



TECHNOPOLICY BRIEF 9

# CAN AFRICA DEVELOP WITHOUT SCIENCE AND TECHNOLOGY?



Osita Ogbu

**AFRICAN TECHNOLOGY POLICY STUDIES NETWORK**





## ABOUT THE AFRICAN TECHNOLOGY POLICY STUDIES NETWORK

The African Technology Policy Studies Network (ATPS) is a multi-disciplinary network of researchers, policy makers, actors in the private sector and other end-users interested in generating, promoting and strengthening innovative science and technology policies in Africa. With a regional secretariat in Nairobi, the network operates through national chapters in 21 African countries, with an expansion plan to cover the entire sub-Saharan Africa.

One of the objectives of the network is to disseminate research results to policy makers, legislators, the organized private sector, civil society, mass media and farmers' groups through publications, dialogue and advocacy. Among its range of publications are the Working Paper Series (WPS), Research Paper Series (RPS), Special Paper Series (SPS) and the Technopolicy Briefs.

**Technopolicy Briefs Series are commissioned short papers written by experts from all over the world specifically to address current science and technology policy concerns and questions in Africa. The briefs are also summaries of technical papers published under our WPS, SPS and RPS written to highlight significant policy recommendations. These briefs are written with the busy policymakers and non-specialists in mind. The materials are designed for general readership and help advance the advocacy and knowledge brokerage roles of the ATPS.**

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## 1.0

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### Introduction

The 30<sup>th</sup> of June is Africa's science and technology day—the day when Africa and its people rededicate their efforts to scientific and technological development. This day was chosen at the 46<sup>th</sup> Ministerial Conference of the Organization of African Unity (OAU) on June 30, 1987. It was passed that this day was to be commemorated every year on 30<sup>th</sup> June. This is yet another day in the calendar of African policy makers, scientists, researchers and industrialists. In fact, it is a day that all of Africa should mark, not for what we have achieved in the field of science and technology but for what we have not achieved: the missed cues; the missed inventions; the lack of supporting environments for science and technology to thrive and our general lack of interest in science and technology. We are truly in the age of science with many breakthroughs and this day is likely to pass without any one making a note of it. Africans have surrendered to the rest of the world in science and technology. Globalization is driven by science and technology. For example, the Internet is facilitating rapid opening up and integration of national economies. It is the engine of economic liberalization and associated developments in international trade.

As consumers of science and technology we are fascinated by gadgets, the latest equipments, the speed of these equipments, tools as “toys” for accomplishing our daily chores. As fascinated as we may be about the tools and gadgets, we never stop to marvel and to understand the science behind the tools. Why are we so keen on the latest gadgets but not keen in improving our science and engineering schools? Why do we appreciate someone else's innovation and do very little to support our own innovators? Only 0.1% of patents registered in the United States Patent and Trademarks Office originate from sub-Saharan Africa.

We have never paused to ask why we score very high on the barometer of consumerism and low on the barometer of production. Even as we enjoy the benefits, we never pause to understand the threats these technologies pose to our way of life,





our culture and our relationships. Every new technology creates its own vacuum; its own set of issues. Are we simply going to be “standbyers” and consume what the enthusiastic technology-merchants dish to us? Or are we going to invest in research, build capacities that would enable us to “own” the technology, maximize the benefits while minimizing the problems and direct these technology to Africa’s real problems? Examples from the Newly Industrialized Countries (NICs) and from other emerging nations such as Brazil, China and India, where sustained economic growth have been achieved, indicate a strong determination to build indigenous science and technology capacities. It is evident from their R&D expenditures and the number of researchers per million inhabitants. The NICs spend US\$66 per inhabitant while China spends \$17, India \$11 and Africa \$6. Sub-Saharan Africa has 113 researchers per million population compared to China’s 454, India’s 151 and NICs’ 595. We should have these figures in mind as we chart visions and dreams of industrialization by 2010, 2020 etc.

There is a certain unwitting acceptance of technological determinism among Africans, certainly among many African policy makers. Their tendency is to treat technology as manna from heaven. That technology does not have a social context. And, that the impacts or effects of technology are determined by the technology itself. Yet we know that the direction of development and impacts of any given technology are shaped by social and economic forces embedded in well-crafted science and technology policies.





## 2.0

### Where did Africa go Wrong?

Science and technology are permanent lexicon in the African development discourse among our policy makers. No speech will be read and no plan would be promulgated without mention of the importance of science and technology in Africa's development. From the Lagos Plan of Action of 1980, the Kilimanjaro Declaration of 1987, the Khartoum Declaration of 1988, the Addis Ababa Declaration of 1998 and many others, it is clear that African political leaders, at least on paper, understand the importance of science and technology in the socio-economic development of the continent. The Lagos Plan of Action mandates that by 1990, every African country should be spending at least 1% of its Gross Domestic Product (GDP) on science and technology. No African country has met this target twelve years after the due date. The Addis Ababa Declaration captures and reaffirms the essence of all the other declarations thus: "aware of the considerable impact of the progress made in the field of science and technology and aware of the challenges facing our continent, we are determined to promote the development of science and technology and to share our experiences in this areas so as to meet these challenges". In our determination, what progressive steps have we taken to realize this loft declaration. A few institutions have been set up but none of these institutions will exist without donor financing in spite of their status as inter-governmental institutions. No meeting of researchers, and for that matter, no meeting of those charged with science and technology policy making can take place in Africa without donor financing. How determined are we then to exploit science and technology for Africa's development? Every meeting, every workshop and every conference charts "the way forward" and yet we are getting farther and farther away from the "promised land".

