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AFRICAN MEDIA COVERAGE OF- SCIENCE AND TECHNOLOGY ISSUES: A NIGERIAN PERSPECTIVE

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Science and technology is a way of life. With science many drudgeries of living have been amply simplified and in many cases turned into pleasurable experience. The story has been told of the early man's struggle for survival against all odds. How he admirably conquered his environment by finding local solutions to the multitude of problems that confronted him in his day-to-day life. Thus, he made fire by striking two stones against one another, converted caves into habitable homes, used donkeys and camels for haulage, bow and arrow for defence as well as kill games to feed on. The modern man has shrunk the entire universe to what McLuhan referred to as a "Global Village" through the powerful instrument of communication technology. This is why the modern man can reach out for whatever he needs from across the continents of the world because he has information about where there are expertise and production of his needs. While this has made many nations more daring and result-oriented, others have been complacent and lazy, preferring to consume rather than produce. This is the major difference between the advanced nations and the developing ones in the third world for as Julius Nyerere aptly puts it "while others are going to the moon, we are trying to reach the village."

In order to appreciate the purpose of this paper, it is necessary to understand the concept of science and technology. The Nigeria National Policy on Science and Technology describes it as:

a way of doing things through the application of knowledge derived from systematic investigation of natural forces or materials. It leads to the development of processes and devices indispensable to the stable enhancement of the quality of life and human progress.

Nwakwo (1990) has been able to bring out three salient issues that science and technology attempts to engender in the context of development and modernity thus:

- a. Science and technology are concerned with systematic and replicable knowledge (experiences), skills, and artifacts needed by man for effective living in a particular time and situation;
- b. Science and technology derive from the ecology, environment and culture of those concerned; that is, they are not culturally, ecologically or experientially neutral; and
- c. Science and technology are necessarily interrelated, symbolic or reciprocal human activities.

In order words, the acquisition of technological know-how is not accidental but has to be rooted in the quest of man for excellence and the will to qualitatively improve his environment such that it responds to his needs.

The history of a conscious science and technology policy in Nigeria dates back to 1889 when the Botanical Research Institute, Lagos was established. An autonomous Science and Technology Ministry was established in 1979, only to be merged with the Ministry of Education in 1984. Finally, in 1985, the Ministry of Science and Technology was re-established and it has remained so till date. Within this period, over thirty-nine research and allied institutes have been established in Nigeria with several institutions of higher learning offering special courses in science and technology. At least, four universities in Nigeria are exclusively established for the study of science and technology.

The establishment of the National Council for Science and Technology during the third National Development Period (1981-1989), National Science and Technology Policy (1986), and National Science and Technology Fund in 1987 indicate the interest that various

governments in Nigeria have shown to the development of science and technology. How far reaching the effect of these institutions is, on national development would be a good subject of debate. Suffice it to say that with such an array of institutional, policy and logistic support, technological advancement ought to be a matter of time.

The failure of Nigeria to have a demonstrable influence among the developing nations of the world, in terms of concrete steps and achievements in the area of science and technology, can be seen as a direct consequence of planning and implementation indiscipline coupled with the dearth of political will on the part of the elite bureaucrats. Of the various reasons adduced for this sorry state of affairs, it does seem that the inability of the political actors to relate directly with the problems and aspirations of the rural majorities may have been responsible for the latter's continued neglect from the scheme of things. Simple and effective technologies that could have transformed the quality of lives of the ruralities are often jettisoned in favour of extremely complex and technical alternatives.

This has resulted in flagrant consumption of goods and services that we cannot produce and maintain thereby leaving many white-
elephant projects uncompleted. The state of technological transfer from the advanced nations can at best be a dream since technology can only be transferred within an equally high technology environment and not between a dissimilar science culture.

The stated objectives of Nigeria's National Policy on Science and Technology (1986) are instructive as well as illuminating on the intentions of Government to have an applicable technological policy which will harness the abundant human and material resources in the country. These objectives are aimed at:

- i. increasing public awareness in science and technology and their vital role in national development;
- ii. directing science and technology efforts along identified national goals;
- iii. promoting the translation of science and technology results, into actual goods and services;
- iv. creating, increasing and maintaining an indigenous science and technology base through research;
- v. motivating creative output in science and technology;

- vi. increasing and strengthening both the theoretical and practical scientific bases in the society; and
- vii. increasing and strengthening the technological base of the nation.

