



Leading an academic career with pride

With an extensive academic record and having been at the forefront of some of South Africa's leading civil engineering research work with the students he has supervised, former President of the Water Institute of Southern Africa (WISA), Prof Frederick Otieno, chats to Debbie Besseling about the highlights of his fulfilling career, not the least of which is his 75 academic papers and 120 conference presentations.

Tell us about your current position as Deputy Vice Chancellor (DVC): Technology, Innovation and Partnerships, and Professor of Civil Engineering, at the Durban University of Technology (DUT).

I took up my role as Deputy Vice Chancellor in April 2010. In this position my role is to develop strategy, as well as lead and support research and innovation at DUT. My other areas of responsibility as an Executive include the Enterprise Development Unit (EDU), Business Support Unit (BSU), Cooperative Education, Information Technology and Support Services (ITSS), Innovation, and Research Institutes, all of which fall under my control.

The position of Professor of Civil Engineering is a fall-back position which I will slot into at the end of my contract as DVC. However, one cannot carry the title of Professor if you are not professing knowledge. I like to keep abreast with professional developments in my work and so I actively supervise at least three Masters and three Doctoral students at any time, and also undertake research in my own area of specialisation. It is important that I am in touch with what is being

researched and happening in the profession.

Your first academic achievement was in 1979 when you obtained a Bachelor of Science in Civil Engineering, Upper Second Honours at the University of Nairobi, Kenya. In terms of your academic credentials what would you like to highlight?

I have an MSc and a PhD in Civil Engineering and a Master of Business Administration (MBA). The MBA I did to strengthen my management capabilities and strategic thinking. I strongly recommend this to anybody who comes from a non-business background and who intends going into a management position.

I am a Fellow of the South African Institution of Civil Engineering, Senior Fellow of WISA and a Professional Registered Engineer. Recently I was appointed as a Fellow of the African Academy of Sciences, a very prestigious body on the continent. I regularly attend short courses and seminars to sharpen my skills and enable me to keep abreast and remain relevant in an ever changing environment.

Tell us about the topic of your PhD that you completed in 1989 in Civil Engineering (Environmental Engineering) at the University of Newcastle upon Tyne, England.

The title of my thesis was 'The Impact of Leachate Recirculation on Landfill Leachate Quality'. Essentially this involved modelling different scenarios that present themselves at landfill sites to try and address questions of protecting groundwater resources which can be costly to remedy if polluted.

What have been some of the highlights of your career?

My first job was as a design engineer in 1979 with Kenya Consulting Engineers in Nairobi, Kenya. This provided me with my grounding in the profession – it was my internship as an engineer. I have had several highlights in my 34-year career. In fact, I would say all the places that I have worked in have been as such. I can, however, highlight four places that stand out.

The first is working for the World Bank in the development of environmental action plans for arid and semi-arid districts in Kenya from 1991 to 1993. These were turned into

areas that could support life, and thus there could be economic activities that would emanate from these previously neglected areas.

Being Head of Department and successfully mounting and running the MSc in Water and Environmental Management at the University of Durban Westville in 1994 to 1999 is the second highlight. Many young men and women who attended this programme now occupy senior positions in the water and environmental sector in the public and private sector in South Africa and elsewhere internationally.

The third highlight of my career was as Dean of Engineering at Technikon Pretoria (now Tshwane University of Technology or TUT) and then Executive Dean of Engineering and the Built Environment at TUT from 2003 to 2010. This had to do with successfully managing the merger and also positioning the faculty as a leader in Research and Postgraduate training at TUT.

The last highlight is my current post as DVC Technology, Innovation and Partnerships at DUT, where we are faced with managing the challenges of developing and strengthening the culture of research and postgraduate work at the university.

With regard to corporate experience, you serve on a number of committees and boards. Please discuss your current positions.

I have served on several, but I would say the most challenging ones were Pikitup (A City of Johannesburg entity for solid waste management) and the South African National Roads Agency (SANRAL) when we developed and approved the toll roads in Johannesburg. Pikitup being challenging as waste is everywhere and every politician is concerned about it. SANRAL and the Gauteng Road Improvement Programme, which as we know are controversial and are major areas of interest to the general public.

Currently I serve on the boards of Rand Water, the Rand Water

Foundation and Invotech Incubator. I am the Chairperson of the latter organisations. The challenges when serving on these boards are about understanding the Public Finance Management Act (PFMA), developing and executing strategy, good corporate governance as per King III and keeping at arms length from daily management to enable those managers and executives to lead and excel in their roles. They are, after all, the real experts in these areas.

In terms of innovation and research in the water sector, what projects has DUT been involved in?

Three interesting projects that DUT are involved in are firstly working with Umgeni Water and Rand Water to develop strategies to minimise and be able to predict treatment costs of drinking water. A second project is aimed at minimising water usage in the agriculture sector. Currently, 60% of the water available is used for agricultural purposes. There are high inefficiencies in the use of this water and any gains that we make in this area would contribute to availing more water for use by human beings. This project involved the development of a model for efficient water usage while optimising crop yield. The third area that we are involved in is that of water demand management. Instead of always increasing supply, rather look at an integrated approach, which minimises usage, waste and creates less demand.

What is your message to young individuals entering the field of civil engineering on what it takes to have a successful career in civil engineering?

Civil engineering is an interesting and worthwhile profession that addresses the needs of mankind and is responsible for a better quality of life for our people. It is a varied profession, and includes sectors ranging from buildings, drinking water, sanitation and wastewater treatment, roads, transportation and highways,

services and infrastructure, environmental and geotechnical. To succeed, the individual needs to be strong in the subjects of mathematics and science and have good analytical skills. In terms of practicing as an engineer and so that the public is protected, one needs to be professionally registered. This is also a quality assurance mechanism and it also ensures that only qualified and registered people design and take responsibility for work that they do for the good and safety of the public.

In terms of employment, the sector offers a broad range of employment opportunities. Possible areas of employment include: Consulting engineers, local authorities, government departments, non-governmental organisations, research institutes, academic institutions, banking, development banks (World Bank, African Development Bank, DBSA etc), development agencies etc.

What in your opinion are some of the major challenges that we as a country are facing in the water and sanitation sectors?

One of the major challenges is to provide all citizens with good quality drinking water within a reasonable distance and with adequate sanitation services. The vast spread of our rural population makes this difficult and expensive. The cost of treatment has become quite high with most sources being highly polluted. Another area that needs to be addressed is the ageing infrastructure that needs to be replaced. In addition, qualified staff are needed to operate the treatment plants especially in outlying local authorities. As South Africans we are privileged to be provided with certain free quantities of water in terms of our Constitution. However, in terms of what is used above the free basic water allocation, and thus what needs to be paid for, remains a challenge in terms of cost recovery. Like any business if you are spending more to produce than what you are recovering, then there is going to be a deficit. ■

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