



Dinié van Rensburg

## Worldwide waterbird count on

**M**ore than 15 000 voluntary expert observers in more than 100 countries around the world are currently participating in the International Waterbird Census.

The census, which has been running since 1967, is coordinated by Wetlands International, a non-governmental organisation. The count is the source of information about the global status of waterbirds and possible changes in populations.

Most observers are members of voluntary networks, with professional coordination at the national level. Altogether they

spend about 50 000 hours on this fieldwork. Wetlands International organises a standard method for the count, which makes it easy to compare yearly census data. Each year, between 30 million and 40 million waterbirds are counted on every continent except Antarctica.

It is reported that waterbirds are good indicators for assessing the status of wetlands globally, thus regularly tracking waterbird populations helps to identify priorities for the conservation of wetland sites at the local, national and international level.

## International symposium heads to SA

**G**auteng's Emperors Palace will be playing host to the next UNESCO Hydrology for the Environment, Life & Policy (HELP) symposium on 4-9 November.

Led by the International Hydrological Programme, HELP is creating a new approach to integrated catchment management through the creation of a framework for water law and policy experts, water resource managers and water scientists to work together on water-related problems. The programme has a global network of 67 basins, including two in South Africa (the Olifants and Thukhela basins).

The Help Southern Symposium 2007 is entitled *Local Solutions to Global Water Problems – Lessons from the South*. The symposium is aimed at bridging the gap between science and policy towards sustainable development at local, national and international levels.

*For more information, contact Taryn van Rooyen at Tel: (011) 463-5085; Fax: (011) 463-3265; or E-mail: conference@soafrica.com*

## NW water crisis averted

**T**he Central District Municipality in the North West has embarked on a project to install new water pipes in Puaneng village in an effort to ensure efficient water supply.

Director of the provincial project management unit, George Ramagaga, said the multi-million Rand project to supply clean water to more than 10 000 homes, is a permanent solution to the water shortage crisis in the area. Historically, the community has had to rely on water from boreholes and a local stream.

"The community has never had any formal water infrastructure," noted Ramagaga. "In some instances, members of the community use donkey carts to fetch water from the adjacent villages." More than 28 water pipes will be connected to a stream as a source of water supply for the entire village.

## SA wants expats back for a while

**T**he South African government plans to attract expatriate academics to share their skills in short exchange programmes and research projects as an alternative to moving back to the country, according to news agency BuaNews.

"We need to look at repatriation in a flexible and pragmatic way. Repatriation does not only have to take the form of people coming back to live for good," reported Minister of Education Naledi Pandor. According to the Minister, intellectual capacity was something that could be exchanged from anywhere.

Government, she explained, would continue to look at different ways to attract South Africans back to the country, even if it was just for short periods. To this end, government is looking at developing a mechanism to keep contact with skilled professionals from South Africa working abroad so that they could still contribute in the form of ideas and knowledge.

Engineering has been identified as a skill of prime importance for government in achieving its targeted 6% annual economic growth. For their part, higher education institutions have agreed to help increase the number of engineering graduates by an extra 1 000 a year.

In addition, government intends to recruit 1 500 engineers, 1 000 educational professionals, 3 500 information technology specialists, 5 450 health and medical specialists and 1 500 agricultural science professionals. "If we need to import skills to this country, then we must," noted Pandor.

## Framework approved to fast-track delivery

Cabinet has approved a framework to fast-track and align infrastructure delivery. According to government spokesperson Themba Maseko, the framework aligns infrastructure delivery cycles with the medium-term expenditure framework budget cycle to improve planning and implementation. The infrastructure delivery cycle will be amended to include an infrastructure programme management plan, and an infrastructure programme implementation plan, which will be mandatory for all departments.



Best practice approaches will be adopted to include budget cycles that commit funds for the duration of the project without leading to so-called roll-overs. In addition, the framework will require the appointment of appropriately skilled built environment professionals across all relevant departments, provinces and local government.

## New hygiene course for rural kids

Lenehan Consulting, with support from the Water Research Commission, has developed a new child-centred course for teachers to promote basic health and hygiene awareness in rural communities.

