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Section 3:
Country Trends

Building research capacity in Sub-Saharan Africa through inter-regional collaboration

George Lan

Over the next few decades, Sub-Saharan Africa (SSA) will benefit from a "demographic dividend" – a dramatic increase in its working-age population (1). Yet, increasing the subcontinent's labor pool cannot push Africa toward a developed, knowledge-based society without simultaneously increasing the subcontinent's capacity to train and educate that talent.

The strength of a region's research enterprise is closely correlated with that region's long-term development and important drivers of economic success. Research suggests that bibliometric indicators on publications can help characterize the stage of a country's scientific development (2).

A recent study conducted by the World Bank and Elsevier looked at the state of Science, Technology, Engineering, and Mathematics research in SSA (3). For this analysis, Sub-Saharan Africa is divided into three regions (West & Central Africa, Southern Africa, and East Africa). The country of South Africa is considered separately and independently from Sub-Saharan Africa due to large differences in research capacity and output between the two.

By many measures, SSA has made great strides in its research performance, doubling its overall research output over the past decade and significantly increasing its global article share (4). However, as past studies show, article growth in other countries and regions in the developing world – particular Asia – outpaced that of SSA in recent years (5).

Moreover, SSA researchers collaborate extensively with international colleagues. Between 2003 and 2012, international collaborations as a percentage of Southern Africa's total article output increased from 60.7% to 79.1% (Note 1). For Eastern Africa, international collaborations consistently comprised between 65% and 71% of the region's total output. Although West & Central African researchers collaborate with international colleagues at relatively lower levels (between 40% and 50% of its total research output came from international collaborations), those rates are still well above the world average.

However, echoing the findings of past studies (6), collaboration between different African regions remains low. To calculate the number of collaborations between East Africa and West & Central Africa, for example, we counted all publications in which at least one author holds an affiliation to an East African institution and another author holds an affiliation to a West & Central African institution. As Figure 1 shows, inter-regional collaborations constitute a small fraction of Sub-Saharan Africa's total international collaborations. In 2012, less than 6% of the region's total output resulted from inter-regional collaborations, while nearly 60% came from international collaborations. Moreover, more than half of those inter-regional collaborations were co-authored with colleagues from institutions in OECD countries (Note 2).

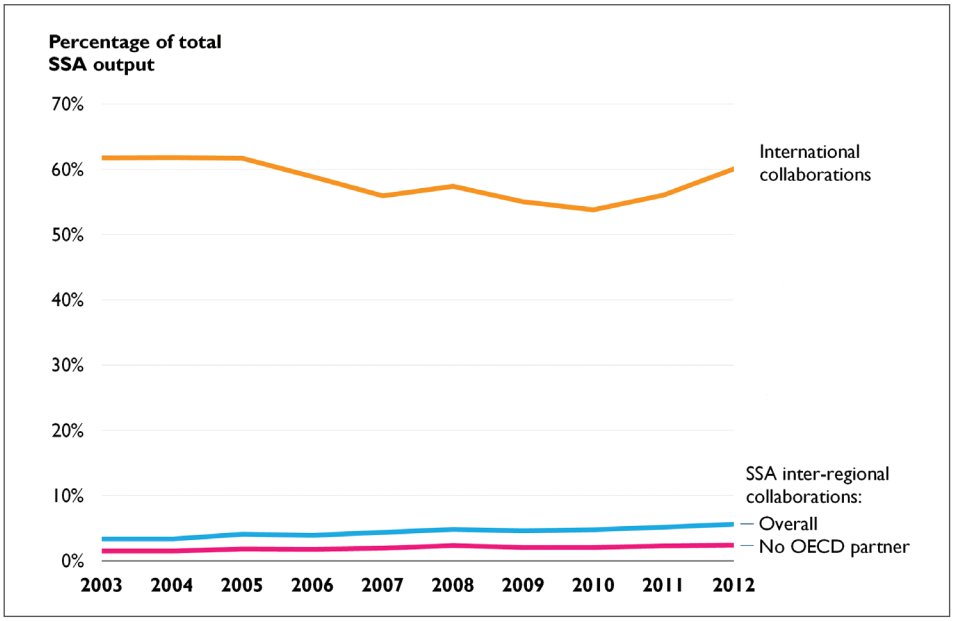

Figure 1: International and Inter-regional collaborations as percentage of Sub-Saharan African total research output, 2003-2012. Source: Scopus

Figure 2 displays the trends of inter-regional collaboration for specifically East Africa vis-à-vis the other regions and South Africa. The top three trend lines (those with stronger lines) correspond to all collaborations between East Africa (EA) and West & Central Africa (WC), Southern Africa (SA), and South Africa (ZA) respectively. The bottom three trend lines correspond specifically to collaborations in which no co-authors were affiliated with institutions in OECD countries.

