

South Africa's research spending slows down

Funding drop may thwart ambitions to lead economic development in Africa.

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Is the leading light in African research dimming? A fall in spending on research and development (R&D) in South Africa has raised doubts about the country's future science performance and its ambitions to move from a resource-based to a knowledge-based economy.

A survey published last month shows that the country spent just under 21 billion rand (US\$2.2 billion) on R&D in the 2009–10 fiscal year. That is 86-million rand less than the previous year — the first drop in more than a decade.

The country's total R&D spending as a percentage of gross domestic product (GDP) decreased for the third consecutive year, standing at 0.87% for 2009–10. South Africa had planned to increase R&D spending to 1% by 2008, but failed to meet this goal. A second goal, to reach 2% of GDP by 2018, now seems increasingly out of reach.

Business, which contributes more than one half of the country's R&D expenditure, dropped its spending by a whopping 9.7% in 2009–10. Government departments also spent less, whereas national science councils and universities spent more.

South African science minister Derek Hanekom says that government income fell as a result of the global financial crisis, contributing to the drop. Furthermore, a tax rebate introduced in 2006 to boost business R&D has not worked out as planned and is being reviewed.

Another factor in the decrease is the 2010 shelving of South Africa's multi-billion-rand experimental nuclear reactor project, says Hanekom. The [Pebble-Bed Modular Reactor \(PBMR\)](#), built by a private company of the same name and funded mainly by the government, was dropped after investors failed to come to the table.

"Of course the PBMR had an effect on the spending," Hanekom told *Nature*. It was "disappointing" to see the decline after many years of growth, he said. But he thinks that the country has turned a corner since 2010, and that future R&D surveys will show an increase in spending. Hanekom also said that the government would spend 500 million rand (US\$54 million) over the next three years to foster research partnerships with industry.

So far, the spending slowdown does not seem to have affected South Africa's research output. The number of papers published in international journals by authors based in the country rose from around 7,500 in 2008 to nearly 8,800 in 2011. The country's citation rates have also increased steadily over the past decade.

Planning ahead

But this academic performance is failing to translate into better economic planning and development, says Rasigan Maharaj, chief of the Institute for Economic Research on Innovation in Pretoria and former policy head of the country's Council for Scientific and Industrial Research. South Africa's industries remain based mostly on natural resources, he says. And government departments — with the exception of the Department of Science and Technology — have been cutting back on R&D.

Others agree. "There is a weakness in the understanding of the importance of science and technology across the political spectrum. South Africa is orders of magnitude behind countries like South Korea in building high-technology industries," says Anastassios Pouris, director of the Institute for Technological Innovation at the University of Pretoria.

The spending lull could also hamper the government's plans to fund the training of 5,000 PhD students a year from 2030, up from 1,500 now, says Maharaj. "The data suggest increasing difficulties with respect to funding doctoral studies as well as with the capacity



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South Africa's science and technology minister Derek Hanekom says the country's economy has turned a corner and that its research funding will grow again.

of institutions to absorb new graduates.”

Pouris believes it could also harm the resolve of other countries on the continent to increase R&D funding. “The other African countries expect [South Africa] to provide leadership. If we don’t show that we are going to become a knowledge-based society, they are going to give up as well,” he says.

But John Mugabe, former science and technology director of the New Partnership for Africa’s Development, a pan-African programme for economic development, disagrees. “While most African countries aspire to catch up with South Africa’s R&D expenditure, it is not necessarily their only reference country,” he says. “Nigeria and Kenya seem to look up to China, India and Malaysia in terms of R&D investments and economic policy.”

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