The policy objectives are emphatic on the role of the media in popularizing and giving prominence to science and technology issues. This paper is therefore aimed at seeing how this very important role of information gathering, processing and dissemination of science and technology is being tackled.

The Media Character in Africa

The Nigerian Press generally exhibits the characteristics of an urban-biased media that could be found all over the world. Also, the news coverage are usually political and entertainment oriented, and quite a large proportion of the available space is devoted to advertisements of products, social announcement and obituaries. All over Africa, the newspapers and magazines have become so thin in size and content that one can no longer justify their increasing cover price *vis-à-vis* the benefits derivable from such elitist-centred and ill-packaged media of communication. The situation is even more precarious as the middle-class are being forced to join the majority of low-income earners who have been effectively priced out of information. Nigeria alone has more than 125 newspapers, 36 news magazines, 32 television stations and 29 radio stations in the twenty-one federating states and the Federal Capital Territory, Abuja. Many more national, community and provincial newspapers are still on the drawing board and will hit the newsstand someday.

Part of the problem emanates from the non-availability of community-based vernacular newspapers. The few people that have ventured into tackling this very strategic area of communicating with the larger, neglected population have not received tangible support in terms of advertisements and general patronage.

After many years of independence, most African press still have no identity of theirs. Quite often, the media strives to be the darling of the Western press which they ape so effectively that some of their dailies could be mistaken as copies for a different audience other than Africans.

In a recent television interview, Ray Ekpu (1990) of *Newswatch Magazine* deposed that “the Nigerian media is urban oriented”. He opined that “the immediate audience of media outputs are the elite” which implies packaging the news to suit their taste. Also, the profit motif cannot be underestimated in the scheme of print journalism. Isoba (1967) in a study on *Uganda Argus* found out that:

political news has as much as 11.6% of total news story columns to only 1.0% of agriculture which scored the lowest. In other words, news stories varied from 71 for agriculture and science related issues to 2,089 for social engagement, education, recreation etc. Political pictures can even boast of more space than science.

Given the present circumstances in which publishing has received tremendous boost in the past few years, a qualitative, deliberate and purposeful attempt should be made at news packaging and delivery for strategic and needy areas such as science and technology. Before this, the print media should address the need to make their products relevant and accessible to their target audience.

Several attempts have been made in making information available to the ruralites through the use of local languages in publications such as *Gaskiya Tafi Kwabo* and *Amana* (Hausa), *Udoka* (Igbo) and *Isokan* (Yoruba) and a few others. Also, Rural Link publishes five language editions: English, Pidgin, Yoruba, Hausa and Igbo. *The Community Concord* and other community newspapers are ironically produced in English and one wonders the value of such publications, given the very low literacy rate in the country.

It is only when this situation has been redressed that these relevant media can then be used to propagate technological information for those who need them most. Perhaps for greater impact, the rural newspapers should go a step further in devising bolder type faces, increased use of pictures and simple graphics as a means of attracting and retaining the attention of the less-literate audience. It is through this type of innovative publishing that any talk of having consideration for the information need of the ruralites can be taken seriously. A pilot scheme of this system is ripe as this group (rural dwellers) continues to swell in number by the day. In language, style, presentation, content

and mode of circulation, therefore, an authentic African press is not yet here.

When the Western and neo-colonial vestiges are not at play, the ownership structure that allows subscribers/shareholders (mostly government and single proprietorship) unlimited meddling with the editorial policy of the publications, due to business, political and egocentric considerations are brought to bear on the over-riding interest of the hapless readers. Thus, more than 75 per cent of the content of newspapers are reports on government activities and its functionaries on the one hand and the 'great' speeches, philanthropic exercises, political and business exploits of their proprietors on the other.

As for radio and television, they are 100 per cent owned by Federal and State Governments. Apart from government news, they seldom have the means and logistic support to create and produce relevant science-based programmes that their non-literate audiences can relate to.

Electronic Media

Many studies have also confirmed the extensive use of the radio in extending development-oriented information to ruralites in low literate societies. Lynn (1984) gave the number of radio sets in Africa as 29,700,000, that is, an average of one radio set to sixteen people. Even if the actual number of radios that are currently available can be contested, radio remains the commonest, cheapest and easily accessible medium of communication to the non-literates as a result of its portability and alternative power source — batteries.

