

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KNUST) - KUMASI



KEYNOTE ADDRESS DELIVERED BY PROFESSOR KWASI KWAFO
ADARKWA, VICE-CHANCELLOR OF KNUST AT THE OFFICIAL LAUNCHING
OF THE SCIENCE AND TECHNOLOGY RESEARCH ENDOWMENT FUND
(STREFund) AS PART OF THE LAUNCHING OF THE 50TH ANNIVERSARY
CELEBRATION OF CSIR

HEAD OFFICE OF THE COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH (CSIR),
AGOSTINO NETO ROAD, AIRPORT RESIDENTIAL AREA, ACCRA

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1. SALUTATION

Mr. Chairman

Honourable Minister of Finance and Economic Planning

Honourable Minister of Education, Science and Sports

Honourable Deputy Ministers of Finance and Economic Planning

Honourable Deputy Minister of Education, Science and Sports

Chairman and Members of the Board of Trustees

Chief Director of the Ministry of Finance and Economic Planning

Chief Director of the Ministry of Education, Science and Sports

Cherished Scientists and Researchers

Distinguished Invited Guests

Ladies and gentlemen

2. INTRODUCTION

It gives me great pleasure to be called upon to deliver the keynote address to this august gathering at the launch of the Science and Technology Research Endowment Fund. Mr. Chairman, the usual excuse for all of our problems has always been inadequate budget or financial support. It is, therefore, very gratifying to witness today's launching ceremony which marks a shift in focus in our development effort by making funds available to support research and development in the fields of science and technology.

3. ROLE OF RESEARCH IN DEVELOPMENT

Mr. Chairman, our developmental problems of water supply, sanitation, malaria, road accidents, unemployment, inflation, food insecurity, access to health care and basic education, infant mortality and malnutrition, amongst others, have enjoyed considerable public discourse.

In recent times, the sky rocketing world oil prices and the impending food crisis which have the potential of throwing our economy out of gear with the fluctuating returns from our export of raw materials and agricultural products have compounded the problem. Fortunately for us, some other countries that were once beset with similar developmental challenges have been able to better their fortunes over the last few decades. These success stories of our compatriots which are substantially attributable to the conscious effort of applying science and technology provide us with an excellent model for our guidance.

Focused research or demand driven research has become an integral part of every development effort. In the world's globalised, hyper-competitive and knowledge-based economy, coupled with high level of obsolescence, research has assumed strategic dimensions in attempts to ensure an organisation's continuous competitiveness and solvency. As a result, companies have had to create Research and Development (R&D) Departments, solely tasked with the duty of continuously researching into and developing new services and products. Such research efforts are co-ordinated and focused into specific services and products, aimed at improving or consolidating competitive advantage.

Last week, I presented a paper at the Sister Cities Conference here in Accra and I made it quite clear that, globalisation and technological advancement have brought about the unfortunate phenomenon of a divided world with sharp differences between the rich and the poor. At present, there are serious problems of human existence such as food insecurity, high levels of maternal and infant mortality and environmental degradation in the developing world but as a result of parochial interests in global research effort, most of the global research and development activities are devoted to defence and military purposes as well as to the commercial interests of multinational corporations. As a result, very few of such research activities are of direct relevance to the conditions in countries of the developing world, especially, sub-Saharan Africa. But can we blame them when they are simply pursuing their interests?

As we may be aware, different economies require different sets of knowledge and research. Research, as the production of knowledge must include both discoveries and inventions and situation-specific enquiries in order to apply knowledge to development. Increasing the capacity of researchers and knowledge users is an essential element of research development in Ghana. We must therefore, carry our own burden by pursuing our own research agenda. The real challenge for us, therefore, would be the need to consciously ensure that our research

efforts concentrate on areas that are at the core of our development effort such as food production, diversification, preservation and processing, livestock production and processing, industrial and manufacturing technologies, software systems, environment and its protection/sustainability, energy production and distribution, infrastructure, access to health care and funding, HIV/AIDS, maternal and child mortality, as well as education provision; amongst others. We must also ensure that new technologies from our research efforts reach all those who really need them such as farmers, fishermen and rural dwellers by overcoming problems such as the lack of information in some cases and inability to pay for commercially developed technologies.

