RESEARCH AND DEVELOPMENT STATISTICS

1. Introduction

In developed and developing countries alike, Governments are actively involved in the promotion of science and technology, through investments in research and development (R&D).

Historically, scientific research and development in Nigeria operated like any other department of a ministry. The exception was that the research departments were all headed by scientists and engineers when they were established in the 1940s.

In the 1960s, there were 14 of such research departments within the Ministry of Agriculture and Water Resources alone. The Ministry of Trade and Industries had two of such research department, while all others had only one each. They all worked independent of one another without any significant communication among them. Some of the early scientific research departments were the then West African Institute for Oil Palm Research [WAIFOR], now Nigerian Institute for Oil Palm Research [NIFOR]; and the West African Institute for Medical Research [WAIFMR], now Nigerian Institute for Medical Research [NIFMR]. They were created to serve the English-speaking parts of West Africa with each country so served contributing funds towards their operations.

The first effort towards coordinating scientific research in Nigeria was in 1970 with the establishment of the Nigerian Council for Science and Technology [NCST]. It was charged with the responsibility of ordering national priorities in scientific research and coordinating and supervising both basic and applied research activities in the country. Two other subsidiary councils viz the Agricultural Research Council and the Industrial Research Council were established in 1971, while the Medical Research Council and the Natural Science Research Council of Nigeria were created in 1972 and 1973 respectively to assist the NCST in specific areas. Throughout the six years of the existence of the NCST there were various complaints concerning its relevance to the economic development of Nigeria. Consequently, in 1973, virtually all the research departments in the various ministries were made autonomous research institutes. These research institutes are:

1. The Cocoa Research Institute of Nigeria [CRIN], Ibadan

2. Federal Institute of Industrial Research Oshodi (FIIRO), Lagos
3. The Forestry Research Institute of Nigeria [FRIN), Ibadan
4. Hydraulic Equipment Research Institute (HERI), Kano
5. Institute for Agriculture Research (IAR), Zaria
6. Institute for Agricultural Research and Training IAR&T, Ibadan
7. Lake Chad Research Institute (LCRI), Maiduguri
8. National Agricultural Extension and Research Liaison Service (NAERLS), Zaria
9. Natioal Animal Production Research Institute (NAPRI), Zaria
10. National Agency for Science and Engineering Infrastructure (NASENI), Lagos
11. Nigerian Building and Road Research Institute (NBRRI), Lagos
12. National Cereals Research Institute (NCRI), Badeggi, Niger State
13. National Centre for Genetic Research and Biotechnology (NCGRB)
14. National Institute for Freshwaters Fisheries Research (NIFFR), New Bussa
15. Nigeria Institute for Oil Palm Research (NIFOR), Benin city
16. National Horticulture Research Institute (NIHORT), Ibadan
17. National Institute for Medical Research NIMR), Yaba
18. Nigeria Institute for Oceanography and Marine Research (NIOMR), Lagos
19. National Institute for Pharmaceutical Research and Development (NIPRD), Abuja
20. Nigeria Institute for Trypanosomasis Research (NITR), Kaduna
21. National Root Crops Research Institute (NRCRI),Umudike, Abia state
22. National Research Institute for Chemical Technology (NRICT), Zaria
23. Nigerian Stored Products Research Institute (NSPRI), Yaba
24. National Veterinary Research Institute (NVRI), Vom, Jos
25. Projects Development Institute (PDI), Enugu
26. Rubber Research Institute of Nigeria (RRIN), Benin City

The most radical change was the creation of the National Science and Technology Development Agency [NSTDA] in January 1977 to replace the NCST. It was to be responsible for the promotion and development of science and technology "including initiation of policy in relation to scientific research and technology". Specifically, the body was given full control of all the Government-owned research institutes in the country.

In response to the general call for the review of the national machinery for managing science and technology (to ensure that scientific research was made relevant to the economic development in

Nigeria), a full-fledged Ministry of Science & Technology to be headed by a Minister of Cabinet rank and with a Scientist as its first Permanent Secretary, was established in 1980. It took over the responsibilities of the NSTDA, with five professional departments:

(i) Science and Technology Planning Department.
(ii) Agricultural Science Department.
(iii) Industrial Science and Energy Department.
(iv) Medical and Natural Science Department.
(v) Technology Transfer and Science Education Department.

The functions of the abolished Research Councils were transferred to appropriate departments which were now to advise the Minister as well as initiate and implement technology innovation policies appropriate to the sectors and sub-sectors in their charge. Each research institute retained its Governing Board, which was expected to screen proposals and budgets before they got to the ministry.