Children, especially those living in rural areas, remain most susceptible to health and hygiene challenges. Water supply and sanitation infrastructure can go a long way in improving this situation, but it is not enough. Community health and hygiene can only improve significantly through health and hygiene awareness education.

Children are good health messengers, yet their role in community health and hygiene promotion remains under-exploited. While many innovative approaches targeting school children exist, most have been designed for urban school environments.

The new health and hygiene awareness programme is based on the lesson plan format and is ready for use by rural school educators. It comprises ten lesson plans and is designed for learners aged six to eight years. Resources to support the lessons were chosen that are typically available in rural schools or relatively easy to substitute, acquire or replicate (e.g. paper, pencils, crayons, and plastic bottles).

To order the report, which includes the lesson plans, (WRC Report No 1400/1/07) contact Publications at Tel: (012) 330-0340 or e-mail: [orders@wrc.org.za](mailto:orders@wrc.org.za)

## Groundwater Papers Sought

The Geological Society of South Africa has called for papers for its upcoming Groundwater Conference to take place in Bloemfontein, from 8 to 10 October.

The theme of the conference is 'An Africa Where Groundwater is Valued and Sustainably Managed by Empowered Stakeholders'. Themes to be addressed include sustainable groundwater management; the impacts of mining activities on groundwater resources; the role of groundwater in integrated water resource management; aquifer characterisation; groundwater contamination, vulnerability and remediation; and groundwater governance.

Abstracts must be submitted before 30 March.

For more information, contact the Conference Secretariat at Tel/Fax: (028) 316-2905; E-mail: [kruger@kurger-associates.com](mailto:kruger@kurger-associates.com); or Visit: [www.gwd.org.za](http://www.gwd.org.za)

## Buckets will be eradicated by end-2007

Finance Minister Trevor Manuel has reported that the Municipal Infrastructure Grant will receive R400-million to eradicate the bucket system across the country.

During his Budget Speech in Parliament, he said that R1,4-billion would be spent on bulk water and sanitation infrastructure, and R590-million on the delivery of water and electricity to schools and clinics.

He reiterated government's confidence that the bucket toilet system will finally be eradicated by the end of this year. Earlier, Health Minister Dr Manto Tshabalala-Msimang said the government approved sanitation acceleration strategy, Operation Gijima, had delivered some positive results. The programme is aimed at accelerating the delivery of sanitation in rural areas, while simultaneously building skills and creating jobs.

"The backlog at the inception of the programme in February 2005 was 252 254 units and the delivery against this backlog was at 110 648 units by the end of November 2006," reported Dr Tshabalala-Msimang. The remaining backlog, she added, was 141 606 units. The provinces with the highest backlogs are Free State (95 254), Eastern Cape (16 630) and North West (22 209).



# THE WATER WHEEL



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## R800-m for sinkhole-affected Khutsong

The Merafong Local Municipality, in the North West, has secured R800-million to help resettle Khutsong residents after sinkholes were found in their area.

Government news agency BuaNews reports that the area was declared unsuitable for human habitation following the formation of sinkholes and unpredictable ground movement. The funds will be used to help relocate 18 000 households to land between Carltonville and Welverden.

An additional R1,4-billion is needed for the entire resettlement programme which includes the construction of formal housing, providing community facilities, and assisting the local business sector, among others. The dolomite sinkholes are not a newly discovered development in the area. In 1997, a survey commissioned by the municipality found that 90% of Khutsong fell within extremely high risk zones for dolomitic sinkholes which made it unsuitable for human settlement. Apart from damage to homes and businesses, the sinkhole formation also affected the Carltonville water reservoir last year.

## Upcoming environmental water conference

The Department of Water Affairs & Forestry and the Water Research Commission are organising an international Conference on Environmental Water Allocation to be held in Port Elizabeth from 1 to 5 December.

The conference is aimed at promoting sustainable use of rivers, wetlands, estuaries and groundwater. Topics to be covered include integrating surface and groundwater; integrating water quality and quantity; eco-status assessments; government awareness, policy and decision making; operational issues; and hydro-politics, among others.

The organisers have called for papers. The abstracts should be submitted before 30 September.