4. FUNDING OF RESEARCH - EXPERIENCE FROM ELSEWHERE AND THE CASE OF GHANA

Generally, Science and Technology (S&T) are critical drivers of economic development. Advances in science and technology have contributed significantly to improvements in the quality of life in both developed and developing countries (Juma and Yee-Cheong, 2005). The ability of a country to access, comprehend, select, adapt, and use scientific and technological knowledge is correlated with the well-being and quality of life of its people. Developed countries have recognised this and supported the development and application of S& T to their economies accordingly. The commitment is illustrated by the level of funding and the various structures that have been established to provide policy directions for S& T.

The United States lead in scientific investment in the world with Asia following closely. A UNESCO Report published in 2002 indicates that the world spent US\$830 billion on research and development in the public and private sectors, which represents 1.7 percent of global GDP or US\$134.40 per person. The US spent 3.1 percent of its GDP or US\$431.80 per person; Japan 3.1 percent or US\$836.6 per person; Israel 4.9 percent or US\$922.40 per person; China 1.2 percent or US\$56.20 per person; and India 0.7 percent or US\$19.20 per person.

In 2002, the US had 1.26 million researchers with R&D funding per researcher at US\$230,000. For the European Union, 1.11 million researchers or US\$177,000 per researcher; Japan 647,000 researchers or US\$165,000 per researcher; Israel 9,200 researchers or US\$661,000 per researcher; China 811,000 researchers or US\$89,000 per researcher; India 118,000 researchers or US\$177,000 per researcher. Comparable figures would have to be developed

for Ghana so we can begin to monitor our performance on an annual basis but they are certainly much lower than the above figures.

The United Kingdom (UK), under the government's strategy for S& T launched in 2002, planned to invest an additional £400 million per year by 2005-06 in science and engineering research programmes, and an extra £100 million annually on equipment and capital infrastructure. This showed the level of commitment of the UK government to improving her S& T capabilities and infrastructure. Currently, UK research funding as a percentage of gross domestic product (GDP) is 2.0 percent and it is required by European Union to reach 3.0 percent.

The situation in Ghana and other African countries where not much financial resources have been committed or earmarked for the development of S& T is very different. Most countries are unable to commit the minimum of 1.0 percent of their GDP to S& T development. This target was set in the 1970s, as part of the Lagos Plan of Action for Accelerated Development in Africa (NEPAD, 2003). Thus far, the average S&T funding Ghana has achieved is 0.3 percent of GDP; Nigeria is about 0.5 percent and 0.3 percent for Kenya. Our circumstances may be understandable but how long can we continue to behave this way, considering that science and technology are, indeed, the bedrock of our development efforts?

Over the years, R&D funding as a percentage of GDP has been erratic in Ghana. Ghana achieved the highest funding as a percentage of GDP in 1986. Generally R&D funding as percentage of GDP was relatively better from 1975 - 1986. Since then, the country's performance has slackened. Overall, support in terms of research funding has largely been inadequate. For example, in 2004, 81 percent of Ghana government's budgetary allocation to the CSIR was for personal emoluments with only 9 percent for research activities (Gogo, 2004). This pattern will certainly stall our progress in science and technology research.

For instance, in 2003, only 74 percent of budgetary allocation for that year was released. However, this was an improvement of between 15 - 23 percent over the previous years performance. In Ghana, the funding for these years was between 0.3 and 0.35 percent. Additionally, the S& T Policy of Ghana estimates that Government should spend 2 percent of GDP to achieve middle income status. This is almost seven times the current expenditure on science and technology which is 0.3 percent of GDP amounting to US\$30 million per annum which constitutes about a third of what Ghana pledged to invest in Lagos. In the UK, the private sector plays a key role in R&D funding. For example, in 2002, it contributed about 1.24

percent of GDP to R&D activities. There are no credible data on the level of contribution by the private sector in Ghana towards R&D activities. Such contributions, if any, might be very low, since some of the private companies still have a wrong notion that R&D funding is a public sector activity that must be supported by the government. There is the need for this perception to be eroded gradually through a more active interface with industry.

