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FEDERAL GOVERNMENT OF NIGERIA

RURAL WATER AND SANITATION PROGRAMME

POLICY AND GUIDELINES

DRAFTED BY UNICEF / FEDERAL MINISTRY OF HEALTH



MAY 1986



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1. EXECUTIVE SUMMARY

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This Document presents the Policy and Guidelines adopted by the small scale UNICEF - assisted Rural Water and Sanitation Programme, now in operation in Imo, Gongola, Kwara and Cross River States. This Programme is designed to assist state governments embark on projects to provide accessible potable water and to introduce effective sanitation to rural communities of less than 6000 through a low cost, health based water supply and pit latrine programme.

Each State Project has an annual target of 100 to 150 handpump-equipped boreholes (for a 2 drilling rig operation); protected springs, upgraded wells and rainwater catchments (the numbers depending on the 'locality); one VIP latrine per ten compounds and 200 to 300 Community Based Workers (CBWs) trained to promote immunization, diarrhoea management, improved hygiene and health practices.

A rapid expansion of this Programme to more States is needed because the existing scarcity of potable water and safe excreta disposal in rural Nigeria defeats any hope for improved health and development. The World Health Organization recommends 20 litres of water per day for every person as the minimum requirement for acceptable health and hygiene, but reliable studies have shown that the average rural Nigerian gets less than ten litres. Rural water sources (open wells, ponds and streams) are often so consistently contaminated that the water they provide is dangerous to health with a content of potentially infectious organisms is hundreds of times above the maximum safe level.

The UNICEF-assisted Rural Water and Sanitation (WATSAN) Programme, furthers the objectives of the International Drinking Water and Sanitation Decade and unlike most water programmes it is a community based health programme, rather than exclusively an exercise in water engineering.

The Programme's main purpose is to reduce, especially among children and mothers, the morbidity and mortality which are due to water-borne diseases such as diarrhoea, cholera and Guinea worm. The ultimate effects upon rural development will be to improve welfare, increase food production and reduce migration to urban areas.

The Programme's technical approach is a balanced and critically selected combination of advanced and appropriate technologies. On the advanced side boreholes are sited with geophysical equipment and drilled with hydraulic rigs. These have enabled the construction of boreholes with a success rate of 93 percent. The appropriate technology used is best symbolized by the handpump, spring development, upgrading of hand-dug wells and the VIP latrine. Communication techniques used to mobilize rural communities and for health education is a mixture of traditional (songs and drama) and modern techniques (posters, leaflets, audiovisuals etc).

The Federal Steering Committee for the UNICEF - assisted Programme has recommended that greater assistance should be given by the Federal Government for the Programme. Based on this recommendation a financing plan was developed. Under this plan the local currency component (personnel costs and locally procured equipment, spare parts and

materials) would be borne by the State Governments, Local Governments and the rural communities themselves. The Federal Government would be responsible for the foreign exchange component of the Programme. A proportion of the costs would be recovered from the beneficiaries.

The annual local currency component of a UNICEF - assisted state project ranges from Naira 1.5 million to Naira 1.8 million being larger initially due to the cost of constructing or rebuilding the workshop, stores or office premises. These estimates include salaries which are already part of state budgets as the majority of the staff is seconded from State Ministries and Parastatals (Works, Information, Health, Local Government, Water Board etc), which continue to pay their salaries. The estimated foreign exchange requirement of the Programme in each State also vary according to the stage of implementation and range from USS 0.6 to 2.3 million per annum.

The implementation of projects in all States using the pragmatic approach of the UNICEF - assisted Programme would be a great step forward but the present projects are relatively modest and reach only 75,000 people per annum in each State. The needs of the rural water supply and sanitation sector in Nigeria are enormous and a huge financial, managerial and human effort must be undertaken if the rural population living in communities of less than 6000 across the whole country is to be reached by this or an equivalent approach.

The rural population of Nigeria is likely to be about 75 million by the year 1990, and therefore a programme about forty times larger would be required at a cost of about Naira 3 billion to satisfy the needs of this population by 1990. Equipment for such a programme would amount to:

400 drilling rigs, 600 heavy support trucks, and 5000 light vehicles.

Approximately 15000 to 20000 people would be needed to implement the programme and many of these people would require additional training.

