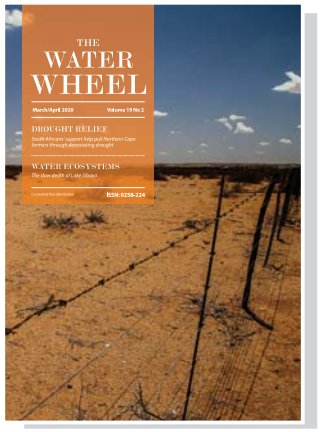
"What's interesting is this system would still be effective today and the Maya discovered it more than 2 000 years ago," Tankersley said.

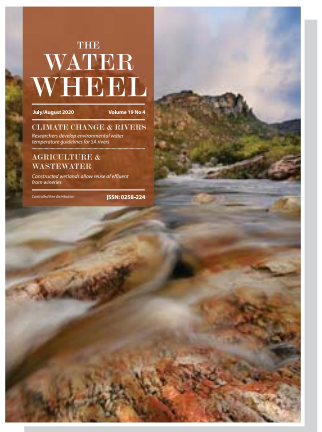
UC's discovery was published in the journal ***Scientific Reports. To read the original article, Visit: https://www.nature.com/articles/s41598-020-75023-7***

THE WATER WHEEL

SUBSCRIPTION







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WORLD MOURNS PASSING OF SA AQUATIC EXPERT

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Olaf was at his happiest in the field.

Condolences have been pouring in from all over the world following the untimely passing of Prof Olaf Weyl in November. Olaf, a globally recognised expert in inland fisheries, freshwater ecology, and the consequences of alien species introductions in freshwater ecosystems, passed away on 14 November. He was doing what he loved best – chasing fish in mountain streams, and looking for new trout genetics sampling sites.

Olaf was born in 1972 in Giessen, Germany. In 1977 his parents moved to the northwestern province of Zambia as development workers. He obtained his PhD at Rhodes University in 1998. He married Michelle Price in 1999 and was the proud father of twin girls, Philippa and Olivia.

Following a stint as a Fisheries Research Advisor to the Malawi Department of Fisheries, Olaf became a senior lecturer at Rhodes University. In 2009 he joined the South African Institute of Aquatic Biodiversity (SAIAB), initially as Senior Scientist and then as Chief Scientist. Testimony to his great standing and pursuit of excellence in both inland fisheries and aquatic invasion biology, he was awarded the South African Research Chair in Inland Fisheries and Freshwater Ecology in 2017.

Olaf participated in several Water Research Commission (WRC) research projects through the years, first as a young researcher and later as a project leader and mentor to post-graduate students. The WRC joins the world community in mourning this great loss.

"It is almost impossible to talk about Olaf without talking about freshwater fish, students, society and fishermen," said WRC Research Manager, Bonani Madikizela. "His career did not only shape the fish industry in South Africa, but in Africa and globally."

Between 2010 and 2018, Olaf served as the project leader of three projects at the WRC in the strategic area of water management and aquatic ecosystems. These projects covered a highly controversial subject, namely the control of alien and invasive fish species, such as bass, using the chemical rotenone. The WRC worked with Cape Nature in order to pilot test the use of rotenone within the confines of the National Environmental Management: Biodiversity Act and Alien and Invasive Species Regulations, National Water Act and the Conservation of Agricultural Resources Act (CARA). "Only an authoritative figure, such as Olaf, could lead such a sensitive project successfully," noted Madikizela.

Through the years Olaf became a leading figure in the aquatic science sector, and the large number of students that thrived under his mentorship made him a recognised project leader. It was this legacy that earned him a WRC Knowledge Tree award in 2015. "We have lost a great authority on freshwater fish science. Olaf did not only have a big personality with a thunderous voice, he also had a great love of nature and people," said Madikizela.

Should anyone wish to leave a personal message of condolence for Michelle, Olivia and Philippa and their extended family, SAIAB has set up a dedicated email address: condolences.olaf@saiab.ac.za These messages will be redirected to the family. A dedicated memorial page is also available on Memories.net: https://memories.net/timeline/olaf-weyl-69791#.X7GB79ghSWM.link.

To watch Prof Weyl's last presentation, given at the American Fisheries Society Virtual Conference 2020 in September, visit: https://www.youtube.com/watch?v=yx6hi1Cj2QU

Olaf in 2015 with his WRC Knowledge Tree Award.