

Decline in environmental crime prosecutions

Dedicated courts to hear violations against the environment will be set up in the next six months.

According to Minister of Water & Environmental Affairs Buyelwa Sonjica, the establishment of dedicated courts, including dedicated prosecutors, will have a profound impact on the fight against environmental crimes. Sonjica said that a meeting between the Minister of Justice, Jeff Radebe, and herself in September last year resulted in the decision to move forward with the process of re-establishing the courts to address many of the challenges experienced in effectively enforcing the environmental laws. "The big issue would be how to find them [courts], where do we establish them, and finding the skilled people who will be working there."

Released late last year, the National Environmental Compliance and Enforcement Report revealed an increase in the number of cases where the National Prosecution Authority (NPA) declined to prosecute from 16 in 2007/08 to 100 in 2008/09. The number of convictions for environmental crimes decreased from 748 to 258.

Commenting on the decline of cases prosecuted, Sonjica said that this was because environmental crimes were not the core function of the NPA, hence the need for dedicated courts. "The heart of the problem is conviction. Most people are getting away with murder when it comes to the environment." Department of Environment Compliance and Enforcement Support Director Mark Jardine said that, going forward, his department would focus on the causes for the fluctuations in the number of reported convictions, acquittals and decisions not to prosecute. They would also investigate why some institutions were recording over 200 convictions a year while others recorded nothing.

Source: *BuaNews*



Centres expanding water knowledge in Southern Africa

As coordinator of the NEPAD Water Centres of Excellence Initiative, Stellenbosch University (SU) will over the next three years take the lead when it comes to network expansion in southern African water research and tertiary training communities.

A consortium of centres of excellence focusing on water research has been established through the NEPAD Water Centres of Excellence Initiative in southern African countries such as South Africa, Malawi, Botswana, Zambia, Mozambique and Namibia. The initiative is funded by the European Commission.

The Water Initiative is also supported financially by the South African Department of Science & Technology (DST) and enjoys high-level recognition by the African Ministers' Council on Water (AMCOW). The initiative aims to promote cooperation and knowledge transfer between organisations involved in water research in the region in order to improve resource management, policy formulation, the provision of high-quality water sources in rural and urban areas and water purification technology, in particular. It also aims to limit the damage caused by flooding.

"The initiative focuses on people and strengthening networks, and not on funding specific research topics as such," explains Prof Eugene Cloete, Dean of the Faculty of Science at SU. Prof Cloete chairs the executive committee heading the initiative on behalf of SU.

The universities and research institutions that have already been awarded the status of Centre of Excellence in Water Research all have proven experience in the areas of training, scientific research, consultation and policy formation. It is expected that the network will be expanded to include other relevant institutions in the region.

Besides SU, other South African institutions, such as the CSIR, the University of the Western Cape, and the University of KwaZulu-Natal also form part of the initiative. During a meeting of the executive committee towards the end of last year, the general aims of the centres were determined. These include strengthening the water researchers' network in the region, as well as capacity-building projects such as the provision of bursaries for staff and post-graduate students, and technology and knowledge transfer through workshops and conferences.

Bank and French development agency partner to accelerate infrastructure development

The Development Bank of Southern Africa (DBSA) and Agence Française de Développement (AFD) have entered into a financial agreement to promote financing opportunities to accelerate infrastructure as identified by the New Partnership for Africa's Development (NEPAD) over the next five years.

The first phase of this agreement has been fully committed. The two organisations will each provide €200 000 for the financing of studies. In addition, the AFD will provide further technical assistance to obtain an expert in the energy field, financed through a grant of €600 000.

The first agreement between the two organisations goes back to 2003. To support the NEPAD initiative, they created and jointly funded the Project Preparation and Feasibility Study (PPFS) Fund for the purpose of financing the pre-investment stages of regional integration infrastructure projects.

This second agreement regulates how the parties will work together regarding the disbursement of funds relating to the African development initiatives. The DBSA will continue to provide the management to execute the implementation of the development of these projects funded by the PPFS Fund.

