

Water availability in Africa declining – UN survey



The amount of water available per person in Africa is declining, and only 26 of the continent's 53 countries are currently on track to meet the Millennium Development Goals related to access to water.

This is according to the latest survey by the United Nations Environment Programme (UNEP), released in November.

Furthermore, the survey showed that only five countries in Africa are expected to attain the target of reducing by half the proportion of people without access to sustainable sanitation by 2015.

The Africa Water Atlas, compiled by UNEP at the request of the African

Ministers' Council on Water, also maps out new solutions and success stories on water resource management from across the continent. It contains the first detailed mapping of how rainwater conservation is improving food security in drought-prone regions. Images also reveal how irrigation projects in Kenya, Senegal and Sudan are helping to improve food security.

Prepared in cooperation with the African Union, the European Union, the United States Department of State and the United States Geological Survey, the Atlas gathers information about the role of water in Africa's economies and development, food security, trans-boundary cooperation, capacity building and environmental change in one comprehensive volume.

Among others, the Atlas drawn attention to Africa's 'water towers', which are sources for many of Africa's transboundary rivers and contribute immensely to the total streamflow of African major rivers. They supply life-giving resources and services in downstream areas, including water for hydropower, wildlife and tourism, agriculture, domestic and ecosystem services.

According to the Atlas, most of these water towers, from the Middle Atlas Range in Morocco to the Lesotho Highlands in southern Africa, are under extreme pressure.

Source: UN News

Nominations sought for international award

The Stockholm International Water Institute (SIWI) is inviting nominations for the Stockholm Industry Water Award.

Companies and business organisations that have made impressive achievements in water and wastewater process technologies, improved performance in production processes, or have

made other significant contributions to help improve the world water situation are all eligible to be nominated.

Both external and self nominations are welcome. The deadline for submission is 15 February.

For more information, including details how to enter, Visit: www.siwi.org/siwa/nominate

WASH central to HIV programmes

A new guideline on integrating water, sanitation and hygiene into HIV/AIDS programmes, is now available from the World Health Organisation and USAID.

The publication is aimed at facilitating the integration of WASH (water, sanitation and hygiene practices) into official HIV guidelines and standards, and into HIV programming. Among others, the guide outlines why WASH should be included in HIV programmes; details which WASH practices to include; and identifies how WASH can be included in HIV programmes, illustrated by case studies from various programmes. The document also provides

concrete recommendations for country programmes and those implementing them on how to integrate WASH into HIV policies and programmes.

The priority actions to integrate into national HIV programmes are to treat drinking water, store treated drinking water safely, promote hand washing, handle and dispose of faeces safely, manage menstruation, prepare, handle and store food safely and promote personal cleanliness, especially of people living with HIV/AIDS.

To access the guideline document, Visit: http://www.who.int/water_sanitation_health/publications/9789241548014/en/index.html.

Report calls for increased investment in engineers

A shortage of engineers in developing countries, and lack of interest in engineering careers from young people are hampering development, according to a new report, published by UNESCO.

Engineering is vital for raising standards of living and creating opportunities for sustainable prosperity in line with the Millennium Development Goals. However, developing countries on average have only five engineers per 10 000 of the people – and less than one in some African countries. This compares to developed countries which have 20 to 50 engineers per 10 000.

The poorest are hardest hit by this shortage of engineers, for example, 1,1 billion people still have no access to clean water. Around 2,5 million engineers are required only in sub-Saharan Africa just to ensure provision of clean water and sanitation.

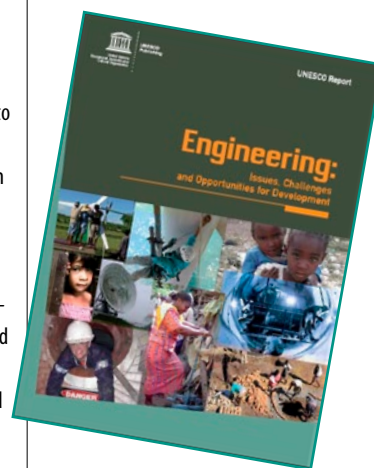
The report, *Engineering: Issues, Challenges and Opportunities for Development*, calls for developing public and policy awareness of engineering as a key driver of innovation and social and economic development. It also highlights the need to focus educational

efforts on the need for more effective application of engineering to sustainable development, poverty reduction and climate change.

"The report makes it clear that investing in infrastructure and the education of engineers in developing countries will be hugely important to development," notes Andrew Lamb, CE of non-profit organisation Engineers without Borders.