Thus, Nigeria like many developing nations, has made extensive use of the radio to communicate science and technology information to the masses particularly on agriculture, health, population and educational matters. Such information are usually disseminated to support on-going programmes mainly through extra-ministerial organizations such as the Directorate for Social Mobilisation (MAMSER), the Directorate for Food, Roads and Rural Infrastructure (DFRRI), National Directorate of Employment (NDE), People's Bank of Nigeria (PBN), and Better Life for Rural Dwellers (BLRD), all of which have direct influence on the lives of the people. These

broadcasts are aimed at qualitatively improving the lives of the people and their communities through adequate public enlightenment on socio-political matters, provision of essential social amenities that would transform the "rural-rural" to "rural-urban" centres. Small-scale and medium-sized industries are sited through the provision of various types of credit facilities requiring no collateral and stringent procedures of the existing formal, commercial, merchant and industrial-credit outlets in the rural areas.

The television, with the advantage of audio and visuals, has become so expensive that many rural people cannot afford it. Community efforts through organs such as MAMSER have helped to build viewing centers which work well but, much still needs to be done in order to reach more people in the rural areas. A reactivation of rural film shows would still be relevant in our effort to mobilize the entire population towards an improved, productive and modern life through the aid of technology. Whatever made a country like Nigeria jettison an effective and efficient communication channel as the popular and inexpensive rediffusion would continue to be an example of needless hurry into adopting modern technology. After all, we are yet to produce a single unit of radio, not to talk of television.

In the circumstance, most African media exhibit extra-continental characteristics that are totally irrelevant to their immediate cultural environment. This development has proved so disastrous to the extent that developing nations have called for the reversal of the imbalance in international news flow with particular reference to cultural, economic, political, social and technological dominance and dependence. Political independence and sovereignty has proved inadequate and incapable of solving underdevelopment problems unless it is backed by well articulated, development programmes that would guarantee qualitative and quantitative livelihood for all.

If the media have been unable to generate developmental news that could improve the lives of the people, it is because of the low level of importance attached to science and technology news coverage at that level. The reasons for this state of affairs has been attributed to the urban leaning of the media, inadequate and obsolete tools, lack of specialization (of reporters and the publications), ill-equipped personnel and dominance of political and social-oriented news over other vital areas.

The examples of African and Asian countries where multi-faceted approach to communication has been used for practical and result-oriented mobilisation for development include the Malawian three-prong approach of extension agents, training centers and mass media; Swaziland's national media production center where printed publications, graphics and audio visual materials including video tapes are distributed for use around the country-side; Seychelles, where all communication channels simultaneously relay the same story on radio, television and print; and the Philippines "Masagana 99" in which carefully prepared instructional comic book style publications, periodicals, newsletters, booklets and bulletins in the eight Filipino dialects (Atkins 1984) are disseminated to several thousands of farm families.

Science and Technology

Significant attempts have been made to acquire technological know-how in Nigeria, both at the official and individual levels. The Government has put in place several organizational structures: a science and technology policy, and by funding programmes to back up the desire and intent to become a recognizable force in the development of science and technology. The world economic recession and Structural Adjustment Programme (SAP) have both combined to make the development of local technology, a must, as industries are compelled to look inward for raw materials to source industrial inputs.

These efforts have not materialized because an intention is not the same as having the courage and will to make things happen. While the continued interest in the primacy of technological acquisition for national development and growth continues, much has not been achieved because of misplaced hope in technology purchase and transfer. Both are unrealistic and illusionary and can only lead to recurrent circle of dependency. This is why Osofisan (1990) in exasperation wondered why "we have brought nothing new to the world that is the product of our own originality or our own adventurousness, haven traversed all the continents of the world, read many book and learns so many things in the process". Onimode (1989) attributed our failure to achieve technological development to lack of "organizational technology." As he puts it:

non-possession of technological development in superlative terms as developed nations are not excuses for our inability to provide uninterrupted pipe borne water, electricity, telephone service, air transportation and even effective tax collection but a result of planning and implementation indiscipline.

The worldwide economic recession has accentuated the need for developing countries, particularly Nigeria, to look inwardly for raw materials to source the needed inputs for industrial operations. Increasingly, the industries in Nigeria have had to be more creative and innovative as a result of the Structural Adjustment Programme (SAP) and its other corollaries, which emphasise the need for self-reliance as a means of achieving true economic and political independence.

