

# **7. Preliminary Indications of Research Needs for Improved Irrigation Management of River Basin Development Authority Projects in Nigeria**

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## **7.1 INTRODUCTION**

In order to identify the general trend of research needs of the River Basin Development Authorities (RBDAs) projects, questionnaires were distributed to the 11 RBDAs. At the end of the preparation of this short report, 6 questionnaires were returned to the researchers. They are grateful to those Managing Directors who have taken time to fill in the valuable information about the RBDAs.

The questionnaires were divided into eight different components. These components are interrelated and interdependent for better performance and management of irrigation systems. These components are:

- a. Performance improvement of irrigation systems,
- b. Management of water resources at regional level,
- c. Socio-economic aspects of RBDA projects,
- d. Organizational improvement activities,
- e. Farmer participation in irrigation management,
- f. Interaction with Research Institutions, and
- g. Research priority list

It is not claimed here that all the answers have been found for the problems and issues encountered by these RBDAs. This presentation based on the questionnaires returned is only a humble attempt to present the trend at the RBDAs in those interdependent and interrelated components.

## **7.2 ANALYSIS AND DISCUSSION OF THE RESPONSES FROM THE QUESTIONNAIRES**

### **a. Performance Improvement of Irrigation Systems**

Four (4) out of 6 RBDAs reported that they have monitoring systems in place. However, water measurement activity against the design capacity is reported only by 2 out of 6 RBDAs. Crop coverage survey is done by all RBDAs. The knowledge of productivity difference between head end and tail end is reported only by one RBDA out of 6. No substantial effort was undertaken to correct those differences between the head end and tail end of the system. This issue raised the question of equity, timely delivery of water and efficiency of the system.

In response to the question of under utilization of the system, the general reasons given include lack of funds, manpower shortage and poor response of the farmers.

In relation to performance improvement, a question was asked whether RBDAs have formulated indicators to evaluate the performance of their systems. Four out of 6 responded that no indicators have been prepared. One system suggested that it is using crop yields as one of the indicators to evaluate the performance of the system. However, caution is necessary when crop yield is taken as one of the indicators. Several complications are involved in crop yield surveys and their interpretations. Four out of 6 did not have socio-economic impact survey. Two of them indicated positive results of socio-economic impact surveys.

### **b. Management of Water Resources at Regional Level**

Another set of questions posed by the questionnaire was in relation to the regional nature of RBDAs. In response to questions regarding regional plans for integrated management of water resources, three RBDAs suggested that they have integrated management of water resources. These three RBDAs have established mechanism for conflict resolution and resource utilization through coordination committees of relevant agencies and coordination with state agencies as well.

Water losses in irrigation systems is also identified as one of the major problems by five RBDAs. It is reported that the problem was prevented by the physical improvement of the system and enlightenment of the farmer about the utility of water.

### **c. Socio-economic aspects**

The RBDAs are not only technical agencies, but they also have to perform several socio-economic activities as well. In this respect, attempts were made to find out the socio-economic activities of the RBDAs. Four out of 6 RBDAs responded that they

have economists and social scientists among their staff. Four out of 6 mentioned that they undertake rigorous economic analysis before investment. Five out of 6 RBDAs indicated that they have consultants for such jobs. Three RBDAs reported that they have developed an in-house capacity for such socio-economic analysis.

#### **d. Organizational Improvement**

The improvement of any organization is and should be a continuous process. In this regard, a question was asked whether there has been any reorganization of the RBDA management structure after the introduction of commercialization and privatization policy. Five out of 6 reported that they underwent a reorganization process. When asked to identify three prominent areas where changes have taken place, they identified staff reorganization, change in the composition of the board and better service condition for the staff. Other changes made include project priority setting, giving autonomy to units, review of tariffs and strengthening of commercial services.

The commercialization and privatization policy involves the issue of resource mobilization. Questions were asked about the possibility of cost recovery in the system. Five out of 6 suggested that it is possible to have cost recovery. Only one out of 6 responded negatively. They were also asked whether their organization should be centralized in future. Three out of 6 expressed the belief that centralized system could be effective. Four out of 6 supported financial autonomy to individual systems whereas only one out of 6 moved in the direction of giving financial autonomy to individual systems.

#### **e. Farmer Participation in Irrigation Management**

The new reorganization of RBDAs and farmer participation in irrigation systems are closely related. Five out of 6 reported that they have been promoting farmer participation, and 3 out of 6 have Water Users Associations (WUAs) as well as units to look after such associations. Three RBDAs have yet to set up WUAs as well as the organizational support for them. Three RBDAs have given some maintenance responsibility to the WUAs while two out of 6 are trying to legitimize the activity of WUAs under the authority of RBDAs. Three RBDAs have not yet given any thought to legal status of WUAs. It is interesting to note that 5 out of 6 RBDAs reported that they have assigned staff to take care of WUA activities.