To access the report, Visit: <http://unesdoc.unesco.org/images/0018/001897/189753e.pdf>

Source: Scidev.net



New project to rid Cape of invasive alien fish

A unique project aimed to remove the century-old invasive alien fish problem in one of the Western Cape's most critical rivers is now underway.

The small Rondegat River, which rises in the Cederberg Wilderness before entering privately-owned farmland and flowing into the Clanwilliam Dam, is one of four rivers in the Cape Floristic Region earmarked for rehabilitation through a present pilot study funded by the Water Research Commission (WRC). The introduction of invasive alien fish to rivers in the region in the late 1800s to mid-1900s, primarily for angling purposes, has had disastrous impacts on almost all the indigenous fish species of this region.

The invasion of the Rondegat River by smallmouth bass has resulted in the local extinction of three out of the six native fish species, leading to significantly altered invertebrate communities in the invaded river. Rehabilitation is focused

on the lower reaches of the river, now dominated by the smallmouth bass and another alien species, the bluegill sunfish.

Eradication of invasive alien fish species is regarded by South African fish conservation experts as the best and fastest way of improving the conservation status of our highly threatened indigenous fish species and associated aquatic organisms. Mechanical removal through electric fishing is one way of removing these fish, but this is highly labour intensive and provides only a short-term solution to the problem.

The WRC study is being conducted by the South African Institute for Aquatic Biodiversity, in collaboration with CapeNature and the Cape Action for People and the Environment. The study has attracted attention as rotenone, a toxic natural chemical found in the roots of tropical plants, will be used to rid the river of the invasive alien fish.

Rotenone has already been used

successfully to eradicate invasive alien fish from reservoirs and streams in the US, Britain, Australia and New Zealand. In one case, native fish were successfully re-introduced to a treated reservoir after the removal of the invasive species.

Concerns have been raised in South Africa regarding the impact the chemical might have on other aquatic species. Prior to the start of this project, a comprehensive environmental impact assessment (EIA) was carried out, and the project has been approved by all the relevant authorities.

A preliminary assessment of the threat posed by rotenone to the invertebrates of the Rondegat River was conducted as part of the EIA. The finding was that, at concentrations and doses to be used, rotenone posed a low threat.

It is reported that the Rondegat River rehabilitation pilot study represents an important opportunity to meet the need

for quantifying the impacts of rotenone treatment as a river rehabilitation method on a suitably wide range of native aquatic organisms. Accordingly, the WRC is supporting short-term research in the form of a detailed impacts monitoring programme, focusing on aquatic macro-invertebrates, fish and also amphibians. In addition, habitat information is being gathered and biomass measurements made of periphyton (algae attached to surfaces of stones and rock), representing part of the food web.

Successful river rehabilitation will depend, firstly, on the ability of rotenone to completely eradicate invasive alien fish species and, secondly, on the ability of invertebrates and other aquatic life to re-colonise the river following treatment.

Following the Rondegat project, similar rehabilitation is scheduled to take place in the Krom River (Eastern Cape), and Suurvlei River (Cedarberg).

SHORT COURSE ON WORLD HISTORY OF WATER MANAGEMENT QUEST CONFERENCE ESTATE, VANDERBIJLPARK 27 JUNE – 1 JULY 2011

Course Objectives:

- Providing a comprehensive and international overview of past and present trends in water management, water-related technologies, hydrology and human interaction with the aquatic environment.
- Developing an understanding of the cultural dynamics of water in the past, the present and the future.
- Comprehending the historical antecedents of our current paradigm of water management and what can be learned from historical case studies on the basis of the knowledge and experience of several scholars from different countries and from the exchange of experiences to be generated between the participants of the course and the experts
- Providing postgraduate students in management studies, water sciences, engineering, environmental studies and the humanities with useful historical and contemporary information to integrate in their research work.

Presenters:

Experts in the field from all over the world

Important Dates:

Final closing date for registration: 1 June 2011

Interested? Please contact Mari-lize Harris at sduinfo@nwu.ac.za or 016 910 3014



New from the WRC

Report No: KV 238/10

A high level scoping investigation into the potential of energy saving and production/generation in the supply of water through pressurised conduits (Prof SJ van Vuuren)

Hydropower development has major potential benefits. In this scoping study the emphasis was on the potential power generation by retrofitting hydropower generation facilities at existing dams and utilising the untapped energy on the supply side of storage reservoirs in water distribution systems where the excess heads are normally dissipated across control valves.