The NEPAD projects which will benefit from this alliance must meet certain criteria, including:

- ◆ Having a regional or continental impact;
- ◆ Having an acceptable environmental impact;
- ◆ Falling into one of the four priority sectors (transport, energy, ICT, water and sanitation);
- ◆ Prioritising the implementation of public-private partnerships; and



- ◆ The size of the financing by the fund shall not exceed US\$500 000.

The PPFS Fund has played a catalyst role and mobilised other funds from relevant international finance institutions and donors in supporting project implantation. It facilitates the establishment of partnerships, provides funding for pre-project assessments and feasibility studies, with its secretariat and management based at the DBSA.

Nominate now for prestigious WISA Award

People have until 15 February to submit their nominations for the prestigious Water Institute of Southern Africa (WISA) Dr CG Cillié Award.

This award, administered by WISA's Anaerobic and Sludge Processes Division, acknowledge high-level research in anaerobic and sludge processes and technologies. Awarded biennially, the award goes to a student who made the most significant contribution to the understanding and application of anaerobic and sludge handling processes and technologies. The award consists of a trophy and a R3 000 cash prize.

To submit a nominee, contact Bileen Nel at Tel: (035) 753-5283 or E-mail: bileen@wisa-us.co.za

Water savings in the pipeline for CT

Work has been completed on a new pipeline that will distribute treated effluent water from the City of Cape Town's Athlone Wastewater Treatment Works, to surrounding areas.

"Despite Cape Town's rapid growth in population and industrial expansion we have shown a significant 26% saving in water usage by the end of the previous financial year on 30 June and the new pipeline will help us improve on that figure," says Alderman Clive Justus, Mayoral Committee Member for Utility Services. "Five years ago the City implemented a programme to save water and, in June 2007, we adopted a R75-million Water Demand Management Strategy to reduce unnecessary losses and wastage. The new pipeline will now make purified and treated sewage effluent of high quality available for re-use."

The treated effluent is suitable for irrigation and industrial processes where it is not necessary to use potable water. Treated effluent is currently

Editor of leading scientific water journal retires

Editor of South Africa's leading scientific water journal, Ingrid Buchan, is retiring.

Buchan joined the *Water SA* team at the Water Research Commission (WRC) in 1984. "Before I arrived at the WRC I had envisaged the science editor's job as being the quiet pursuit of scholarly publishing, much intellectual discourse, promoting and upholding editorial freedom, simulating readers to learn more, educating them about what is known, and informing them of new research," she says. "While these lofty ideals certainly became part and parcel of the daily life of this editor, the sheer pace of the place came as a complete surprise."

With assistance from referees and the members of the editorial board, Buchan managed to take the journal to the next level. "Slowly but surely one built the confidence to run a busy editorial office, calm unhappy authors and resolve disputes. The journal prospered as eager authors now entrusted us with their high-quality papers and made *Water SA* their journal of choice. Growing numbers of enthusiastic readers started supporting us."

Buchan achieved several highlights during her tenure as editor. In 2005, the journal appointed its first editorial board and moved from being mainly paper-based to being primarily



electronic, becoming a free online e-journal. "Although I had had reservations about the move, and had anticipated a huge loss in readership, I was pleasantly surprised by the resilience and depth of the journal," she notes.

Since then, the journal has gone from strength to strength. In 2007, *Water SA* achieved an Impact Factor of 1.120, its highest ever, thereby setting its own benchmark. Another highlight has been the move to digitise all back copies, creating a digital archive of the entire *Water SA* collection, dating back to the first edition in 1975.

Buchan has been awarded the Aqua Vita Est Award by the Water Institute of Southern Africa (WISA) for her efforts in contributing to the success and esteem of the organisation.

Buchan is succeeded by Tamsyn Sherwill.

distributed to the Durbanville farming area, the Chevron oil refinery in Milnerton, the Century City development and to various local schools and sports fields. Interest has also been expressed by the Grand West Casino, the Old Mutual complex, several factories in Epping, schools, sports fields and two golf courses along the route of the pipelines.

The initial supply will be approximately 21 million ℓ /m and the plant has ample capacity to further increase this supply as more users are linked to the network. The project cost R34-million. This includes the construction of a pump station for distribution, three pipelines, filter

banks, electrical control panels and ponds to store the treated effluent.