In 1989, Nigeria produced its first indigenous car through the Project Research Development Agency (PRODA), followed by two locally built ferries at NIGERDOCK Ship Yard in 1990. Before the PRODA car, there was the solar-energy-powered car produced by a private innovator at Egbufor Solar Energy Company and many other car prototypes and tricycles that are regularly on display at various Trade Fairs. Most of them are designed and constructed by individual innovators through research, hardwork, creativity and belief in the ability of Nigerians to produce their own vehicles. It is their hope that the Government and car manufacturing companies would be interested to mass produce them in the near future. This has constituted a challenge to the local vehicle assembly plants that are now trying to see how they can increase the local content of the vehicles they assemble to over 85 per cent. In the same vein, several machinery and tool parts are now manufactured locally and in just five years, most of them, such as brake pads, windscreen and several other parts are now competing favourably with the imported ones.

Science and technology has made great impact on agricultural practices in terms of fabricating, planting, harvesting, processing, storage equipment and general improvement in farm resource management. An impressive list of simple technologies for developing countries have been worked on extensively by the Developing Countries Farm Radio Network (DCFRN) over the years through printed scripts backed by recorded tapes that are broadcasted to several

millions of listeners in developing countries all over the world. Similarly, many research institutes in Nigeria such as the Agriculture, Extension and Research Liaison Services (AERLS) of various conventional universities, Universities of Science and Technology, Polytechnics and several agriculture-based research institutes now have many scientific aids and products to their credit. (Appendix A and B show the various categories of indigenous scientific innovations in recent times).

This notwithstanding, Nigeria and indeed all the countries in Africa are still very far from any concrete science and technological achievement to warrant any celebration. Japan and the 'tigers' of the Far East (Korea, etc) have demonstrated, beyond reasonable doubt, that technology is not the exclusive preserve of the caucasian race as their products now compete favourably with those of the Western advanced nations. In doing this, the creators of our technology must be guided by the principle of adaptability, relevance, serviceability and ruggedness so as to be relevant to the needs of the people. The peculiar circumstances of rural people that constitute more than 50% of our target audience must therefore guide the choice of device to be made for them. Olorunfemi (1989) prescribed the following essential parameters for technological devices/innovations for rural people. According to him, the technology should seek to:

- aid provision of infrastructural facilities;
- improve traditional farming methods;
- aid provision of portable water;
- improve crop processing, storage and utilization;
- reduce drudgery of household chores;
- enhance development of rural industries, agro, agro-allied and cultural industries such as spinning, weaving and pottery;
- harness rural resources in terms of raw materials;
- aid trading and marketing and enhance provision of medical care.

This practical and systematic way of identifying with the ruralites in their environment and attempting to promote positive technological development within this framework would have far-reaching consequences on the steady and better standard of living on the part of the rural people.

Media Coverage Survey

In order to provide an empirical base for this paper, a survey of seven Nigerian newspapers, four magazines (in May and June 1990) and the News Agency of Nigeria (NAN) reports (for April and May 1990) was undertaken. The survey was to determine the regularity, typology and orientation of science and technology news in the stated media. The major areas examined include: agriculture, health, education, innovations, research, environment, information, foreign technology and others. (See Table I in Appendix D)

There was no special reason for the choice of the newspapers other than that they were the available and complete sets for the entire duration of the study from April to June 1990. Of the seven newspapers, five had special pages designated for science and technology materials. The *Nigerian Tribune* publishes science and technology news under three columns: "Agriculture", "Popular Science" and "Science and Technology"; *Daily Times* has two columns: "Agro Times" and "Science and Technology"; *The Guardian*, *New Nigerian* and *Daily Sketch* have one page each: "Science Fair", "Window on the Country Side" and "Science Digest" respectively.

The four dominant subjects in these publications are agriculture, health, education and foreign technology. Agriculture led with 25.15 per cent of the total items analysed; health had 17.79 per cent, education had 11.66 per cent; and foreign technology and feature stories had 7.98 per cent of the listed items.

The lead by agriculture-related materials is not surprising since it is the one area that science and technology can really make appreciable impact on the social and economic life of the majority of people in Nigeria. If the aspect of agriculture can be revolutionized through appropriate use of science and technology, all other things like improved health and education will naturally follow.