Report No: TT 459/10

Developing a method for determining the environmental water requirements for non-perennial systems (MT Seaman, MF Avenant, M Watson, J King, J Armour, CH Barker, E Dollar, PJ du Preez, D Hughes, L Rossouw & G van Tonder)

The National Water Act requires that the environmental reserve be determined for each significant water body before licenses may be issued. Methods currently available to achieve this are based on perennial rivers. This research programme began by identifying which existing methods might initially seem to be suitable for use and where further work needs to be done. It then took this research a step further with the overarching objective to develop a prototype methodology for determining the environmental water requirements for non-perennial rivers. This would be based on field-based knowledge acquired during comprehensive research on a range of non-perennial systems.

Report No: TT 456/10
The effects of stream flow manipulation on the invertebrate hosts of malaria, bilharzia

and liver fluke disease (LM Quayle; CC Appleton & CWS Dickens)

The regulation of rivers is known to cause a number of changes to the function and form of rivers. Almost every major river in South Africa has been regulated to a certain degree, largely to meet the growing needs of development. This report aims to assess the current state of knowledge concerning the relationship between river flow regulation and its effects, and the population dynamics of invertebrate hosts of malaria, schistosomiasis (bilharzia) and fascioliasis (liver fluke disease) in South African rivers. The habitat requirements of these invertebrates are central to this discussion. Additionally, the concept of using the manipulation of flows to control these invertebrates and thus also the transmission of their associated diseases is addressed.

Report No: TT 400/09

Energy from wastewater – A feasibility study (S Burton; B Cohen; S Harrison; S Pather-Elias; W Stafford; R van Hille & H von Blottnitz)

This guide is based on a study with the purpose of determining the feasibility of developing technologies for energy recovery from wastewater (Report No: 1732/1/09). Historically, the use of wastewater as a renewable energy resource has been poorly exploited, particularly in developing countries, such as South Africa. The study reviewed the available literature and surveyed international and national practice in energy recovery from wastewater in order to identify the most significant potential for new research and innovation. The project also included a set of case studies that show what factors to consider in developing energy from wastewater projects.

This guide makes recommendations relevant to the research and development (R&D) sector regarding recovery of energy from wastewater. It also seeks to provide information about directions which would be useful to South Africa's research community by identifying areas where R&D are needed. The guide is specifically aimed at technology developers and

researchers; industry and wastewater generators as well as policy makers.

Report No: 1547/1/10

A first order inventory of water use and effluent production by SA industrial, mining and electricity generation sectors (TE Cloete; A Gerber & LV Maritz)

The overall objective of this project was to compile a first order inventory of the amount of water used and effluent produced by the South African industrial, mining and power generation sectors, and to assess the impact these might have on water quality. Among others, the study identified a severe challenge in terms of incomplete data around effluent production. This highlights the problem in South Africa around understanding the exact load of waste that is associated with industry. This is of great concern when it comes to managing the impact of effluent production on the environment. Several recommendations are made to remedy this.

Report No: TT 462/10

Framework and manual for the evaluation of aquatic ecosystems services for the resource directed measures (AE Ginsburg; JG Crafford & KR Harris)

This document provides a framework and manual to guide practitioners conducting the evaluation of aquatic ecosystem services required in establishing resource directed measures for the protection of water resources in any water management area or subsidiary catchment. The publication integrates a complex set of disciplines, approaches and methods and is structured into four parts: an introduction to and overview of the framework; the manual; a case studies part; and a supplementary information part.

Report No: TT 451/10

Investigating the applicability of ecological informatics modelling techniques for predicting harmful algal blooms in hypertrophic reservoirs of South Africa (CE van Ginkel; S du Plessis & JJ Bezuidenhout)

seasonal. The increasing number events of cyanobacterial blooms in South African impoundments and rivers is a cause of concern. Ecological informatics is an interdisciplinary framework promoting the use of advanced computational technology for the elucidation of principles of information processing at and between levels of complexity of ecosystems – from genes to ecological frameworks – and aiding transparent decision-making in relation to important issues in ecology. This project aims to address the application of these models in the management of cyanobacterial blooms in South African conditions.