For more information, contact the Secretariat at Tel: (012) 667-3681; Fax: (012) 667-3680; or e-mail: [confplan@iafrica.com](mailto:confplan@iafrica.com)



## Water on the Web

<http://environment.newscientist.com>

This is scientific magazine, *New Scientist's* newly-launched environmental news website. The website contains news, comments, blogs, podcasts, special reports and interactive graphics on internationally relevant environmental issues such as climate change, biodiversity, pollution and sustainability.

[www.undp-saci.co.za](http://www.undp-saci.co.za)

This is the website of the Southern African Capacity Initiative, a framework promoting responses to a number of critical human capacity areas. SACI supports countries in southern Africa to design and implement a set of additional actions and strategies which address the complex human capacity challenges in a systematic and integrated manner.

[www.waterencyclopedia.com](http://www.waterencyclopedia.com)

This is a useful water website containing articles on everything from acid mine drainage, to dams and desert hydrology to water wars and water quality.

[www.watgovernance.org](http://www.watgovernance.org)

The United National Development Programme Water Governance Facility works with the governance of all aspects of water challenges. It promotes improved water governance reform and implementation.

[www.worldwaterday.org](http://www.worldwaterday.org)

'Coping with Water Scarcity' is the theme for World Water Day 2007, which is celebrated each year on 22 March. The theme highlights the significance of cooperation and importance of an integrated approach to water

resource management at international, national and local levels.

[http://ec.europa.eu/research/water-initiative/index\\_en.html](http://ec.europa.eu/research/water-initiative/index_en.html)

This is the website of the scientific research dimension of the European Union's Water Initiative.

[www.icold-cigb.org](http://www.icold-cigb.org)

The International Commission on Large Dams (ICOLD) is a non-governmental International Organisation, which provides a forum for the exchange of knowledge and experience in dam engineering. The website contains a vast amount of information on dam engineering and includes the useful list of ICOLD publications on issues related to dams.

## UN pits trees against global warming

In an effort to mitigate global warming, the United Nations Environment Programme (UNEP) has stepped up its campaign to plant a billion trees around the world.

Under the Plant for the Planet: Billion Trees campaign, individuals, children, youth and community groups, schools, non-governmental organisations, business and industry, farmers, local authorities, and national governments are urged to plant trees as a small but practical step to combat what UNEP says is probably the key challenge of the twenty-first century. At the time of writing, 157 million tree planting pledges had been received.

Rehabilitating tens of millions of hectares of degraded land and reforesting the Earth is necessary to restore the productivity of soil and water resources, reports UNEP in a statement. "Expanding tree cover will mitigate the build-up of atmospheric carbon dioxide, a global warming greenhouse gas."

*Pledges can be entered on the website [www.unep.org/billiontreecampaign](http://www.unep.org/billiontreecampaign). Each pledge can be anything from a single tree to ten million trees.*



## More to rain than meets the eye

US researchers have dispelled a 50-year-old misconception about how rain-splash transport works.

A single drop is harmless, but when billions of raindrops fall on to bare soil they strike like billions of tiny hammers, dislodging soil which is carried away by surface runoff. Rain-splash has played a significant role over time in sculpting the features of the mountains and cliffs of the world, particularly those in arid and semi-arid regions.

Researchers from Vanderbilt and Arizona State University used a high-speed camera to analyse the interaction between individual raindrops and soil particles. The high-speed camera revealed that when small drops fell on to coarse sand, they hit without a splash and disappeared with scarcely a trace.

However, when a large drop falls on to fine sand, it flattens out and pushes a ridge of grains ahead of it. At about the same time that it blasts the sand grains into the air, the drop begins to contract, pulled back by its own surface tension, leaving behind a small impact crater.

The difference in the impact of the different size raindrops did not come as a surprise. However, when the researchers started tilting the target to see what happens on sloping surfaces, they discovered something they did not expect.