In 1984, the Federal Ministry of Science & Technology was merged with the Federal Ministry of Education to form a Ministry of Education, Science & Technology, with the Science and Technology arm coordinated by a Director who was below the rank of Permanent Secretary. Towards the end of 1985, the Ministry of Science and Technology once again regained its autonomy with its own Permanent Secretary. However, in 1992, its identity became subsumed in the Ministry of Industry & Technology. A new agency called National Agency for Science and Engineering Infrastructure [NASENI] was established. The research institutes in the defunct Ministry of Science and Technology were transferred to their sectoral ministries. By 1993, the Ministry of Science and Technology was reactivated with a Secretary of cabinet minister rank as its chief executive with the following mandates:

[i] Promotion of Scientific and Technological Research.
[ii] Promotion of Agricultural, Industrial, Medical, Road, Building, Energy Research and Basic Sciences Research.
[iii] Promotion and Administration of Technology Transfer programmes.
[iv] Coordination and issuance of policy guidelines to all research institutes in Nigeria. It is also to approve the institutes' research programmes and sanction their capital and recurrent expenditures.
[v] Advising the President on the appointment of the governing council/board for each institute.

As at today, there is full-fledged Ministry of Science & Technology headed by a Minister of Cabinet rank.

2. Coverage, Scope, Uses and Users of Research and Development Statistics

The sub-sector is coded '73' in the International Standard Industrial Classification [ISIC]. In Nigeria, relevant data are collected from various research institutes, universities and polytechnics. The supervising Line Ministry of Science & Technology coordinates the collection and management of these data.

Research and development statistics are national in outlook and used for planning and investment decision making. The users of these statistics include the research institutes, universities, polytechnics, National Planning Commission, private investors and the Presidency.

3. Sources and Methods of Compiling Research and Development Statistics

There are two major categories of data that are gathered by the research institutes, universities and polytechnics. The scientific experiments undertaken by research institutes as major data collection do not fall in the purview of time-series database which form the bedrock of decision making process. The other form of data gathering which is administrative is useful. These administrative statistics cover the following areas:

- Value of Research and Development Projects funded by type of Funding Agency and Subject Area.
- Number of scientists on ground — male/female.
- Number of technologists on ground — male/female.
- Number of supporting staff on ground — male/female.
- Value of scientific output produced and sold.
- Number of research trials undertaken.
- Number of workshops attended by male/female scientists.
- Number of workshops attended by male/female technologists.
- Number of workshops attended by male/female supporting staff.
- Total expenditue on scientific equipment.

4. Current Methods of Data Storage and Dissemination

Research and Development activities are supervised by several line ministries, among which are the Federal Ministries of Industry, Health, Agriculture & Rural Development and Science & Technology. In order to coordinate the activities of the research institutes, the Federal Ministry of Science & Technology operates a Sectional Data Bank [SDB] at the Raw Materials Research and Development Council [RMRDC]. Most of the data are available in hard copy and electronics automation which are circulated free. Since the NBS and the Federal

Ministry of Science & Technology have adopted a standardised coding system as recorded in the International Standard Industrial Classification '73', electronics transfer data will be easy between the two agencies.

5. NBS Data Base Coding System for Research and Development

Statistics

The structure of the data into Division, Item and Detail follows the conventional coding of the International Standard Industrial Classification [ISIC], revision 3 of 1988. The ISIC division codes have been allocated on the basis of exact correspondence in respect of most sectors and sub-sectors.

Research and Development is assigned Division '73'; the Division-Item-Details [DID] coding system is the format for coding National Bureau of Statistics [NBS] datasets. The Item under each Division is the elementary entity or group of elementary entities about which statistical data are gathered. For example, in this dataset the Division is '73', '7302' is the first Item, while '73020' is the first detail

Generally, some NBS's datasets are 6-digit codes, but 'Research and Development' has a 5-digit code for variables as stated above. The first 2 digits are used to identify a particular division [that is, 73], the first 4 for a particular item under the division [that is, 7302], while the 5th digit is used to identify detail [that is, 73020].

6. CONCLUDING REMARKS

The Raw Materials Research and Development Council [RMRDC] should strengthen its capabilities for tracking data from various Research Institutes. The present arrangement for data collection from these institutes is not comprehensive enough to achieve satisfactory results.

As suggested in this document, if coordinating agencies work closely with the various research centres, we can look forward to adequate data on Research and Development in Nigeria. If the strategies suggested in this document are adopted by the relevant co-ordinating agencies, working in close collaboration with various research centres, adequate data on the different areas of research and development will be assembled at regular intervals for the country.