

TECHNOPOLICY BRIEF 8

HOW CAN SCIENCE AND
TECHNOLOGY POLICY AID NIGERIA'S
RECONSTRUCTION?

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AFRICAN TECHNOLOGY POLICY STUDIES NETWORK

Published by

The African Technology
Policy Studies Network,

P.O. Box 10081, 00100 General Post Office,
Nairobi, Kenya.

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Policy Studies Network (ATPS)

Printed by



ISBN:

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.

ATPS is supported by a growing number of donors including the International Development Research Centre (IDRC), the Carnegie Corporation of New York, the Rockefeller Foundation, the World Bank, the OPEC Fund, Ford Foundation, Coca-Cola Eastern Africa, the African Development Bank, and the Royal Dutch Government.

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1.0

Introduction

It gives me great pleasure today to address eminent and distinguished citizens of Nigeria, representatives of the people, you our law makers who have shown keen interest in the very dry subject of science and technology (SCIENCE AND TECHNOLOGY). I say dry because science is often seen as what scientist do and science and technology is what the Ministry of Science and Technology is set up to do. What has it got to do with legislators, the law makers and other policy makers far removed from the designated ministry? There are two assumptions. First is the belief in the centrality of science and technology in Nigeria's reconstruction and, second, the willingness to always engage in meaningful dialogue. These assumptions have solid basis. My task is to set the stage for the discussions by broadly outlining the key issues and drawing attention to the challenges that lay ahead as well set the stage for defining roles, individually, institutionally and collectively.

Is there need for fundamental reforms?

There are on-going discussions on how to deepen Nigeria's economic and system-wide reforms which would unleash the creative energy of the people and make for a more efficient delivery of public goods and an economy that is robust with all the attendant goodies, including ultimately poverty reduction in the country. Economic reforms are important and there is no question about that. A strong budgetary control, implementation and monitoring is important. The budget, the strongest most important instrument for national economic management, has been poorly articulated and implemented since the 1980s. Budgetary process and control of that process has become an arena for unnecessary vexed contestation for supremacy between the executive and legislature partly because there is no common understanding of the aspirations of the Nigerian people. Budgetary implementation and monitoring has been shoddy in most part.

2.0

What is Nigeria's Shared Vision? Do all the Segments of the Power Structure buy into this Shared Vision?

How can we prepare a budget that reflects this shared vision?

Very often we see budgetary allocations that have no bearing on reality. How can an agency of government, for instance, be allocated N100 million for its approved activities for a particular year and it ends up getting N5million at the end of the year that is after much lobbying with the associated costs. No serious budgetary process can allow this level of divergence.

I support a re-examination of the system that delivers Nigeria's public goods and services. Albert Einstein once said, that you cannot use the ideas that created the problems to solve the same problems. Think about it for a minute. If the foundation is weak, the structures you build on top, no matter how well crafted cannot survive the slightest storm. Nigeria must address the systemic weaknesses in the public sector before it can forge ahead. Reform may be a mild word; perhaps what we really need is to re-engineer the system. For many years, we have side-stepped the painful decision required to put an effective system in place. Regime after regime have tinkered on the margin with strong resistance from vested interests and compounded by political exigency. But one cannot wish the problems away. There is a need for an over-arching vision of where the country should be articulated by the President who should rally the legislators, the civil service, the governors and everyone else towards the attainment of this vision. The process of articulating this vision will, in part, determine the outcome. But the President has a duty and responsibility to lead this process with the strong support of legislators. But business as usual will not do. If it requires a reconfiguration or reconstruction of public institutions or the creation of new ones so be it. For the reform to work there must be various champions who are vigilant, placed strategically to ensure compliance and continues education.



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This is a necessary sacrifice and if the cross drops on your desk, please accept it as part of your contribution towards a stronger, more prosperous Nigeria. But like a shared vision, the sacrifice must be shared.

Is there need for strategic science and technology policies?

Reforms, as fundamental as they are, will not be enough to lift Nigeria from its present economic and social quagmire. The aim is promote and use science and technology policies to address Nigeria's poverty problems. There is abundant evidence that the material well being of the world in the last 200 years was driven by science and technology. The rich countries are the science and technology haves and the poorer countries are the science and technology have-nots. The rich countries are knowledge haves and the poor countries are knowledge have-nots. Rich countries have industries that are knowledge-intensive and the poor countries are still producing primary commodities. These are not profound statements. We have known them for many years. They are, in essence, self evident. What is problematic is that haven known these to be the truth; we have not paid serious attention in Africa and indeed in Nigeria on how to address our knowledge-gap and our science and technology- gap.

3.0

What is the Second Pillar of Reform Process?