By stretching the time frame to the year 2000 the financial, logistical and managerial burden can be attenuated, but the sector's financial needs in this case would probably still be in the order of Naira 200 million per annum. The answer to the problem lies in the more widespread application of technology appropriate to the Nigerian situation (in order to reduce costs wherever possible), and the careful expansion of the existing Programme such that its needs match, but do not overwhelm, the available human and financial resources.

UNICEF and the World Bank (the latter through loans to the agricultural development projects - ADPs), have already provided considerable assistance to the sector. UNDP has funded small projects and has indicated its willingness to consider a larger programme. It is recommended that the emphasis for assistance by international, multilateral and bilateral agencies is placed on training in the managerial and technical aspects of the programme; the various agencies have a wealth of experience in these fields and could make a valuable contribution to the programme.

2. THE PROBLEM

Less than fifty per cent of Nigeria's population has access to potable water but perhaps more important in the fight against diarrhoea are the limited quantities of water available and the lack of adequate sanitation. The sixty per cent of the population who live in small rural communities use on average ten litres of water per capita per day.

Collection of this meagre quantity, which is half the WHO recommended daily minimum, may involve women and children in a daily trek lasting several hours.

It is estimated that the Nigerian child in a rural setting has as many as five bouts of diarrhoea per year. Thousands of adults and children suffer every year from the debilitating and crippling effect of Guinea worm. Cholera epidemics also account for a significant toll in human lives. These and other water-borne and excreta-related diseases are largely ascribed to the lack of water and the improper disposal of excreta, in the rural communities and the poorer urban areas.

If the rural population does not adopt a simple low-cost system for water supply and excreta disposal, then the pathetic status of women and children, the most disadvantaged and vulnerable group within the rural communities, will continue to persist.

The challenge is how the model based on the UNICEF-assisted Rural Water and Sanitation Projects in Imo, Gongola and Kwara States can best contribute to Federal and State Government efforts to reduce child and maternal mortality over the next five years to socially acceptable levels.

3. STATUS OF THE UNICEF - ASSISTED PROGRAMME

3.1 Objectives

UNICEF's assistance is designed to help States embark on rural water and sanitation projects by supporting the following activities:

- a) Drilling of the first 300 borewells each borewell serves 500 people.
- b) Establishing heavy equipment workshops valued at approximately US\$ 60,000 for maintenance of equipment and vehicles
- c) Provision of drilling rigs, support trucks, light vehicles and equipment valued at approximately US\$ 1 million.
- d) Training and reorientating staff seconded to the Project from several Ministries and Parastatals and establishing a multi-disciplinary integrated capability of providing community mobilization, project communication, health education, planning monitoring and evaluation, sanitation and water supply to rural Communities.

After 4 years of intervention, the emerging approach to rural water and Sanitation has spread from Imo to Gongola, Kwara and Cross River States.

3.2 Water Supply

Nine hundred and twenty successful boreholes have been drilled as of March 1986 at a success rate of 93% in the five UNICEF-assisted projects while eight hundred handpumps have so far been installed. On average, 92% of these are functioning at any one time. The overall rate per drilling rig achieved in Imo, Kwara and Gongola is 5.5) successful boreholes per rig per month. At this rate, a two rig operation will produce 132 boreholes over one year.

The great majority of boreholes constructed by the UNICEF assisted State projects can yield several times more water than that which is presently withdrawn by handpumps. This allows for the substitution of handpumps by submersible electric pumps if so desired in the future. The use of mechanized boreholes is however not advised due to the difficulties and high costs of maintenance of such equipment and schemes in remote rural areas.

3.3 Sanitation

Where open space allows both convenience and privacy the existing demand for sanitation is low. If a demand for latrines is to be created in these areas on the basis of improved health then an extensive long term programme of health education is required. Many areas served by the Projects fall into this category and the resources needed to create and satisfy the demand for sanitation have in the past been underestimated. This resulted in the construction of only 800 latrine compartments by the end of 1985 and a number of these are in institutions or in public conveniences. Recently more resources have been allocated to sanitation and it is anticipated that progress will improve during 1986.

3.4 Training of Community Based Workers

By the end of 1985, 2200 CBWs had been trained to promote health education within the community and are to some extent active. This is in line with the programme target but has been achieved only by training many more CBWs and accepting a relatively high drop-out rate. Experience has show that without a financial incentive it is difficult to retain CBWs and that therefore health education at village level can not be sustained through this channel. The involvement of school teachers and civil servants working in the health sector is being considered.

