

WATER RESOURCE DEVELOPMENT STATISTICS

1. Introduction

The development of the rural sector has always attracted the attention of successive Nigerian Governments. Programmes and/or agencies such as Operation Feed the Nation (OFN), Green Revolution, Directorate of Food, Roads and Rural Infrastructure (DIFRRI), Better Life for Rural Women and Family Support Programme (FSP) have all been directed primarily towards rural development. The need to reduce rural-urban drift by improving living conditions and increasing employment opportunities in the rural areas is a major reason for the attention usually given to rural development. The renewed effort is also to reduce the current level of urban congestion and its attendant socio-economic problems.

In this regard, over the last fifteen years or so, Government has focused attention on the proper management and development of the nation's water resources. The objectives are to facilitate the use of the abundant water resources in the country for the provision of hydro-electric power (HEP) and raw water for domestic and industrial uses, to control erosion and prevent floods, for irrigation purposes and the development of Artisanal fishing activity. The last two identified reasons are the most relevant in rural development and largely explain why these programmes are integrated.

Until 1992, the Ministry of Water Resources was part and parcel of the Federal Ministry of Agriculture. However, since its establishment, it has expanded its activities in the various areas of water resources exploration and utilisation. Water resources represent an important parameter of the environment on which the nation depends, especially for agricultural and industrial purposes. It also has physical environmental effects as it has definite impacts on micro-climatic characteristics. Similarly, its socio-economic importance cannot be overemphasised particularly in the areas of fishing and employment, domestic water supply and generation of hydro electric power [HEP]. Rural development is one of the main foci of Agricultural Development Programme under the control of Federal Department of Agriculture.

2. Coverage, Scope, Uses and Users of Water Resources and Rural Development Statistics

Statistics on water resources and rural development (WRRD) include time-series observation on the activities and outputs of the rural development programmes, the hydrological areas and stations and the river basin development authorities. The sub-sectors of the WRRD sector in respect of which data are collected are:

- [i] agricultural and Artisinal fishing activities.
- [ii] rural infrastructure, especially roads and water supply.
- [iii] hydrology, surface water discharge and storage.
- [iv] hydro-geology, underground water systems.
- [v] meteorology: rainfall, evaporation humidity, temperature, windspeed, etc.

The observations refer to entire basins or part thereof, hydrological areas or individual stations. Information on WRRD is collected from observation stations located at various points along river channels and within the areas of influence of major earth dams. For the purpose of comparison, information on rural economic activities and rural infrastructure will be aggregated on Local Government and State bases.

Water resources and rural development statistics are useful in monitoring the impact of rural development programmes on the quality of life of the expected beneficiaries. They are also useful in determining the success or otherwise of the implementations of development programmes initiated by the Governments or donor agencies at the grassroots. Also, most of the indices of the quality of life in the rural areas require data on WRRD as inputs for their computations. Time-series of hydrological observations are useful for early warning and precautionary purposes in respect of droughts or floods. They are invaluable for planning efficient irrigation scheduling and water supplies for domestic and industrial uses, particularly during the dry periods of the year.

The users and potential users of Water Resources and Rural Development (WRRD) statistics include Government development agencies, Agricultural Development Projects (ADPs), Research Institutes and international organisations.

3. Sources and Methods of Compiling Water Resources and Rural Development Statistics

As is the case with most datasets, there are two sources of WRRD statistics in Nigeria. These are routine administrative sources and

surveys & censuses. Most of the data on water resources are collected through censuses and surveys, while the rural development aspect of the data can come from both administrative sources as well as censuses and surveys. In this sector, data generated as by-products of routine administration or what can be described as operational data are generally more important than survey/census data.

The National Water Resources Institute (NWRI) is a major source of data on water resources. It is a parastatal under the Ministry of Water Resources. Their data bank collects, stores and retrieves hydro-meteorological data for planning purposes. The relevant mandate of the Institute includes:

- the harmonisation of all systems of water data collection in the country.
- designing and development of a data bank system for the water sector across all primary and secondary stations in Nigeria.

The main tasks include system design, collection, validation, coding and entry of data, the development of a reporting system on the hydrology, hydro-geology and meteorology of Nigeria's eight hydrological areas and stations.

The 12 River Basin Development Authorities are also sources of information on land acquisition, cultivation and irrigation, dam construction and management, potable water supply systems, agricultural cooperative societies and fresh water fish production in the country.

The Local Government authorities, particularly in the rural settings in the country, are also sources of information on the development of infrastructures such as roads, boreholes and tube wells.