For more than 50 years, scientists have known that soil particles detached by rain splashes move down slope further that they move sideways or upslope. Confirming this, the experiment found that more grains are

## Water Diary

### WATER QUALITY APRIL 16-18

Nepid Consultants is offering a training course on SASS 5, a rapid method for water quality assessment. The course will be held at Sabie, Mpumalanga. *Enquiries: Dr Rob Palmer, Tel: (013) 751-1533; Visit: [www.nepid.co.za](http://www.nepid.co.za)*

### WATER LAW APRIL 20-21

The International Environmental Law Research Centre is hosting a workshop on Legal Aspects of Water Sector Reforms in Geneva, Switzerland. *Enquiries: E-mail: [water@ielrc.org](mailto:water@ielrc.org); Visit: [www.ielrc.org/water](http://www.ielrc.org/water)*

### WATER AWARENESS APRIL 23-27

Johannesburg Water is hosting its annual Water Festival at Mary Fitzgerald Square and Newtown Park, in Newtown. *Enquiries: Web: [www.johannesburgwater.co.za](http://www.johannesburgwater.co.za)*

### SYSTEMS ANALYSIS MAY 7-9

The Seventh International IWA Symposium on Systems Analysis & Integrated Assessment will take place in Washington, in the US. *Enquiries: E-mail: [watermatex2007@modelEAU.org](mailto:watermatex2007@modelEAU.org) or Visit: [www.watermatex2007.org](http://www.watermatex2007.org)*

### WATER MANAGEMENT MAY 13-16

The International Conference on Water Management and Technology Applications in Developing Countries will be held as in Malaysia under the auspices of the

International Water Association's Specialist Group for Developing Countries. *Enquiries: Conference Secretariat: the Malaysian Water Association; Tel: +603-6201-2250; Fax: +603-6201-5801; E-mail: [arasi@malaysianwater.org.my](mailto:arasi@malaysianwater.org.my); Visit: [www.malaysianwater.org.my](http://www.malaysianwater.org.my)*

### WATER ENGINEERING MAY 14-17

The International Council for Research and Innovation in Building and Construction (CIB) is hosting its World Building Congress in Cape Town. The theme is 'Construction for Development'. *Enquiries: Carla de Jager, SAICE, Tel: (011) 805-5947; Fax: (011) 805-5971; E-mail: [cdejager@saice.org.za](mailto:cdejager@saice.org.za), Web: [www.cib2007.com](http://www.cib2007.com)*

ejected in the down-slope direction than in other directions, and that they are ejected at higher velocities. This is particularly important because splash erosion does the most damage on sloping surfaces.

From this study the researchers produced a theoretical model for the way in which the momentum carried by raindrops is transferred to the sand grains that are blasted away from the impact site. When the model is used with new sources of information such as Doppler radar, which can provide data on average raindrop size and velocity in actual rainstorms, it could provide more reliable estimates of the amount of splash erosion taking place in different environments.

"The more we understand the basic physics of the splash erosion process, the better we can become at controlling it, especially in the farmer's field," said David Furbish, Professor of Earth and Environmental Sciences at Vanderbilt, who directed the study.

## Cholera challenge for southern Africa

Several southern Africa countries are battling renewed cholera outbreaks that have been blamed on sewage contamination in Angola.

SciDev.Net reports that apart from Angola, which is said to be the epicentre of the latest outbreak, other countries affected include Namibia, Democratic Republic of Congo, Mozambique, Zambia, and Zimbabwe.

The outbreak has been put down to the overflow of sewage-contaminated water into the Ruacana River from Angola following

floods in January. The war-ravaged country's crowded slums lack adequate water supplies and sanitation, which facilitates infection. At least 44 000 people have already reportedly been infected.

## More dams planned for Zambezi

Mozambique has several new dams in the pipeline to avoid repeats of the flooding of the Zambezi River that has devastated the country in recent weeks, SciDev.Net reports. The first dam to be constructed will be the Mpanda Nkhuwa Dam, located 70 km downstream from the Cahora Bassa Dam.

The initiative is expected to control the flow of floodwaters that are discharged from the Cahora Bassa Dam during the rainy season.

A loan for the construction of the dam, which will cost an estimated US\$2.3-billion, has reportedly already been secured from China's Exim Bank.