Construction has been completed on the three pipelines, one from Grand West towards Thornton Station, which then follows the Elsieskraal canal through Pinelands towards the N2. A second pipeline has been constructed along Jan Smuts Drive in the direction of Sunrise Circle, turning off along Avonduur Road and crossing Forest Drive and then linking up with the Elsieskraal pipeline. The third pipeline has been constructed parallel to the N2 in front of the old Athlone Power Station, through Langa and Bonteheuwel towards Epping Industria.

Nominations sought for industrial water awards

The 2010 Stockholm Industry Water Award is open for nominations.

The Award recognises the business sector's contribution to sustainable water management by minimising water consumption and environmental impact. It is given to any sector of business and industry. The Award recognises improved performance in production processes, new products and management, as well as innovative approaches in water and wastewater process technologies, which together help to improve the world water situation.

The Award was established in 2000 by the Stockholm Water Foundation in collaboration with the Royal Swedish Academy of Engineering Sciences and the World Business Council for Sustainable Development. It is administered by the Stockholm International Water Institute.

The 2009 winner was Trojan Technologies, a Canadian developer and proponent of large-scale ultraviolet water disinfection systems used worldwide. For more information, visit: www.siwi.org/stockholmindustrywateraward

Water pests turned into asset

Communities blighted by water hyacinth may soon view the aquatic weed as an asset rather than a scourge, thanks to a technique devised in the Philippines to turn the plant into a textile.

Scientists from the Philippine Textile Research Institute at the country's Department of Science & Technology have made fibres from the stems of the water hyacinth (*Eichhornia crassipes*). These can be blended with polyester to make clothing and domestic textiles.

E. crassipes is almost 60% cellulose – a complex carbohydrate. To turn the stems into usable fibres they must undergo a series of treatments, including



boiling to soften them and reduce their moisture content, reports Nora B. Mangalindan, officer in charge of the research.

Holia Onggo, a researcher at the Research Centre for Physics at the Indonesian Institute for Science says that, handled well, water hyacinth can be transformed into a source of income for communities. According to Onggo, a number of practical uses have been found for the plant. Stems can be turned into furniture, paper and handicrafts, for instance, or used to create fertilisers or biogas.

Source: www.scidev.net

Water shortage fuelling displacement of thousands of Iraqis

According to a UNESCO study, over 100 000 people in northern Iraq have been forced to evacuate their homes since water supplies began to dwindle in 2005.

Drought and excessive well pumping have drawn down aquifer levels in the region, causing a dramatic decline of ancient underground aqueducts, known in Iraq as karez, upon which hundreds of communities depend. The study is the first to document the effects of the ongoing drought on the karez systems.

Since the onset of the drought four years ago, 70% of the active karez have dried up. The overexploitation of groundwater by modern pumped wells has also been a major factor.

By August last year, only 116 of 683 karez systems in northern Iraq still supplied water to their beneficiaries. Before the onset of drought, the greatest threats to the karez in Iraq were political turmoil, abandonment and neglect. Hundreds of communities lost their karez during the 1980s Anfal campaign launched by the previous regime. Others saw theirs dry up when wells were dug nearby.

Today, few people in Iraq know how to maintain or repair them, and this causes the karez to stop functioning over time. The rapid decline of karez is forcing entire communities to abandon their homes

in the pursuit of new sources of water. Population declines have averaged almost 70% among the communities adversely affected since 2005. The village of Jafaron, one of the hardest hit in the region, witnessed 44 of its 52 karez dry up in 2008, leaving its only source of food – 113 ha of irrigated land – barren, and prompting most of its population to emigrate.

An additional 36 000 people are on the brink of abandoning their homes if conditions do not urgently improve. Beyond the trickle of water that they receive from their karez, these people are relying on water tanks, which must be refilled several times by trucks travelling long distances, or pumped wells, which often need to be dug deeper.

UNESCO has been working with the government of Iraq to rehabilitate karez systems since 2007, and plans to launch the new Karez Initiative for Community Revitalisation this year. The project will aim to help rural communities rebuild their karez and promote better livelihoods.

World species disappearing fast

More than 1 000 freshwater fish species and 1 900 of the planet's amphibians are threatened with extinction, reflecting the strain on global water resources.

This is according to the latest *Red List* published in November.