More importantly, most of the private companies are largely small scale and seem financially weak to adequately support R&D activities, but are likely to adopt and exploit scientific results to boost their economic activities if they come at little or no cost to them. Another disturbing phenomenon is that the few large companies, especially the multinationals, which could possibly support R&D in the country, mostly resort to laboratories of their parent companies for scientific support.

As has been alluded to earlier on in my presentation, science and technology are now basic components of human activity in almost every society. Providing backing for scientific research, stimulating technological innovation and launching or participating in wide-scale science and technology programmes should become the basis of subsequent development policy rationale. It is, therefore, very heart-warming that in the 2007 Budget Statement and Economic Policy, the Government of Ghana provided an amount of Five Hundred Thousand Ghana Cedis (GH¢500,000) as seed money for the establishment of an Endowment Fund solely for science and technology research in the country. This is a very good beginning but clearly, this needs to be reviewed upwards. For example, if this figure is even doubled, then our national research expenditure per person on science and technology will be about four pesewas per annum which is rather too low compared with comparable figures from elsewhere.

However, strategic and tangible interventions such as the Ghana Education Trust Fund (GETFund) set up to provide finance to supplement the provision of education at all levels and the Science and Technology Research Endowment Fund (STREFund) clearly shows the level of government's commitment but a lot more can be done. I would like to challenge the private sector to contribute their widow's might to augment efforts of government in the area of funding R&D in view of the massive benefits that could be derived from R&D.

5. CONGRATULATIONS TO CSIR

Mr. Chairman, permit me at this point to warmly congratulate the management and staff of the Council for Scientific and Industrial Research (CSIR) on the occasion of their 50th anniversary. As a manager of a public institution myself, I am not oblivious of the myriad of challenges the CSIR faces on a daily basis. To have blazed the trail up to this time with the quantum of scientific and industrial research output calls for celebration. As one of the country's major higher institutions of scientific and industrial research, you have over the years hatched and nurtured a lot of developmental ideas which have contributed significantly to the development of the nation such as:

- the development of hybrid root crops and grains;
- the development of Pozollana Cement from clay and bauxite waste;
- food preservation, development of food nutrients from local sources;
- success in the oil palm industry with both local and international impacts;
- the development of activated carbon for the gold and water purification industry which I am told is now ready for transfer;
- the development of a Soil Suitability Map for Ghana; and
- the development of lesser known timber species and other forest and non-forest based resources.

The myriad of solutions your research activities in the above selected examples and many other fields have contributed significantly to our development process and they are highly commendable. " therefore, on behalf of the KNUST warmly congratulate you for your achievements and it is our wish that, we all will continue to collaborate with CSIR for the betterment of Ghanaians.

Once I have been given this opportunity, let me share another thought with you. I believe that the CSIR is already collaborating with the public Universities in various ways but I expect that such collaborations can even be further enhanced and formalised to facilitate the training of master and doctoral students in science and technology-based programmes. This way, it may

be possible to use our graduate students to solve industrial problems and also mobilise more resources to fund our research projects. As research scientists, I trust that you will be able to design mechanisms for this to happen sooner than latter.

6. **CONCLUSION**

In conclusion Mr. Chairman, I would like to say that the development challenges confronting us as a nation call for a change in the prioritisation of science and technology in our national agenda. This means, we need to invest substantial resources to research into value addition, innovativeness and patent development together with other related activities all aimed at enhancing our national development efforts. This policy direction will provide one of the fastest platforms for our quest to become a middle income country and ultimately, into a developed economy. Science and technology will not make any headway without massive investments in the country's universities, research institutions and research infrastructure in general.

However, Mr. Chairman, while advocating for increased investment in S& T on the grounds that, investments in research and development are enough to promote economic growth, we should be careful in simply promoting policies that see S& T as drivers of social progress and economic development, rather than components of innovative programmes in which other factors, from regulatory policy to education and training, are just as important. Experience has shown that such investments are only part of the solutions. The real challenge lies in mainstreaming science and technology in all spheres of government policy and introducing educational, regulatory and fiscal measures to enable innovation to flourish across the economy. Until this happens, demand for more funds for science and technology research will inevitably be seen as little more than self-interested individuals pleading from the scientific community.

Thank you.