Two distinctions were made in the materials — news and features. In general, there are more feature articles than news. This is a clear indication that most of what is published on science and technology are theoretical and exploratory while news of concrete breakthroughs are rare. Various studies have shown that the forty-three Research Institutes in Nigeria have developed several useful, adaptable, simple

and cost-effective technologies, which may continue to accumulate dust on laboratory shelves. (See Appendix A).

Reports on health, population, education and others follow the same pattern of news of government functionaries making policy statements, official visits and occasional public lectures. The feature stories are often long, technical and theoretical. However, there are seldom interviews and documentations on technological feats of individual and corporate bodies notably PRODA, FIIRO, IITA and the tertiary institutions. Other highlights of the content of the published science and technology issues randomly chosen include: an editorial on "Research Institutions and National Development" (*Concord*); features on "Technology Development and Agriculture" (*Daily Sketch*); "Kerosene Incubator for Local Farmers" (*Daily Times*); "Improving Post-Harvest Technology" (*Nigerian Tribune*); "VW Body + Datsun Motor" (*African Guardian*); "Sloppy Teachers, Obsolete Equipment Impair Science Education" (*The Guardian*), "Gas-powered Cars soon for Nigerian Motorists"; and Ata Orin; "Myths and Realities" (*Daily Times*).

Effective linkage between researchers and communicators is therefore lacking. The newspaper publications examined showed (7.98 per cent) research news in the study which indicate that research findings get occasional mention in the media.

Electronic Media

The radio and television programmes were closely monitored during the period of May and June. The radio was found to lean heavily on political and entertainment programmes. Being wholly owned by Government; the State and National radio stations give considerable airtime to science-oriented educational programmes. They are mostly in form of quiz, debates and outright teaching of some physical science subjects. More attention can then be said to be paid to science and technology that cannot be taught as is done in classrooms but learnt in the context of an enterprise. Agriculture, health, exhibitions and innovations are subjects of special programmes whenever the occasion demands. An inventor of locally made duplicating machine or traffic light do get interviewed during news magazine and other entertainment programmes. Also, Agriculture and Health have regular-schedule

programme slots in various languages and are often packaged to suit the various audiences to whom the information is directed.

As for the television, the audio and visual advantages have not been exploited to the fullest. Most television stations in Nigeria show feature films on highly sophisticated foreign technologies that have no direct bearing on the lives of the millions of viewers who can only watch them in admiration since they do not have the means and wherewithal to acquire and use such technologies. To compound issues, similar foreign films on science and technology are used as programme fillers at the expense of locally produced documentaries on science and technology because of the fear of giving such products and organizations free publicity and advertisement! In recent times, feeble but progressive attempts are being made to show the efforts of other African countries in using what they have to develop their own technology for improved standard of living — in the area of portable water, animal husbandry and developing building materials from local raw materials. Surely, any of such films from Africa and the developing nations around the world is preferable to the best hi-tech films from Europe since the latter will only fuel our appetite for goods we cannot produce and most times ill-afford. The only visible effort that the television has contributed to the development of science and technology is through its Instructional Television in which science subjects are taught as it is done in classrooms. The debates and quiz also follow the same pattern except that the visual advantages makes a world of difference. However, sponsored programmes such as the Junior Engineers Technicians and Scientists Project and a few others that television stations initiate, fund and sustain as a matter of policy are also noted. The findings of the study can be summarized thus:

- a. that science and technology information get limited mention in the print media compared to political and social contents;
- b. that the dominance of agriculture (25.15 per cent), health (17.79 per cent) and education (11.66 per cent) reflects the fact that science and technology's impact can be felt most in these areas;
- c. that the relatively low presence of news materials on innovations (9.39 per cent) and research (7.98 per cent) indicate the need for closer co-operation and co-ordinated efforts by researchers and communicators in order to get needed information to the end users;

