

The Public Funding of Research



The *Journal* this month is referred to as the 'Student Edition', as the papers are the published output of students registered for university degrees in various minerals-related subjects across Southern Africa. As one might expect, the topics of the research cover a broad spectrum ranging from mine planning, optimization of mining operations, productivity, safety, mineral processing, environmental treatment of wastewaters, to even the recycling of electronic scrap.

Our universities face increasing financial pressure brought about by a number of factors which include government pressure to withhold or cap annual fee increases, the promise of free tertiary education for all those who passed the National Senior Certificate with a university entrance, and the lowering of the bar for university entrance by the scrapping of the list of 'designated subjects' by the government in March 2018 (which increased the number of students qualifying for university entrance by 18 000 compared to the previous year¹).

Obviously, universities are expected to develop balanced and sustainable annual operating and capital budgets, but this is not an easy task given the aforementioned financial pressures. Faculties such as Science and Engineering have to cope with added pressures, as they must provide laboratory facilities for undergraduate and postgraduate teaching and research purposes. Particularly in the area of postgraduate research, students and staff are required to prepare numerous research proposals for public and private funding necessary for the students to live and the university to provide the facilities, equipment, and operating costs to conduct the research.

As members of the SAIMM, we can take some pleasure in reading the student papers in this issue of the *Journal* covering such a breadth of subject material, and feeling that the human resource capability required to sustain the mining industry is already in the making. But we should not be complacent.

And so it is with some interest that I read an article in the Johannesburg Star newspaper of 27 February 2019 which was reporting on research conducted at the University of Pretoria (UP) into the public funding of research. The article starts with the statement that: 'The government has outlined new policy objectives around science, technology and innovation. These are in draft form and will soon appear in a new White Paper. The vision of the policy is the use of science and technology to drive the sustainable and inclusive development of South Africa.'

Excellent – I can't wait to read the White Paper. The article then continues with a summary of the UP research, and I must quote from the newspaper article as I have not seen the actual PhD research report from UP. Their key points are as follows (I quote verbatim):

- There are seven councils which collectively consume 55% of government's research budget. [The science councils of relevance to the mining industry would be the Council for Geoscience, Mintek, and the CSIR].
- Work recently completed for the National Treasury reveals that since 2003, science councils have become expensive and often unproductive institutions.....It is clear from the trend that in 2014 the science councils became the most expensive performers in the system, and are now almost three times the unit cost of universities.
- The problem is that the model used to create these science councils is outdated. Today, universities fulfil many of the councils' roles at a much lower cost and also add value by simultaneously training postgraduate students.
- Our work suggests that closing under-performing science councils could achieve two important goals. First, the public budget for R&D will be enhanced because at least a portion of the R6 billion funding can be redirected to universities and the private sector. Second, the country's ability to absorb new technologies and knowledge will be strengthened.
- The analysis for National Treasury was done using the programme evaluation approach of Performance Expenditure Reviews.....The Treasury review involved benchmarking the public-funded R&D system. The findings suggested that the science councils are unproductive and need to be either closed or their resources redirected.

I was not aware of this performance review conducted by, or on behalf of, the National Treasury. It is not quite clear to me whether it is openly stated in the Treasury review that science councils should be 'either closed or their resources redirected', or whether this was inferred by the authors of the UP research (I suspect the latter). Either way, the statement is blunt and uncompromising – most un-government-like, if you know what I mean. Was I the only one sleeping on my watch? Or did most of you miss this too?

Our science councils were established at a completely different time in South Africa's history, undoubtedly fulfilled their mandate at that time, and some have achieved an international reputation for their research output. But time and reputation do not stand still – financial pressures have not been kind to similar public research organizations in the USA, Canada, the UK, and elsewhere, which were created to service the mining aspirations of those countries. Should South Africa not take a strong dose of introspection and re-evaluate the value added by these science councils in relation to other options of using the public funds? Of course we should. The debate on this subject should move into the public domain, and be conducted openly, honestly, dispassionately, objectively, and scientifically. We expect nothing less.

R.L. Paul

¹<https://www.dailymaverick.co.za/article/2019-01-07-increase-in-2018-matric-bachelors-passes-means-universities-headed-for-a-perfect-storm/>