But where is the action? African governments have all created national science councils with lofty objectives but given them very little resources with which to champion their mandates. African Science and technology ministries are the least funded of all ministries and their mandates less clear. The notion of an institution to





coordinate science and technology research and institutions is not taken seriously. It is often a symbol of what could be, a statement of intent. No wonder the media leads in charging that the ministry of science and technology is a junior ministry whose Minister has a lower standing than his counterpart in say, the planning ministry. But how can this be? The ministry that is charged with the responsibility of generating new knowledge and in charting the science and technology development of a country be junior? Perceptions become reality and these impressions have persisted. The media must help us in reversing this impression. It must assume its role in accurately informing the public of the role of science and technology in improving societal welfare. It must help in building a strong popular constituency for science and technology; in demystifying science and technology and in putting pressure on governments to respect their commitments to promote science and technology for development. The media must not be associated with the simplistic, erroneous and dangerous notion that science and technology institutions are junior to their counterparts. On the contrary, they must be promoted as critical for change and development.

We have research institutes and laboratories that have not only become skeletons of their past but some are now mere consulting outfits. If there is no donor money, even salaries of the researchers will not be paid. Yes, the structural adjustment program did not help matters. But science and technology research and application have never seriously been a top priority item for African national governments. If it were, no one would convince them to do away with that which is of strategic national importance. Foreign governments and foreign companies make welcome noises about technology transfer? But who would ever freely give away his competitive advantage? What policies have we put in place to make sure that Foreign Direct Investment (FDI) make technological linkages to our local firms that would eventually propel autonomous technical change? Why are we always asking for money instead of knowledge from donors? With knowledge you create your own wealth, with aid you become dependent on foreigners.





### 3.0

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## What of the Brain Drain?

Africa's brain drain phenomenon has both pull and push factors that have contributed significantly to the poor state of science and technology in the region. Given poor political and economic conditions of most African states, many top scientists voted with their feet. Those who were trained abroad, sometimes at great expense to Africa, refused to return. Some developed countries also put in place policies to attract highly specialized Africans thereby depleting the meager stock. It is no longer useful to spend enormous amounts of energy lamenting this drain but to look for ways in which to benefit from the stock of knowledge which these Africans now possess. Permanent reverse brain drain is not likely to happen any time soon. Africa in partnership with those countries and institutions that benefit from Africa's scientists must put in place policies and mechanisms for exploiting, albeit in temporary periods, the skills and capabilities of these Africans in supporting indigenous Africa's science and technology capacities. The suggested details of this mechanism will be the subject of another article. But suffice it to say that this mechanism will involve a combination of change in attitude among our policy makers. They must provide a suitable domestic environment that not only encourages Africans abroad to freely give of themselves and share their knowledge during these short stays and exchanges; summer programs and sabbaticals but to establish strong national linkages that may eventually force them to return finally. This program can be financed through a strong partnership between Africa and the developed world.







## 4.0

### **Does the New Partnership for Africa's Development (NEPAD) Present any Opportunity?**

Africa has another opportunity through the NEPAD process to acquire, indigenize and sustain its science and technological capabilities. In fact, the entire NEPAD initiative should be knowledge-driven. The emphasis should be on science-led sustainable development that is rooted in African scholarship and global knowledge. The NEPAD initiative must champion and popularize science and technology as the real forces for socio-economic growth. The billions of dollars that the developed partners are likely to give in support of this initiative should not only be conditional on good governance, as important as this is, but on a clear program of science and technology-led development. It must be used to rebuild our science and engineering schools and infrastructure and to support knowledge networks and institutions in Africa that generate and broker science and technology knowledge. African problems: food insecurity; diseases; ignorance; supply constraints, lend themselves to science and technological solutions. Why not an innovation fund that encourages the work of scientists and engineers to be translated into goods and services. Why not an African Science and Technology University where African scholars both at home and abroad with their counterparts elsewhere who have expertise on African problems can collaborate and forge strong links with the private sector in search of science-based solutions to Africa's real problems. Africa is endowed with abundant natural resources but its need science and technology to unleash the potential: to sustainably utilize these resources to generate wealth and fight poverty. African policy makers should create the environment for innovation to thrive. Now is the time to go beyond rhetoric and declarations.





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For more information this series and ATPS Contact:



The Executive Director  
The African Technology Policy Studies Network  
3rd Floor, The Chancery, Valley Road  
P.O. Box 10081 00100 General Post Office  
Nairobi, Kenya



Tel: +254-20-2714092/168/498  
Fax: +254-20-2714028  
Email: [info@atpsnet.org](mailto:info@atpsnet.org)  
Website: <http://www.atpsnet.org>

