SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS RESEARCH DEVELOPMENT IN SUB SAHARAN AFRICA

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Abstract- The problem for much of Sub Saharan Africa: a low quality of basic education in science and math, a higher education system skewed toward disciplines like the humanities and social sciences, and low levels of international funding that focus heavily on health and agricultural research.

Keywords- Engineering & Mathematics, STEM Research, Humanities and Social Sciences.

I. INTRODUCTION

Most research in Africa focuses on agriculture and the health sciences, as the continent is battling serious diseases like HIV/AIDS, malaria, and most recently the Ebola epidemic. But missing from the equation is research in the physical sciences and in the science, technology, engineering and math (STEM) based fields. STEM research makes up only 29% of Sub Saharan Africa's output, leaving a gap in many countries' ability to enhance sectors like energy, transport, light manufacturing and the extractive industries. Yet progress in these sectors could transform Africa's economies and help end poverty.

Body: The problem for much of Sub Saharan Africa: a low quality of basic education in science and math, a higher education system skewed toward disciplines like the humanities and social sciences, and low levels of international funding that focus heavily on health and agricultural research.

"Agriculture and health are certainly critical," says George Lan, Analytical Product Manager at Elsevier and the report's co-author. "What we are saying is that STEM research should also be a priority and that raising the capacity of institutions to produce valuable research in science and engineering could help transform Africa and generate broad gains to society. For instance, Africa has vast natural resources but too little capacity to take the lead on their extraction, production and sale."

In addition to benefitting countries and the region as a whole, improving the quality of higher education in STEM fields would benefit millions of youth entering the job market each year in Africa. More than 50 percent of Africa's population is below the age of 25. Given this youth bulge, more young people need to acquire training and expertise to prepare them for jobs in fields like ICT and agricultural sciences.

Some countries have made headway, according to the report. In Cameroon my country, the Millennium Science Initiative, a US$22 million investment aimed at producing more and better qualified science and engineering graduates, helped increase the number of Cameroonian researchers from 153 to 520.and the number of Master's students more than doubled.

The report finds that overall:

- Sub-Saharan Africa has greatly increased both the quantity and quality of its research output.
- SSA research output in Science, Technology, Engineering, and Mathematics (STEM) lags behind that of other subject areas significantly.
- SSA, especially East Africa and Southern Africa, relies heavily on international collaboration and visiting faculty for their research output.
- Research collaboration in Africa features a number of particular characteristics that are critical to understand in order to design successful policies.

It recommends the following:

- African governments and development partners accelerate support to research and research-based education in Africa to build the necessary human capital to further increase research on solving African problems by Africans for Africans.
- Accelerate and persistently pursue policies to improve the quality and quantity of teaching of STEM at all levels of the education system, including for research and research-based education.
- Systematically scale up support to STEM disciplines at the higher education and research level through, for example: bilateral university collaborations, post-graduate scholarships, and encouraging international firms to contribute to the development of STEM capacity in Africa.
- Coordinate higher education strategies with development needs and rigorously implement priorities through effective funding instruments.
- Continue international collaboration, and scale-up collaboration within STEM.
- Scale-up post-graduate education in Africa – possibly through regional collaboration.

- Continue scholarship funding for studies in Africa, possibly through "sandwich-programs" to ensure international exposure and include funding support to raise the quality of the African post-graduate program.

CONCLUSION

A government's ability to deliver important services to its people depends on its ability to uniquely identify them. An official identity is central to everything from health care and voting to social welfare and transport. It's vital to private enterprise as well, as financial institutions require client verification before disbursing a loan or making transfers.

But around the world, official identification remains an elusive goal: for example, in Sub-Saharan Africa, as many as 55 percent of people have no official identification record. This lack of identification severely hampers access to basic services including economic development, education, health and social welfare. National identification systems can use electronic and biometric technology to strengthen social welfare systems, healthcare, financial services and transport, as well as civil registration and vital statistics systems, including birth registration. Furthermore, government does not have to bear the costs of such systems alone: potential public-private partnerships can provide sustainability and scalability, bolster innovation and even produce revenue streams.

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