- d. that only a few newspapers make conscious effort to create special pages for publishing science and technology materials as done by *Nigerian Tribune*, *Daily Times*, *The Guardian*, *New Nigerian* and *Daily Sketch*. The news magazines are general-interest oriented and quite elitist — science and technology news are published when they make big news such as when the Atlantic Ocean over-flowed its banks in Lagos, or when environmental pollution becomes a source of worry as a result of abuse;
- e. that foreign technologies have a generous attention in most of the papers. Even features and news that could be regarded as 'indigenous' are based on foreign models coupled with direct hi-tech reporting of the latest technology in developed countries;
- f. that most media houses have not recognized the primacy of science and technology information in the quest for national development to warrant their assigning specialists to write and edit such pages. From all indications, it is still regarded as an area that anybody can cover effectively;
- g. that both the radio and television stations are conscious of the need to devote considerable airtime to useable science and technology materials even though their efforts are grossly inadequate when compared with the generous attention to politics, music and entertainment programmes; that in both the print and electronic media, emphasis must shift from producing pedagogic science and technology programmes to those that would be tailored to suit the audience they are meant for in terms of content, style, timing, language and context.
- h. The media would be expected to strip their language bare of overbearing and complex technical terms such that the information being passed across could be easily understood.

Conclusion and Suggestions

It appears that Nigerian scientists like their counterparts in both developed and developing countries of the world are not lacking in ideas and quantifiable research breakthroughs. Rather, what has been militating against their zeal and achievements has been the neo-

colonial mentality that has taught the people not to see anything good in whatever is done locally and the insatiable appetite for foreign goods and services particularly the ones we cannot produce. Hence, rather than develop his own technology, he wants those of the advanced hi-tech nations transferred to him; instead of processing his raw materials to get finished products, he would rather export the raw materials which are processed abroad and are imported at exorbitant prices later. Consider for a moment the abundant yet unexploited natural resources God has bestowed on Nigeria and many other African countries. Is it not a miracle that we are able to survive in spite of the feeble attempts made so far at developing these latent economic resources? Nigerians over time have unwittingly developed a self-defeating attitude to local inventions and products, branding them as inferior and fake but forgetting that nobody achieves perfection except through perseverance and doggedness. After all, the perfect-finished goods from industrialised nations of today were once regarded as fake.

The notion of technology transfer has proved inadequate and unhelpful as a strategy for national technological development. This is because no sensible nation would agree to transfer the technology it suffered and invested so much resources on to a lazy and dreamy nation. If there is indeed any nation that would 'transfer' its technology, it must be the obsolete and dump materials that are transferred — that is what developing countries waiting for imported technology have been getting in exchange for their hard-earned resources. Hence, our industries are filled with archaic, obsolete, disused and partly refurbished machinery which never really operate profitably. The numerous uncompleted white elephant projects littering our cities are relics of unwise investment, based on expected technology transfer we do not have the competence to utilise profitably and maintain.

Surely, technology is to make people benefit from the abundance that modern science promises through positively improving man's environment and living standards. The so-called 'common man' or 'peasant farmer' as a member of the silent but active majority that hold the key to our continued existence, needs more sincere attention. He constitutes the primary baker of the national cake which the elite few share among themselves. Any meaningful and far-reaching

development, adaptation and use of technological innovation and information must therefore start with the ruralites. Such innovations and inventions must involve in-depth study of the environment, characteristics, literacy level, cultural practices and such other indices that would determine their acceptance or otherwise of the solutions being planned for, to find solutions to the drudgery of their occupations. It is important to recognize that if the ruralites have continued to use hoes and cutlasses over the years, it is a manifestation of the realities of life that confront them such as poverty, need to generate employment and slow learning pace, not necessarily because they do not deserve better and more appropriate methods that would enhance their productivity and save them the pains.

Adequate and appropriate information that are well packaged and delivered through the right channel would certainly go a long way in facilitating the right atmosphere for a better understanding and use of science and technology innovations in Nigeria and in other developing nations. A multi-faceted approach is therefore needed to alleviate the obstacle known as underdevelopment since science and technology generates more from less, thereby creating abundant wealth in the end.