Published since 1963 by the International Union for Conservation of Nature (IUCN), the *Red List* provides an annual status of species and subspecies on a global scale – highlighting those threatened with extinction and promoting their conservation. According to the list, 12% of all known birds, 28% of reptiles and 25% of invertebrates are under threat. Among the animals threatened is the Kihansi Spray Toad from Tanzania, which is thought to be extinct in the wild due to the construction of a dam which destroyed their habitat in the Kihansi Falls, removing



90% of the water flow to the gorge. Nearly 70% of the world's plants are also in danger of disappearing.

"The scientific evidence of a serious extinction crisis is mounting," said Jane Smart, Director of IUCN's Biodiversity Conservation Group. "The latest analysis of the *Red List* shows that the 2010 target to reduce biodiversity will not be met. It is time for governments to start getting serious about saving species and to make sure it's high on their agendas for next year, as we're rapidly running out of time."

The year 2010 has been declared the International Year of Biodiversity.

Airborne nitrogen affecting alpine lakes

The impact of airborne nitrogen released from the burning of fossil fuels and widespread use of fertilisers in agriculture is much greater than previously recognised – extending even to remote alpine lakes. This is according to a study published in a November edition of the journal *Science*.

Examining nitrogen deposition in 90 alpine and subalpine lakes in Colorado, Sweden and Norway, James Elser, a limnologist in the School of Life Sciences at Arizona State University and his colleagues found that, on average, nitrogen levels in lakes were elevated, even those isolated from urban and agricultural centres. It was also revealed that nitrogen-rich air pollution has already altered the lakes' fundamental ecology.

Economists failing to account for 'natural capital' – Report

Many economists are failing to assess the value of their countries' natural resources, putting billions of people's well-being at risk and contributing to catastrophic species loss, according to a new United Nations Environment Programme report. *The Economics of Ecosystems and Biodiversity for Natural and International Policy Makers 2009*, released late last year, states that governments must adopt better accounting systems that measure the true value of natural resources, and integrate them into government decision-making.

World nature organisation WWF has welcomed the report, urging governments to heed the call to

reform their economic policies to halt the destruction of natural resources. "Governments need to pay attention to this report and start looking at nature in a more holistic way," said WWF Director of Global and Regional Policy Gordon Shepherd. "With smarter approaches to economics this can change, but right now we are paying for their ignorance."

Investing in conservation, management and restoration of ecosystems will provide economic returns to society that outweigh the immediate monetary returns of unchecked use of natural resources, such as the clear-cutting of forests or overfishing, according to the report.

"We are running down our natural capital stock, without understanding the value of what we are losing," the report states. "Degradation of soils, air, water and biological resources can negatively impact on public health, food security, consumer choice and business opportunities. The rural poor, most dependent on the natural resource base, are often the hardest hit."

Virtual streams to help restore real ones

Researchers at the University of Minnesota have developed a new computer model designed to help restore real streams to a healthier state. Dubbed the Virtual StreamLab, the model demonstrates the physics of natural water flows at an unprecedented level of detail and realism. A team of researchers, led by Prof Fotis Sotiropoulos, Director of the university's St Anthony Falls Laboratory (SAFL), have completed their first simulation of SAFL's Outdoor StreamLab, a scaled natural stream along the Mississippi River.

More than 90 data points have been mapped into the computer model resulting in what is believed to be the most accurate model of a real stream to date. The model employs sophisticated numerical algorithms that can handle the arbitrarily complex geometry of natural waterways, features advanced turbulence models, and uses the latest advances in massively parallel supercomputers.

The ability to simulate water flow over topography with this degree of realism provides researchers with the insights necessary to improve sustainable stream restoration strategies, helping to optimise techniques to fight erosion, help prevent flooding and restore aquatic habitats in degraded waterways.

"The practice of stream restoration has had a rocky rate of success as practitioners have struggled

to alter a natural system with countless unknowns," said Sotiropoulos. "The need for more effective and reliable stream restoration strategies is clear, but the underlying physical processes which govern the behaviour of a stream and its inhabitants are very complex. Our new model should provide researchers with a deeper understanding of those complexities."