The second pillar of the reform process is to restructure the Nigerian economy towards a knowledge driven economy. According to Professor Jeffrey Sachs, a leading American economist, "part of the failure of the structural adjustment program is that it failed to restructure African countries away from dependence on a narrow range of primary commodities". This was as a result of over emphasis on economic reforms without equal attention to selective science and technology policy and strategic industrial policies. In fact, selective science and technology policies as well as strategic industrial policies were deemed "anti-market". Interestingly enough, as Professor Sachs points out, the "free market United States spends about \$85billions per year of public funds in support of basic science, and applied research and development." Yet, the real structural adjustment should have used industrial and science and technology policies to foster greater manufacturing export, increasing the knowledge content of African exports and, hence, the value of such exports. Time and again, countries like Nigeria were told that they should continue to do what they do best: produce and export cocoa, palm oil, tea and coffee. This is nonsensical. But more importantly, to improve the productivity of these crops requires investment in science and technology and prosperity will not only require technical change in agriculture, it requires some strong agro-based industries. In Nigeria, over dependence on oil exports did not help matters. Nigeria' manufacturing value added as a percent of the Gross Domestic Product (GDP) in 2000 was 4% compared to Pakistan's 15%, South Africa's 19%, South Korea's 31% and China's 35%. At the same time, Nigeria's total expenditure on research and development as a percent of GDP in the late 1980s to early 1990s was on the average 0.1%, compared to China, 0.7%, Pakistan 0.9%, South Africa 1.0%, South Korea, 2.0%. It is no wonder that these countries in Asia are developing but Nigeria is not. There is clearly strong evidence that a country that invests in Research and Development (R&D) and education of its population will improve the knowledge content of its products provided it also invests in selective science and technology and industrial policies that



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constitute part of the enabling environment. Priority must be accorded to quality training of the work force, with greater attention paid to strengthening and improving the relevance of the engineering and science curriculum. Economic reform should not be allowed to "reform out" the engine of growth and prosperity; science and technology.

It must be recognized though that science and technology go beyond the realm of R&D. One, however, does not have to move from R&D to technology. To industrialize, to improve the knowledge content of our exports and close the knowledge-gap, we must be ready to borrow ideas and shop for technologies that already exist. But transfer of knowledge and technology cannot occur in a non-technical environment. One critical element in closing the knowledge-gap, in ensuring technology transfer is building the requisite human capital. There must be trained people to absorb and use this knowledge. Again, once the vision is defined, it is critical to build essential skills around a system of innovation that mobilizes resources towards the attainment of the stated goal.

4.0

What is the Role of the Government and Leaders?

Whether it is in using science to create technology that will address Nigeria's many problems or in shopping for, and using existing technologies, the role of the government is central. The government cannot afford to be passive; it must aggressively and purposefully seek to acquire this knowledge or technology and monitor its adoption and use. Leadership is so important that it often defines the technology trajectory of most countries. The champion could be the President or the President of the Senate or the Speaker of House of Representative or the Chairman of the House Committee on science and technology. Can you imagine what would happen to the science and technology of palm wine production if the President, through an act of crisis construction, announces that Nigeria would be the leading exporter of world-class palm wine by 2005. And that he and all his guests will from that date be served this palm wine at all official dinner, here and abroad. The President need not know the details of what is involved to achieve this goal. Clearly, the President does not simply announce this and rests, but demonstrates leadership by mobilizing resources around this project with strong personal interest and commitment through close supervision and monitoring. It is almost guaranteed that the Nigerian scientific community will rise to the occasion. When John F. Kennedy announced that America would land someone on the moon, it was an act of crisis construction. He had no idea what he was talking about but he had committed the nation and had to deliver. The American scientific community rallied to his stated goal and with his personal commitment, the feat was achieved. The leadership that the Prof Turner Isoun, the Nigerian Minister of Science and Technology is demonstrating through the launch of Nigeria's first satellite is not only commendable, it illustrates how personal commitment and a clear vision are vital for technological acquisition. This was not your usual "shop and deploy" strategy. Rather, a clear program of transfer of technology involving the training of at least 15 young Nigerian engineers from the construction of the satellite to deployment was instituted and agreed upon. Many of Nigeria's other technical and managerial agreements in



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many fields from communication, automotive manufacturing to oil exploration and mining beg this question. Why are there no benchmarks, milestones, and other measures for ensuring that Nigeria benefits from much more than taxes but from technical skills acquisition and diffusion of knowledge to the wider economy from joint ventures and other foreign direct investment arrangements? One wonders whether it is ignorance, corruption or simple negligence on the part of the leaders.

4.0

What is the Role of the Legislators?

The role of the legislators is not that different from those expected from the executive arm of the government. We expect the science and technology committees of the two chambers of the house to work together with their counterparts in industry and agriculture. With their counter parts in the industry committee, they should maintain oversight on technical agreements entered into by governments to ensure that they have monitorable science and technology benchmarks. They should use their power of summon to question key industry leaders on progress towards transfer of knowledge and skills especially in fields currently dominated by foreign investment and expertise. They should make creative proposals to the industry on how the industry and the country can have a win-win situation through a deliberate intensification of industry-economy wide linkages and appropriate beneficial legislation that are of keen interest to the industry. The legislative oversight must also extend to the government agencies, which must be accountable for the public resources they receive with clear benchmarks of deliverables.

In a declining revenue scenario such that Nigeria is facing, financing of science and technology will require an innovative mechanism that requires a mix of private, public and external resources. The legislators should have input in this. The role of the government in finding the appropriate financing mix is critical and will require strong cooperation between the legislative and the executive arm of the government. Treating science and technology as residuals in the budgetary process will not do. Once the vision has been articulated, resources including money, people, institutions, processes must be mobilized toward the attainment of this vision. Let us realize that Nigeria is poor not because of absence of capital but because of lack of organized knowledge, lack of appropriate and, I might add, homegrown, implementable policies and lack of will to implement and monitor these policies. It would be futile to use the same ideas and systems that created the problems to attempt to solve the same problems.

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The author is the Executive Director of African Technology Policy Studies Network (ATPS). This policy brief is based on a speech delivered at the Science and Technology Policy Seminar and Training in Abuja, Nigeria on September 29, 2003. Views expressed in this brief are personal.

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