## Treating malaria

A compound derived from tree bark has potential as a preventative treatment for malaria, scientists in Madagascar have found. Scientists isolated a new molecule, tazopsine, from bark collected in Madagascar's eastern rain forest. They found that N-cyclopentyl-tazopsine, a less-toxic compound derived from the molecule, was effective against early, liver-stage malaria parasites in animal tests.

new approaches for collaboration between stakeholders in the North and South. *Enquiries: Dr Nlombi Kibi, Institute of the Environment, University of Ottawa, Canada, Tel: +1-613-5625800 or +1-613-5907128; E-mail: nkibi@uottawa.ca*

### MINE-WATER MAY 27-31

The International Mine Water Association's Symposium 2007 will take place in Cagliari, Italy. Visit: [www.unica.it/geochim/lmwa07/index.htm](http://www.unica.it/geochim/lmwa07/index.htm)

### ENVIRONMENTAL PROTECTION MAY 15-19

The World Environmental & Water Resources Congress will be held in Tampa, Florida, in the US. Enquiries: Visit: [www.asce.org/conferences/ewri2007](http://www.asce.org/conferences/ewri2007)

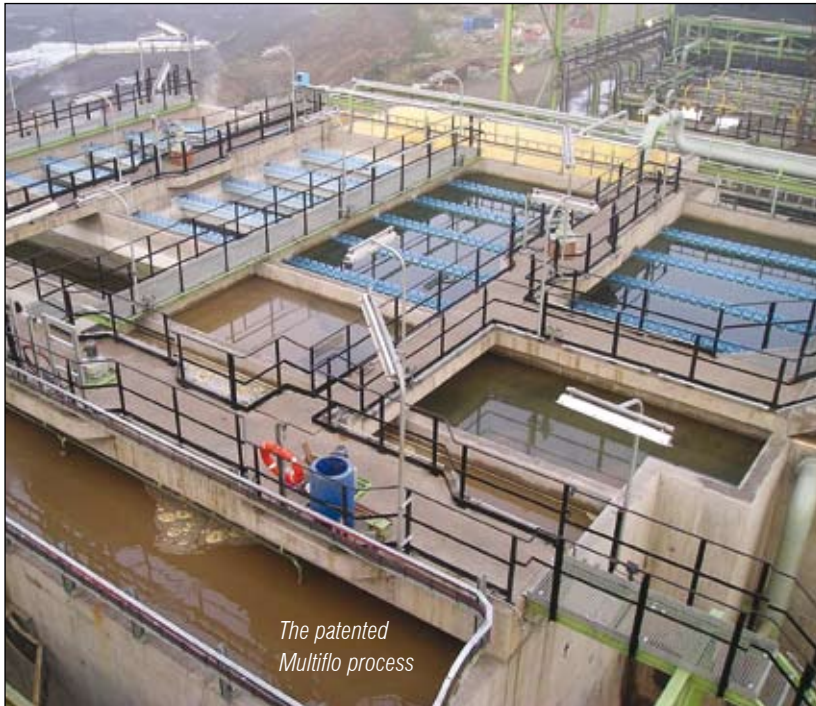
### NORTH-SOUTH COLLABORATION MAY 24-25

An international conference entitled 'Collaborating in Africa: New Approaches in the Water Sector' will be held in Quebec, Canada. The conference aims to promote

## Water by numbers

- **11 000 £** – The volume of water it takes to produce one hamburger.
- **178 million k£** – The water consumed every year in the Tshwane municipal area.
- **800 000 m<sup>3</sup>** – The volume of seawater China is expected to desalinate per day by 2010, according to the government's latest five-year plan.
- **1 billion** – The estimated number of people who rely on fish as their main or sole source of protein.
- **33 billion** – The litres saved in Soweto to date through Operation Gcin'amanzi, Johannesburg Water's multimillion Rand project aimed at replacing leaking water pipes and ageing infrastructure.
- **15 hours** – The average amount of time women spend collecting water per week, according to a United Nations survey undertaken in 177 countries. The time wasted on collecting water from distant points has incapacitated women's efforts to engage in more relevant activities, including child care and productive work.
- **1.3 million ha** – The land under irrigation in South Africa.
- **300 £** – The volume of water the average North American consumes every day. The average Africa, in comparison, lives on less than 20 £ per day.
- **287** – The estimated number of small-holder irrigation schemes in South Africa.
- **50%** – The percentage of Iraq's fabled marshlands of Mesopotamia which have regained their 1970s extent, thanks to a multimillion US Dollar programme managed by the UN Environment Programme. Once totaling almost 9 000 km<sup>2</sup>, the marshlands dwindled to just 760 km<sup>2</sup> during Saddam Hussein's reign.
- **830 million** – The estimated number of malnourished people in the world, mostly small farmers, herders, and farm labourers.
- **17%** – The increase in households in Gauteng from 2002 to 2005. In 2005, there were 2,983 million households in the province.
- **70%** – The percentage of wetlands along the Australian Great Barrier Reef coast that have been lost, threatening water quality of one of the world's greatest tourist attractions.