Diarrhoea three times more deadly than previously thought

Diarrhoea kills three times more over-five-year-olds in Africa and South-East Asia than previously thought.

This is according to research commissioned by the World Health Organisation. Some 1.5 million over-fives – thought to be mostly adolescents and the elderly – are dying in these regions every year from diarrhoeal diseases. Historically, the death toll for these areas was estimated to be 380 000.

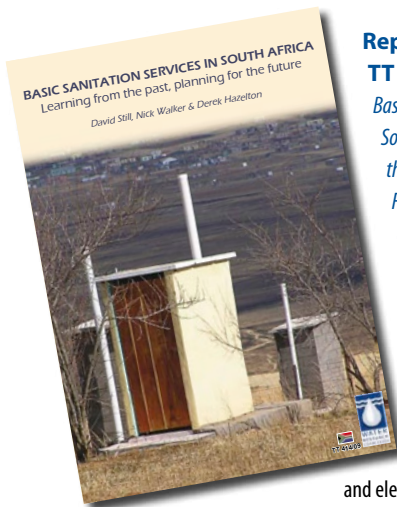
Preliminary results from the study were presented at the latest meeting of the Foodborne Disease Burden Epidemiology Reference Group (FERG), which took place in Geneva, Switzerland last year. "These estimates highlight the significant burden of diarrhoeal diseases in adolescents and adults in the developing world," said Martyn Kirk, Chair of the FERG Enteric Diseases Task Force, who presented the results.

The new estimate is on par with the global annual death toll for malaria. It is also equivalent to nearly one-third of all HIV/Aids deaths and to almost half the number of global deaths from tuberculosis.

Source: SciDev.Net



New from the WRC



Report No: TT 414/09

Basic Sanitation Services in South Africa: Learning from the Past, Planning for the Future (D Still; N Walker and D Hazelton)

In 2001, South Africa adopted a policy of free basic services to the poor. These services include water supply, sanitation, refuse removal

and electricity. What does it

mean to provide free basic sanitation to the poor? In March 2009, the Minister of Water Affairs & Forestry approved the Free Basic Sanitation Implementation Strategy. This document is intended to give water services authorities a framework for planning and operating sanitation services for the poor. It provides substantial leeway to municipalities to determine how to go about this, depending on their geography, demographics, income distribution and capacity.

Report No: 1679/1/08

Integrated Ecological-Economic Modelling as an Estuarine Management Tool: A Case Study of the East Kleinemonde Estuary. Volume 1: The Economic Value of the East Kleinemonde Estuary and Impacts of Changes in Freshwater Inputs (J Turpie; A Joubert; H Babiker; J Chaudhry; M Child; T Hempson; G Humphrey; G Joseph; R la Grange; M Lipsey; G Mann; N Okes; J Puttick and T Wistebaar)

Co-funded by the University of Cape Town, this study is part of a greater WRC project aimed at developing

an integrated ecological-economic model of the East Kleinemonde estuary to enable the assessment of different water flow and management scenarios in both ecological and socio-economic terms. This volume reports on the efforts to collect the economic data necessary to complete the economics component of the model.

Report No 1679/2/08

Integrated Ecological-Economic Modelling as an Estuarine Management Tool: A Case Study of the East Kleinemonde Estuary. Volume 2: Model Construction, Evaluation and User Manual (J Turpie; B Clark; P Cowley; T Bormman and A Terörde)

Co-funded by the University of Cape Town, this study is part of a greater WRC project aimed at developing an integrated ecological-economic model of the East Kleinemonde estuary to enable the assessment of different water flow and management scenarios in both ecological and socio-economic terms. This volume reports on the study to investigate the economic value of the East Kleinemonde estuary, and how this value might change with a change in estuary condition. In particular, the study concentrated on the direct use value (mainly recreational) and the non-use (or existence) value of the estuary.

Report No: 1577/1/09

Increasing Water Use Efficiency of Irrigated Sugarcane by Means of Specific Agronomic Practices (FC Oliver; NL Lecler and A Singels)

In the South African sugar industry about 25% of the total sugarcane crop is produced in the northern irrigated areas of KwaZulu-Natal and Mpumalanga. Low irrigation water use efficiency has been identified as a major problem in the northern irrigated areas in

spite of a very high climatic potential. Recent surveys among sugarcane farmers have also indicated that there is a huge need for more information on techniques for maximising efficiency in utilising the limited water resources in the area while minimising the loss of production associated with reduced water availability. The main objective of this project was to increase low irrigation water use efficiency and profitability of irrigated sugarcane production by formulating a set of best management practices, including optimal use of trash blanketing, variety, row spacing and irrigation.