#### **f. Interaction with Research Institutes**

The improvement of irrigation systems takes place through interaction between the implementers and research institutes. Two questions were asked whether they have been utilizing the research results in improving the performance of their systems, and whether they have made requests to research institutes to investigate their problems.

Four out of 6 indicated that they have been using the research results of the research institutes and 4 out of 6 have made requests to the research institutes to investigate their problems. This trend is very encouraging.

**g. Research Priority List**

The list of research priorities supplied by the 6 RBDAs could be grouped into 6 headings as follows:

**1. Biological:**

Weed control and control of bird havoc.

**2. Engineering:**

Irrigation and Drainage needs in south eastern Nigeria.

Seepage and conveyance loss in water channels.

Water quality, salinity and water logging problems.

**3. Management:**

Land consolidation,

Preparation of farmers to cultivate wheat in early period of the season.

**4. Technology:**

Development of techniques for furrow irrigation in sandy terrain.

Development of low cost sprinkler system.

Low cost irrigation method.

Conversion of sprinkle irrigation to gravity system.

**5. Irrigated Crops:**

Development of export crops such as Ginger, Banana, etc.

Crop diversification.

Disease and pest control.

**6. Soils:**

Soil type analysis and determination of appropriate type of crops

Control over the degradation of the quality of soil, high water table impact on crop production.

### 3 CONCLUSION

This study and its findings have limitations. The report is based on the basis of a questionnaire. One could assume that there are biases both from the questionnaire formulators and from the respondents. Often times, responses are influenced by the events of the particular moment.

The objective of administering the questionnaire was to find out only the trend in the research needs of the RBDAs. No conclusive findings were obtained. Further verification of the trend would be useful to formulate strategies for further research activities in the RBDAs.

However, these preliminary results do indicate that there are several problems that need to be solved in the RBDA projects. Through well designed and executed research, these problems could be solved and this would lead to improved and sustained irrigated agricultural development.

#### APPENDIX 1: TABLES (7.1 - 7.6) OF RESPONSES TO THE 6 CATEGORIES OF QUESTIONS

**Table 7.1: Performance improvement of irrigation systems**

ITEMS	YES	NO
Do you have monitoring system?	4	2
System of measuring water against design capacity	2	4
Crop coverage survey	5	1
Knowledge of productivity difference between head end and tail end	1	3
Are measures taken for head- tail difference?	1	3
Reasons for under utilization	See text	See text
Indicators to evaluate the performance of the system formulated	1	4
Indicators used	1	4
Socio-economic Impact of the system	2	4

Source: RBDA Questionnaire Response, 1993

**Table 7.2: Management of water resources at regional level**

ITEM	YES	NO
Regional Plan for integrated management of Water Resources	3	3
Mechanism for conflict resolution exists	3	3
Irrigation Water loss problem	5	1
How have they been prevented?	See text	See text

Source: RBDA Questionnaire Response, 1993

**Table 7.3. Socio-economic aspects**

ITEM	YES	NO
Economist and Social Scientist as staff in the organization	4	2
Rigorous economic analysis before investment	4	1
Who does such analysis		
- consultant	5	1
- in- house staff	3	1
Socio-economic and other study prior project implementation	6	0

Source: RBDA Questionnaire Response, 1993

**Table 7.4. Organizational improvement**

ITEM	YES	NO
Reorganization after the introduction of commercialization and privatization policy	5	1
Three prominent changes		
- staff reorganization	6	0
- project priority/autonomy	2	-
- financial/strengthening	3	-
- commercial service	2	-
Cost recovery in the system	5	1
Belief in centralized system	3	2
Cost recovery under centralized system	1	4
Financial autonomy to individual systems	4	2
Have efforts been made for financial autonomy?	1	4

Source: RBDA Questionnaire Response 1993

- means that the question was not answered

**Table 7.5 Farmer participation in irrigation management**

ITEM	YES	NO
Promotion of participatory irrigation management	5	1
Presence of WUA in RBDA	3	3
Unit for WUA in RBDA	3	3
Maintenance responsibility of channel to WUA (tertiary level)	3	3
Staff in charge to organize farmers	5	1
Legal status of WUA	2	3

Source: RBDA Questionnaire Response, 1993

**Table 7.6. Interaction with Research Institutes**

ITEM	YES	NO
Utilization of Research findings in improving the system management	4	2
Request to Research Institutes to investigate the problems	4	2

Source: RBDA Questionnaire Response, 1993.

## **APPENDIX 2: LIST OF RESPONDENT RBDAs**

1. Benin - Owena River Basin Development Authority
2. Chad Basin Development Authority
3. Cross River Basin Development Authority
4. Hadejia-Jama'are River Basin Development Authority
5. Sokoto-Rima Basin Development Authority
6. Upper Benue River Basin Development Authority