Hope for the water woes of the Southern African Development Community (SADC)

by Prof Evans Chirwa

Water problems are once again high on South Africa's national agenda, with the threat of cholera growing in rural areas and disturbing reports of unsafe drinking water in the media. Recent media reports even claim that as many as eight million South Africans do not have access to piped water.

Although the South African government set themselves the extremely daunting task of supplying clean water to every citizen and providing sanitation for all by 2010, the challenges to maintain and grow infrastructure and skills in this area have remained problematic. The Department of Environmental Affairs and Tourism's report on projected water requirements and availability by 2025 warns that although water is not at present a limiting factor to economic growth, the situation should be carefully monitored and managed as climate change, unequal geographic distribution of water resources, the relevant technological requirements that are necessary for corrections, and capacity constraints in the water industry could impact negatively on the projections.

A steady growth in the number of postgraduate students studying water-related disciplines at the University of Pretoria clearly indicates the importance that students and people working in the industry attach to the issue. The University of Pretoria (UP) offers a number of water-related degrees in several of its faculties.

The UP Water Institute was established in 2006, and coordinates research projects in five faculties: Natural and Agricultural Sciences, Engineering, Built Environment and Information Technology, Health Sciences, Veterinary Science, and Law. It also has close ties with other local and international tertiary institutions working in this field. Further, the University has been managing two research chairs in Water Utilisation and Wastewater Management for approximately 30 years, and offers a number of graduate and postgraduate programmes related to water and the environment. While the Faculty of Natural and Agricultural Sciences has a strong focus on the microbiological aspects, the Department of Civil

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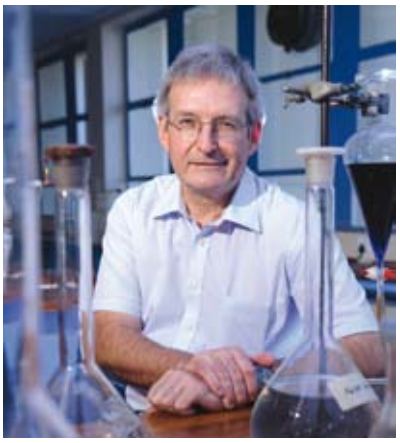

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For more information on the University of Pretoria's water-related academic programmes, visit web.up.ac.za/water.

Engineering studies water resources, plants and hydraulics, while Chemical Engineering looks at water as a process and the management of the resources involved.

Over the past two decades, the Department of Chemical Engineering has established strong postgraduate programmes in environmental engineering with a particular focus on water. Last year, more than a hundred students were enrolled for honours courses specialising in environmental technology, environmental engineering, water utilisation engineering and water utilisation. "These postgraduate courses definitely have an impact locally and on the subcontinent. The programmes attract local students, but also a number of students from elsewhere on the continent. In 2009, we had a record number of students enrolled for the environmental honours programmes," says Prof Philip de Vaal, head of the Department of Chemical Engineering at UP.

Prof Evans Chirwa, coordinator of these honours programmes, agrees strongly with the relevance of the course. "Our honours students, for example, are not only recently graduated engineers, but often people working in the field of water, environmental affairs or other related industries. Although most hold engineering degrees, we also make provision for BSc and even BTech students," he explains. "Our programmes focus not only on the processes and treatment of water, but we also include broader environmental issues such as land and air pollution, where engineering skills are desperately needed."

Dirk Lombard recently graduated as an industrial engineer and enrolled for the honours in Water Utilisation Engineering last year. "I think it is an excellent qualification if one considers the water situation in South Africa at present. This qualification will give me a much better idea of environmental aspects of business processes and, as an engineer, I will be much better equipped to make a positive contribution to the community," Lombard says.

Lombard's awareness of the importance of environmental issues in the current and future landscape of South Africa and the world is shared by most of his fellow students. However, Prof Chirwa warns that academic institutions and government should not let the current water problems overwhelm them. "Yes, it is important for us as academics and postgraduate students to look at ways in which we can improve our current situation and step up maintenance of our water plants and processes, but, as research institutions, we are also committed to look into the future. I think it is vitally important that we also look at strategic research and new ideas and solutions. Budget challenges unfortunately often lead us to sacrifice innovation. The strong postgraduate growth in our programmes at the University of Pretoria is enabling us to balance our focus between reactive and proactive research."

The reality in South Africa, as it is elsewhere on the continent and in other parts of the world, is that water provision, treatment and utilisation need more resources. In South Africa, many of the water treatment plants are growing out of their date range. More human resources with innovative and practical skills are already needed and will become even more critical in future. "It takes ten years for the impact of new skills and training to really take effect," explains Prof Chirwa. "We therefore need to develop as many resources as we can to ensure that we do not end up with a water crisis similar to the one we have experienced in the energy industry."

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