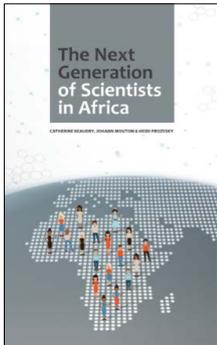




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The next generation of scientists in Africa



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African science: Better but still inadequate

This book is excellent. It should be read by every scholar, funder and policymaker in the field. The authors set out the state of science in Africa and the labour conditions of Africa's young scientists. Their rigorous data collection included a very-large-sample survey questionnaire, bibliometrics and interviews. The book reports an improvement in the state of African science (p.177), compared to the previous millennium's woeful picture; but this step forward is not normalised against the rapid population expansion on the continent. African science may be better in quantity and quality, but still is sadly inadequate to serve the needs of a continent expected to double in population size within 30 years.¹

Fortunately, science has never been national or continental. Insofar as science and the resulting technologies are essential to the well-being and prosperity of 2.5 billion Africans in 2050, they will largely have been drawn from global knowledge and best practice. Nonetheless, context is vital to the use of new discoveries; and there are matters crucial to Africa, which are seldom studied globally. We therefore need all the new young African scientists we can get; and a much more positive structure for their work.

The book has four parts and nine chapters. The first part, on the state of science in Africa, has chapters on whether African science is rising; a bibliometric analysis of African science; and a view of funders and funding. The second, on the challenges, gives a profile of the African young scientist; depicts a lack of funding, mentorship and support; and sets out the benefits of international mobility against a lack of opportunity. The third, on research performance, describes publication and citation counts, as well as enablers of and barriers to publishing. The fourth part, a conclusion, summates that although African science has improved, this improvement is in no part due to African governments and domestic funders: the money largely comes from the obvious sources outside the continent; and scientists in Africa work in weak institutions without support, while facing numerous unnecessary frustrations and negative experiences.

Finally, there are four pages of recommendations (p. 178–181), which I found to be regrettably imprecise and woolly. The recommendations lack the punch of those of a good commission of inquiry. Lenin's 'What is to be done?' or 'Who, whom?' are missing.

Instead we read: seniors 'need to be more approachable, less domineering, and more trusting and encouraging of their younger colleagues' research aspirations' (p.178). And:

There seems to be a lack of recognition, at institutional level, of the extremely time consuming nature of teaching large, undergraduate classes. An increase in marking and administrative teaching assistance is therefore strongly recommended.

A strong emphasis on quantifiable research outputs is often out of touch with the daily realities with which lecturers and senior lecturers are faced.

It should also be recognised, especially by higher education institutions, that many young scientists may be first-generation academics, for whom the expectations and roles associated with their positions are unclear.

Really? These are things known to all but the least progressive deans, university presidents and even ministers of higher education across the continent. In cultures where age means power and deference, and with other large demands on funding, acquiring the cash and the cultural capital to change these things could be impossible. For example, if the tradition of treating professors like gods is still dying hard in Germany, it will die equally hard in Africa. We live worldwide in a time of Procrustean key performance indicators and blind, managerialist short-term targets. African institutions are not exempt from these follies; and so the young up and coming suffer in ways that their ageing mentors did not. Whether in Oxford or in Africa, it is plain that young scientists must work much harder and wiser than their forebears. The book's recommendations take us little further.

Although the recommendations are limp, the hard research findings are cogent, if somewhat dense and difficult to summarise. And if you want what used to be called 'facts', there are many.

An interesting finding is that the Tunisian output of publications (200–300), normalised for population size, beats that of South Africa (at 100–200) in the 2011–2015 period (p.16). Another is that African papers reflected in the Web of Science more than doubled from 1.5% of world output in 2005 to 3.2% in 2015 (p.13).

Africa is strongest in the fields of 'tropical medicine; parasitology; infectious diseases; public, environmental and occupational health; water resources; ecology; immunology; zoology; and plant sciences' (p.16), all of which are fields in which Africa produced over 5000 papers between 2005 and 2015; and contributed over 4% of the world total in 2015.

Disappointingly, the new generation of African academics has almost exactly the same gender distribution as its forebears: only 33% of under 39s are women; 30% of those between 40 and 50 are women; and 28% of those over 50 are women (p.48). This is glacial gender progress.

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Above all, respondents felt that there are simply not nearly enough African scientists:

They would have to hire more people. Especially the young universities that have just started up, they have very few PhDs in every department, so the PhDs that are there have to do the admin as the others are probably doing their studies, trying to get PhD or masters or other degrees. So, in my department there's just two PhDs, so one is the Dean and then I'm the Chairman, so everybody's doing admin. So, the only thing they can do is more people. (33-year-old male from Kenya) (p.62)

Soon after I was born, Kenya had six million people in 1950. In 2020, it will have 53 million people. If I live to be 100, in 2050, I will see a Kenya

of 95 million people.¹ **Kenya will be sixteen times more populous in 2050 than in 1950.**

If that Kenyan population has been properly educated, with its universities strongly underpinned by advanced research, the Kenya of 2050 will be 'healthy, wealthy and wise'. If not, life will be 'nasty, brutish and short'.

It is, literally, *vital* that the quantity and quality of Africa's cohort of young scientists be radically increased; and that their working conditions are dramatically improved. This fine book gives extensive, reliable data, in detail, on which to base the policy argument.

Reference

1. United Nations, Department of Economic and Social Affairs, Population Division. World population prospects: The 2017 revision. Volume I: Comprehensive tables (ST/ESA/SER.A/399). New York: United Nations Population Division; 2017. Available from: https://population.un.org/wpp/Publications/Files/WPP2017_Volume-I_Comprehensive-Tables.pdf