Report No: 1529/1/09

The Testing of a Membrane Technology Unit for the Removal of Nitrate, Chloride, Fluoride, Sulphate, Calcium and Magnesium Pollutants for Groundwater, and the Monitoring of Rural Consumer Knowledge and Attitude to Water Purification (M Hlophe and MD Venter)

Madibogo is one of many rural villages in North West that depend on groundwater and are experiencing a problem with nitrogenous pollution. Tests performed on groundwater from this community indicated high concentrations of nitrate, chloride, calcium and magnesium ions whose concentrations were respectively 23,6 ppm, 637 ppm, 176 ppm and 102 ppm. In this study, the use of membrane technology (nanofiltration and reverse osmosis) was investigated for the removal of excess concentrations of these determinands in brackish groundwater at Batlhaping Primary School in Madibogo village. Since membrane technology is relatively new in South Africa, an important aspect of the study was determining how the community would receive this type of water purifying methodology.

Report No: 1395/1/09

Upgrading Existing South African Filtration Plants to High Rate Filters (PA Thompson; B Brouckaert; M Ngcekwa; R Rajagopaul; S Budhram and M Mhlongo)

The capital cost of water treatment plants doubled from R1 500/m³ to R3 500/m³ between 2005 and 2008. It is anticipated that these costs could increase even further over the next few years. It is thus imperative that researchers and practitioners explore the options of minimising the capital costs of treatment plants without compromising public health. Filtration is one of the most critical unit processes in the treatment process. There is a drive to increase the filtration rate of the filters to achieve higher filter loading rates in order to delay capital

WEBSITES

www.artificialrecharge.co.za

This is the website of the South African Artificial Recharge Information Centre. Supported by the Department of Water Affairs, the site aims to increase awareness of, and utilisation of, artificial recharge as a water management strategy.

www.gwd.org.za

The Groundwater Division of the Geological Society of South Africa has established a new website.

Among others, the website offers interesting snippets of groundwater news, as well as related documents and events.

www.regulationbodyofknowledge.org

Created with funding from the World Bank and the Public-Private Infrastructure Advisory Facility (PPIAF), this website provides resources for capacity building and policy analysis in the field of infrastructure management and regulation.

To order any of these reports, contact Publications at Tel: (012) 330-0340; Fax (012) 331-2565; E-mail: orders@wrc.org.za or visit: www.wrc.org.za

expenditure on new infrastructure. This report provides the practising engineer with a guide for the design and operation of pilot plants to establish the design parameters for the full-scale upgrade of a water works. A survey of the South African filtration industry indicates that there is limited application of the technology, which is contributing to the high unit capital costs of water treatment plants. Recommendations for the full-scale design and operation are also included in the research report.

Report No: TT 412/09

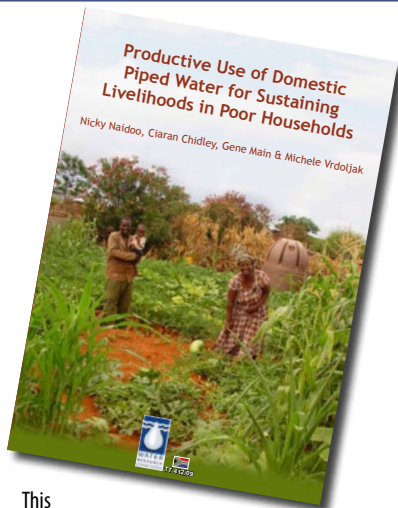
Productive Use of Domestic Piped Water for Sustaining Livelihoods in Poor Households (N Naidoo; C Chidley; G Main and M Vrdoljak)

This study investigated aspects of the provision of productive water to poor households. Specifically, the study aimed at determining whether the provision of domestic piped water for productive uses is featured in national policies, legislation and strategies. The study also reviewed both local and international literature to determine the trends in the provision and use of domestic piped water for productive uses. Lastly, through selected case studies, the following was investigated: whether domestic piped water is being used for productive uses; the types of productive uses; and the volume of water used for each productive use.