Other sources of statistical information on WRRD have been discussed elsewhere in this series on Sources and Methods of Compiling Nigeria's Official Statistics. On crops and livestock, these are the National Bureau of Statistics [NBS], Federal Ministry of Agriculture & Rural Development, Federal Departments of Livestock and Fisheries and State Governments on the relevant subjects-matter. Most of these sources produce routine or administrative data. The only major producer of survey/census data is the National Bureau of Statistics (NBSA).

Most of the information on rural development activities are expected to be reported by the various sources on an annual basis for the appropriate entities. These can be aggregated over localities, Local

Government Areas and even States, except where the dimensions are rates or indices in which some form of averaging have to be adopted.

A substantial proportion of the hydro-geological and meteorological data produced by the hydrological areas and river basin authorities in their various stations are recorded daily, and in some cases more than once daily. For such observations, appropriate averages or maxima and minima have to be computed to reduce the volume of data to be stored. Also, since the observations are station-specific, there is the need to develop appropriate reporting systems that will be used in computing hydrological area- or river basin- specific observations.

4. Current Methods of Data Storage and Dissemination

The items of data belonging to the division on WRRD sector cut across several divisions. Another of their peculiarities is that a high proportion of the sets cannot be reported on National, State and even Local Government basis. The third peculiarity of the sector is that both APMEU (through which the data of ADPs are disseminated) and the Ministry of Water Resources have computerised their items of data.

In spite of the last observation, there is no comprehensive listing of the items of data belonging to WRRD data set. There is, therefore, no database for WRRD data. Since the items of data on agricultural activities and rural infrastructural facilities overlap with the data sets on crops, livestock, fishing, water supply and building and construction, it seems logical that only the water resources database consisting of statistical information on hydrological areas and river basins needs be developed here.

Other items of data on agricultural activities and rural infrastructure should be incorporated into the databases of their appropriate subject matter data sets from which they can be retrieved and used for the study of WRRD when necessary. The following section provides a description of how the items in the NBS Data Base on the WRRD dataset are structured:

5. NBS Data Base Coding for Water Resources and Rural Development

Attempts have been made to follow the coding system used in the International Standard Industrial Classification [ISIC], revision 3 of 1988. Thus, the division code or the first two digits of the code assigned a six-code variable (which identifies the division to which the dataset belongs) is wherever feasible taken from the ISIC. This ISIC

division codes have been allocated on the basis of exact correspondence in respect of most sectors, except where proximity to the nearest closely-related ISIC codes were the basis for the allocation. Going by this system, 'Water Resources' has code 04, with a single division, expanded to include the 12 river basins.

While efforts have been made to ensure that the division code or the first two digits of the code assigned to each variable conforms as much as possible to the ISIC, the items and detail codes which form the last four digits of the code assigned to each variable are arbitrarily determined. The Division-Item-Detail [DID] coding system is the basis for coding NBS's datasets. The item under each dataset is the elementary entity or group of elementary entities [Multiple-item cases] about which statistical data are gathered, for example, in the forestry and wildlife division. "Output of Selected Forest Products in Nigeria", coded 0201, is an item with 10 details.

Generally, the National Bureau of Statistics is using a six-digit-code for attributes [variables]. The first two digits are used to identify a particular division. The first four digits are used for a particular item under the division, where the first two digits are the division code and the last two the item code under the division. Where an item is repeated in two or more divisions, that item is assigned the same 3rd and 4th digit codes.

In coding the details, six digits are used to identify a particular attribute [variable] as follows: the first two digits for the division, the next two for the item under that division and the last two [that is, the 5th and 6th digits] for the detail [variable] under the division and the item.

At present, the NBS specifically included in its database for WRRD, the activities of the River Basin Development Authorities (RBDAs). Currently, there are 44 details in respect of the RBDAs. The 12 of them capture the activities of the former 8 hydrological areas, but serve as the items for the WRRD data, with their statutory functions and activities used as details for the NBS data base.

Based on the coding system, the NBS data structure for Water Resources and Rural Development statistics is as shown below:

6. CONCLUDING REMARKS

The relocation of the Water Resources Data Bank Project from the Institute to the Ministry would require a programme of capacity development at the Ministry, to enable it cope effectively with the tasks of designing and implementing the relevant database. With these in place, a reliable level of continuity can be achieved.

It is pertinent to observe here that though the Ministry of Water Resources reserves the right to house its data bank in its PRS Department, the semi-academic environment of the National Water Resources Institute appears to be more ideal for coordinating the specialised activities of the hydrological areas and their stations.

Also, it is important to note that the RBDAs should intensify their efforts in the area of inputs distribution to enhance rural development and the overall fulfilment of their mandates.