## Botswana contract for water firm



VWS Envig Botswana has been awarded a R16-million contract from the Botswana Department of Water Affairs to supply a turnkey water treatment plant for the softening of borehole water.

The new plant, which will have a design capacity of 13 200 Mℓ/day, will be constructed at a site about 100 km northwest of Gaborone where borehole water is collected in an existing concrete storage tank before being pumped to the Thebephatshwa Defence Force Base, Molepole and Thamga villages.

VWS Envig Botswana MD Peter Healy reports that the water coming out of the borehole is hard and contains dissolved salts. "The hardness of the water causes scaling of pipes, geysers and households appliances such as washing machines. This means that more electricity is required to heat water and more detergents and cleaning products are needed

for the washing process to be effective."

Healy explains how the new plant will work: "The Multiflo is a high-efficiency clarifier that uses lamella plates and lime softening. Lime is injected into the water before the clarification process. Coagulant is then pumped into the water, and sludge is settled out. The sludge is concentrated into a thickener, pumped into a solar drying dam, and then taken to a landfill behind the plant. The clarifier water separated from the sludge is chlorinated and then directed into the supply pumps."

Design of the plant as well as the landfill, an earth-lined enclosure, is subject to an environmental impact assessment, which should be completed this month. If the results are acceptable, construction of the plant will start soon after. It will take about ten months to complete.

## Clamp-on meters available

With no pipe cutting required, clamp-on meters save on installation costs and plant downtime, according to supplier Flowmetrix SA.

The company distributes Eesiflo's range of clamp-on meters, which include portable

meters and field-mounted flow transmitters. The Eesiflo range is feature rich, including multi-channel measurement, data loggers, thickness gauges, analogue and digital outputs, high-temperature transducers up to 400°C, gas flow and hazardous areas.

## Elandsjagt WTW revitalised

The new infrastructure at the Elandsjagt Water Treatment Works should be commissioned this year, reports consulting engineering firm Ninham Shand.

The works treats water from the Impofu Dam, from where it is piped 100 km to supply Port Elizabeth and various towns along the way. The main process units include chemical dosing facilities, a bank of 16 floc blanket clarifiers (FBCs), 12 rapid gravity sand filters, and disinfection and stabilisation facilities.

It is reported that when it was commissioned in 1984, the treatment works was designed to treat a flow of 105 Mℓ/day, but since then it has not been possible to pass the full flow through the FBCs without compromising treatment efficiency. Following a detailed investigation of the challenges at the works, including various plant trials and laboratory tests, Ninham Shand recommended modifications to the FBCs. These have had a profound effect, the company reports, increasing achievable flow from as low as 35 Mℓ/day, to over 70 Mℓ/day.

It was also found that the achievable surface loading rate of the FBCs was about two thirds of the design rate. As a result, it was decided to construct a 35 Mℓ/day horizontal flow flocculation and sedimentation facility to operate in parallel with the FBCs. The FBCs, which are not well suited to fluctuating flows, will then be used to treat that base demand flow, while the new horizontal flow system will deal with the peak demands and enable the full design flow through the treatment works.

Several other improvements have also been undertaken during the upgrading process, including replacement of sludge pumps, refurbishment of various valves, and installation of an additional variable speed drive controlled 850 kW raw water pump, to be located in the 70 m-deep abstraction tower in the dam.