Report No: 1772/1/09

Scoping Study on Water Use of Crops/Trees for Biofuels in South Africa (GPW Jewitt; HW Wen; RP Kunz; AM van Rooyen)

In line with many countries across the world, South Africa has developed its own biofuels strategy.



This strategy is generally considered to be conservative, tempering the international drive towards large-scale bio-fuel production with a pragmatic approach towards a goal of 2% biofuel penetration within five years. Impacts on water resources are a major concern in the production of biofuels with several international studies highlighting that water use in the feedstock production phase is the biggest unknown factor when quantifying the water used in biofuel production. The WRC instigated a study in 2007 to assess both the potential growing areas and water use of potential biofuel feedstocks in South Africa. Among others, the objectives of the study were to identify all crops and trees grown in South Africa that can be used as a biofuel feedstock; assess the available knowledge on water use of these crops and trees; estimate water requirements where knowledge is lacking; and determine existing gaps in knowledge regarding water use and crop parameters.

WATER DIARY

WATER TREATMENT FEBRUARY 8-11

The University of Stellenbosch is hosting a short course on Water and Wastewater Treatment in Cape Town. Enquiries: [Elmien Lovell](mailto:Elmien.Lovell); Tel: (021) 808-4352; E-mail: elmienl@sun.ac.za

WATER & SANITATION MARCH 15-18

The International African Water and Sanitation Congress and Exhibition will take place in Kampala, Uganda. The event is organised by the African Water Association and the National Water and Sewerage Corporation of Uganda. E-mail: info@afwa-hq.org or afwacongress2010@nawsc.co.ug

WATER & SANITATION APRIL 18-22

The WISA Biennial 2010 conference is taking place at the International Conference Centre in Durban. Visit: www.wisa2010.org.za

TRANSBOUNDARY WATER APRIL 12-23

The Stockholm International Water Institute will be hosting an international training programme in transboundary water management in Mozambique and Swaziland. This training programme provides a meeting place for professionals involved in water issues around the world, with the aim of building both personal and institutional bridges. Enquiries: Anton Earle, E-mail: anton.earle@siwi.org or Björn Hansson, E-mail: bjorn.hansson@ramboll.se

WATER BY NUMBERS

- ◆ **4 000 Mℓ/day** – The estimated demand for water from Rand Water by 2012.
- ◆ **4 661** – The number of environmental cases reported nationally in 2008/09. During this period the total number of criminal dockets registered was 2 412 compared with 1 762 in the previous reporting record. A total of 258 convictions were obtained.
- ◆ **40%** – Irrigated agriculture's current contribution to the world's food production.
- ◆ **R5-million** – The money spent by the Limpopo Department of Agriculture during the current financial year on drought mitigation in the province.
- ◆ **R500-million** – The value of the water project for which a joint agreement has been signed between the South African and Dutch governments. The project aims to supply 165 000 people in the rural Zululand District Municipal area with potable water.
- ◆ **R452-million** – The monies Soweto residents owe on their water bills, according to *the Star* newspaper.
- ◆ **10 days** – The average time a water molecule spends in the air once evaporated.
- ◆ **215 000 ℓ** – The average volume of water required to produce one metric ton of steel.
- ◆ **1 120 km** – The length of the Vaal River, the main tributary of the Orange River, and one of South Africa's main rivers.
- ◆ **300 ℓ** – The average volume of water required to produce a kilogram of paper.
- ◆ **1832** – The year the world's first municipal water filtration works opened in Paisley, Scotland.
- ◆ **35** – The age (in years) of the average large dam in the world today.
- ◆ **2 650** – The average number of people employed by Johannesburg Water.
- ◆ **200 km** – The length of concrete pipes that still remain in Rand Water's pipe network of 3 000 km. Over the next five years, the water utility plans to replace the last of its concrete pipes with steel pipes where the condition is no longer acceptable.
- ◆ **23,2%** – The level of the Garden Route Dam, George's main water source, at the end of November.