Report No: TT 398/10

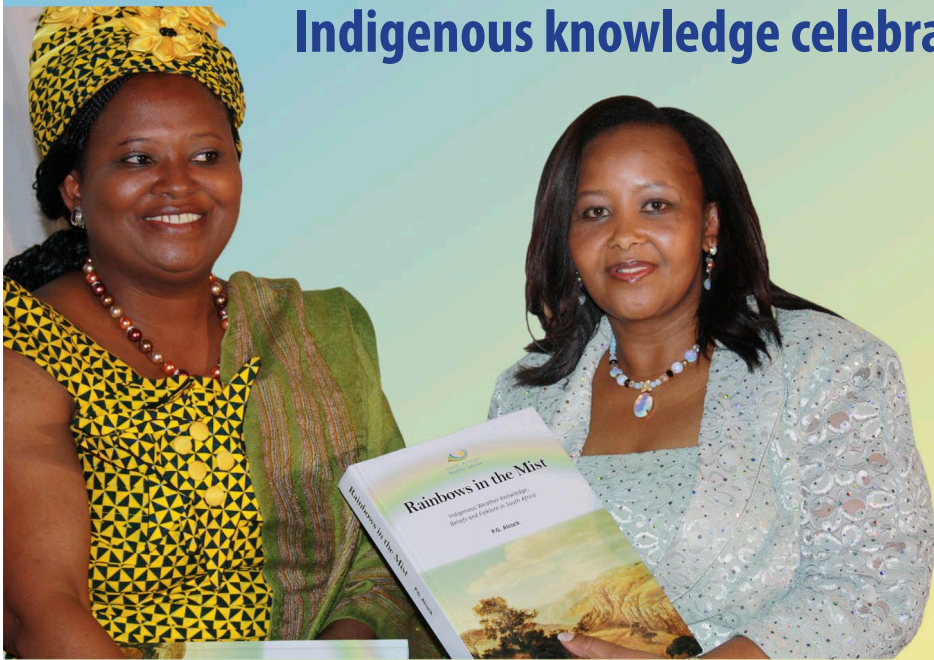
A review of a selection of local waste bylaws against the framework of the National Environmental Management: Waste Bill, 2007 (N Oosthuizen & A Armstrong)

The National Environmental Management: Waste Bill 2007 (now the National Environmental Management: Waste Act of 2008) seeks to address current shortcomings in waste management legislation. Among others, it introduces preventative strategies aimed at pollution prevention and waste minimisation thereby driving the establishment of integrated pollution and waste management systems. A major problem still facing municipalities is that there are so many bylaws, some outdated, but all needing to be merged and transformed in the context of new legislation. An analysis of the existing and national legislation and policy provides direction and guidelines as to what municipalities should be responsible for, what should be in their bylaws, and how integrated waste management should be implemented in their jurisdictions.



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Indigenous knowledge celebrated in new weather book



Lami van Vuuren

Weather SA CEO, Dr Linda Makuleni, and Deputy Minister of Tourism, Thozile Xasa, with the new book on indigenous weather knowledge, beliefs and folklore in South Africa.

Weather and climate have a significant impact on our daily lives and for centuries South Africa's diverse cultures have built beliefs and myths around natural phenomena such as rain, lightning, drought and floods.

Now, for the first time, this indigenous knowledge has been captured in a single volume. *Rainbows in the Mist: Indigenous Weather Knowledge, Beliefs and Folklore in South Africa*, is the product of more than three years of intensive research by author, Dr Peter Alcock. Published by Weather SA as part of its 150th anniversary celebrations in 2010, the book covers a comprehensive list of weather folklore (also known as ethno-meteorology) from the importance of historical rain ceremonies, the significance of heavenly bodies to farming, to animal behaviour around the seasons. "The whole rhythm of life was once geared to the seasons. Many activities were specific to a particular time of year; planting (spring/early summer); reaping and threshing (autumn/early winter)," the author writes.

At around 600 pages, the book is quite comprehensive, however readers

interested in the subject will not be disappointed. Technical terms have largely been avoided, and the book is divided in several sub-themes, making it an easy read. Most enchanting are the tales of mythical creatures found in various cultures, from mermaids in the Karoo, to the *inkanyamba* (water serpent) of Howick Falls and the *abantu bomlambo* (people of the river). The book even includes poems which have weather as a central theme.

According to Dr Deon Terblanche of Weather SA, *Rainbows in the Mist* provides an important link between indigenous knowledge and modern science around weather and climate. "Historically, humans lived much closer to nature and contained within these myths and beliefs lie real wisdom. There is much to learn from the 'recipes' contained in this book."

Speaking at the launch of the book last year, Terblanche said it would aid weather scientists to improve their understanding of human priorities in terms of the weather and climate and

would consequently help Weather SA to align its focus more closely with these priorities. "No amount of scientific research will be accepted by a community if it goes against their traditional beliefs and culture. The book will certainly assist us to improve our services to the public."

Deputy Minister of Tourism, Thozile Xasa, said that for quite some time there has been a lack among communities in understanding scientific atmospheric sciences – especially since communities have always relied on their indigenous knowledge about the weather. She expressed her hope that more research would be done to collate this knowledge for future generations. "For hundreds of years people have relied on their knowledge of the weather and climate for their survival. There is a need to pass this on from generation to generation, and to make sure this knowledge does not get lost."

To order *Rainbows in the Mist* contact Elsa de Jager at Weather SA, Tel: (012) 367-6022; Email: elsa.dejager@weathersa.co.za