Relative to East Africa's overall rates of international collaboration (which comprise over 60% of East Africa's total output), its level of inter-regional collaboration with other SSA regions is low, at about 2%. East Africa's collaborations with South Africa have increased considerably over time, from 3.9% in 2003 to 7.9% in 2012. This growth has been driven mostly through collaborations involving partners at institutions in developed countries. The annual growth rate of East Africa-South Africa collaborations with an additional OECD partner was 8.2%, compared to 3.3% for those collaborations without an OECD partner.

These patterns of low inter-regional collaboration rates (especially without another OECD country as a partner) hold for West & Central Africa as well. In 2012, collaborations between West & Central Africa and other SSA regions accounted for only 0.9% of the former's total research output.

Overall, the level of inter-regional collaborations in Sub-Saharan Africa has increased over the past decade, and this has been largely driven by collaborations involving OECD countries. On the one hand, this is welcome news, bolstering the subcontinent's research capacity. On the other hand, in order for the regions to further develop, there needs to be a greater focus on Africa-centric collaboration.

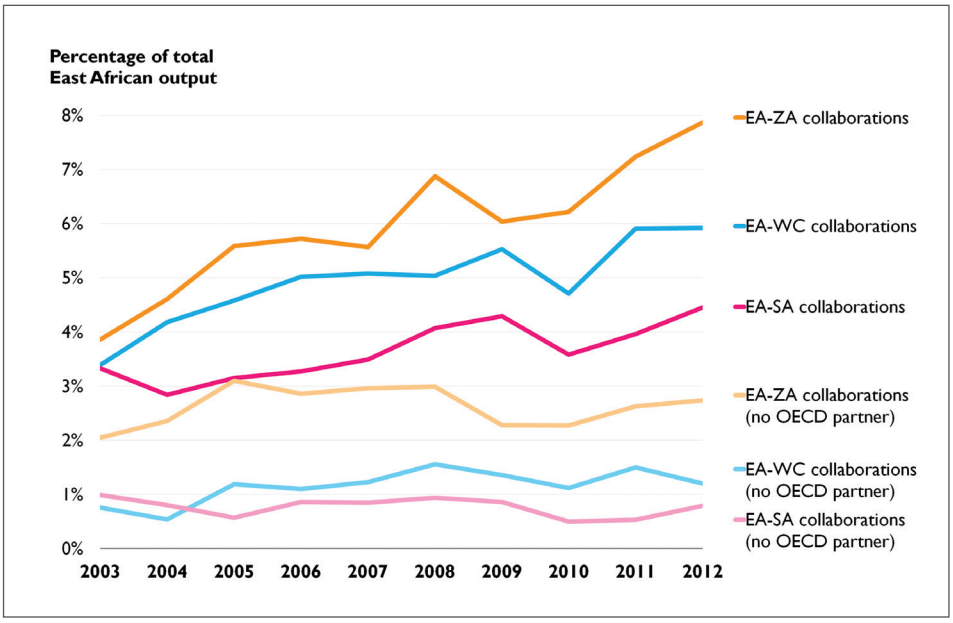

Figure 2: Different types of inter-regional collaborations as percentage of East Africa's total research output, 2003-2012. (EA = East Africa, WC = West & Central Africa, SA = Southern Africa, and ZA = South Africa). Source: Scopus

Notes

1. NB: this analysis defines international collaboration as multi-authored research outputs with authors affiliated with institutions in at least one region in SSA (West & Central Africa, Southern Africa, or East Africa) and elsewhere (including another SSA region).

2. OECD member countries include: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, and the United States.

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