Notwithstanding the problems confronting media organisations, challenges such as poor funding, logistics, generalist personnel, neo-colonial orientation, profit motif of sole proprietors, overbearing influence of government ownership, self-inflicted restrictions by media practitioners and general low morale occasioned by poor condition of service; pragmatic solution should be found to the neglect of majority of our people. Part of this solution can be located in dynamic, functional and development-oriented communication policy which would strive to uphold some of the observations and suggestions listed below. These include:

- a. Media organisations should assemble a team of specialist personnel that would effectively cover, science and technology bits, with emphasis on what Nigerians have been able to create on our own, how effectively we have copied technology to suit our local situations and how blueprints of such innovations and inventions could lead to their mass production;
- b. The need to avoid the use of negative and derogatory terminologies for farmers, artisans and petty traders. Such

- derogatory words include 'crude', 'backward', 'primitive', 'ignorant', 'bush man', ... It is not really true that these ruralites on whom we all depend for meaningful existence can be appropriately describe in these words. Non-acquisition of formal education does not translate to being 'ignorant' or 'primitive';
- c. A science and technology publication in preference to the general interest publications that now inundate our news stands should be encouraged in line with such publications as *Education Today*, *Agriculture Today*, *Rural Link* and other specialist publications;
 - d. The peer-information-sharing strategies perfected by the communicator should be extended to spread information to the rural areas through the active involvement of rural mobilization agencies such as MAMSER, DFRRI, Better Life Programme, Information Ministries and similar agencies in other African countries;
 - e. The educational system should be strengthened to emphasise meaningful science and technology education in all its ramifications; thus eliminating wastages and needless programmes that only serve to distract attention rather than promote the cause of a scientific culture among the youths;
 - f. The mass media should promote an aggressive and relevant policy of collaboration with scientists so that a regular and consistent media exposure is given to inventions, innovations and home-grown products and services;
 - g. The development of science and technology in fledging economies such as ours should emphasise appropriateness, serviceability and adaptability of local inventions;
 - h. The media would be expected to strip their language bare of overbearing and complex technical terms such that the information being passed could be easily understood;
 - i. developing simplified manual and liaison services to guarantee widespread dissemination and assimilation of research findings;
 - j. Initiating, promoting and sustaining programmes that will engender technology generation through copy technology by unpacking, analysing and adapting imported technology to complement technology development from local research activities;

- k. Given the abundant human and materials resources at our disposal, a conducive engineering infrastructure should be created to aid the attainment of technological development. Africans in foreign lands have excelled and made indelible contributions to world technology in places where infrastructure, finance and the enabling environment are provided;
- l. Journalists, scientists, researchers and their parent organisations should resolve to provide for a regular interchange of ideas and training of journalists who will ultimately serve as the outlet for their joint efforts. The Dakar-based Centre for Instruction in the Science and Techniques of Information (CESTI) established by the World Health Organisation (WHO) at the University of Dakar and the International Institute of Tropical Agriculture (IITA), Nigerian, supported Media Forum for Agriculture (FAMS) projects are good examples of institutional support;
- m. Operating well stocked and up-to-date science libraries not only in terms of books and journals but also for science education equipments;
- n. That various African continental bodies such as OAU, ECOWAS, ECA, IGOs and other non-government agencies should concretise their commitment to science and technology through a possible replication of the Developing Countries Farm Radio Network (DCFRN) project for African countries. It is an achievable goal if given adequate financial and moral commitment;
- o. Corporate bodies like the Central Bank, oil companies and multi-national conglomerates should endeavour to sponsor media programmes on science and technology. The Junior Engineers, Technicians and Scientists (JETS) debates, and exhibition of various of inventions on television are very good example of projects in need of adequate support. Science fairs as well as innovations and inventors exhibition should also enjoy sponsorships by the private and public sectors of the economy; and
- p. If science and technology is to be seen as crucial as policy makers oftentimes state at various official fora, there is need to actually back up such claims with adequate budgetary allocations with clearly defined and achievable set goals.

In order to achieve the aforementioned goals, only a symbiosis of all the available means of attaining positive and lasting technological growth through copying, transferring, buying and hijacking are the logical way forward for the developing countries of Africa. As things stand, no African country can lay claim to any technological development, if the spectacular feats of the Asian countries are anything to go by. Yet, the achievement of co-travellers in the coach of nations that are dubbed "developing" which aptly fit the giant strides made by the Asian countries as they compete with world-class economies in the development of their own technology, should serve as stimulus for a determined push from underdeveloped to that of developing countries of Africa.

The time for action is now as rhetorics have failed to perform the magic of turning the avoidable miserable and poverty-stricken life of the average African man. If we can feed ourselves, much of the problems facing millions of our people would have been drastically reduced. This is a challenge to the forth estate of the realm as the use and value people place on information would be directly proportional to the qualitative effect it has on their lives.

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