3.5 Management

To sustain projects after UNICEF withdraws its assistance, State staff are trained so that they assume responsibility for project management and technical inputs as early as possible. Hence, in the beginning performance is erratic but as more experience is gained through practice and further training, production and cost-effectiveness improve substantially. Therefore the "cost" of this management training is recovered in increased efficiency in the long term. Deficiencies in preventive maintenance have also affected performance and there is a need for more emphasis on maintenance during the technical training of drilling rig operators.

3.6 Monitoring and Evaluation

This important programme component has tended to receive insufficient attention apart from the intervention study in Imo State jointly funded by UNICEF, WHO and the Ross Institute, London. This study will be completed by mid 1986. The existing system of project surveillance does however have the following components:

3.6.1 Water Supply

- a) chemical and bacteriological analysis of water from boreholes and handpumps, boreholes initially and handpumps every six months;
- b) average output per rig per month, updated monthly;
- c) borehole success rate, updated monthly;
- d) percentage of installed handpumps operating satisfactorily, updated monthly.

3.6.2 Sanitation

Number of latrines constructed and used, updated quarterly.

3.6.3 Health Education

Number of faecal coliforms in samples taken from water stored in randomly selected households, survey at quarterly intervals for each project.

3.7 Overall Assessment

The long term objective of presenting to the Government of Nigeria a model containing the components above has been met, although the overall per capita cost of about Naira 35, while still cost effective, is considerably more than the Naira 10 originally estimated. When the Imo Project began in late 1981 there was a lack of interest amongst professionals and policy makers in the "low cost and appropriate technology approach". The dominant view was that piped water supplies and flush toilets for everyone should be the goal. Economic constraints due to the reduction in oil revenues combined with the systematic implementation of clearly visible and well advocated projects, have however made many policy makers and technical personnel change their minds.

Last year at a meeting of the Federal Government Steering Committee for the UNICEF-assisted Rural Water and Sanitation Programme, composed of representatives from 5 Federal Ministries, WHO and UNICEF the "Imo model" was endorsed.

At the meeting it was recommended that future cost sharing of the Water and Sanitation Programme should involve Federal Government inputs. Indications of increasing interest in the emerging approach are:

- a) a growing demand for excreta disposal technology regardless of whether accompanied by water supply or not;
- b) the interest shown by the private sector with clear signs that handpumps will be manufactured in Nigeria within the coming years;
- c) pressure from State Governors for UNICEF to initiate Water and Sanitation Projects in their States;
- d) the strengthening of links with the Federal Department of Water Resources, which has recently requested and been handed some India Mark 2 handpumps which UNICEF is currently importing, to assess the possibility of replicating them or producing a similar model for Nigeria.

4. OBJECTIVES OF THE EXPANDED PROGRAMME

The Programme will be based on the following objectives:

4.1 Impact and Service Coverage

- a) To reduce the incidence of infant mortality and morbidity due to water-borne and excreta-related diseases.
- b) To employ appropriate technologies, such as handpumps, protected springs, upgraded wells, rainwater harvesting and VIP latrines, for availing potable water and improved sanitation to the rural communities.

- c) To promote behavourial changes in poor rural communities with respect to water use, personal hygiene and efficient means of waste disposal.
- d) To improve the quality of life in rural areas.

4.2 Outputs

- a) To achieve an rate of 150 boreholes per annum per State with a three rig operation (one rig acting as stand-by).
- b) To develop the potential of existing springs and wells.
- c) To construct rainwater catchments.
- d) To initiate the construction of one VIP latrine per ten compounds in the community surrounding the water source.
- e) To improve through training the institutional capacities of states for promoting, expanding and managing as well as maintaining State Water and Sanitation Projects.
- f) To provide records of geophysical surveys and borehole logs to facilitate more effective water resource planning.

5. IMPLEMENTATION

5.1 <u>Institutional Framework</u>

The strength of the Imo model is its community base. All project activities are undertaken at the community and village levels, receiving support from the two tiers of government, the State and the LGA. The structure within which the project is implemented is therefore a simple one, starting at the top with the State Steering Committee and State Project staff, down through LGA supporting departments (Health and Works), to the implementation of the project in the villages. The traditional leadership plays a crucial part in the understanding of, participation in and the sustenance of the project. It is recognized that there are considerable improvements to be made, particularly in the fields of health education, community mobilization and sanitation, and the institutional framework of State Projects must be developed and strengthened to meet these needs. The various elements of the institutional structure are:

5.1.1 State Steering Committee

This is a committee of representatives from the six or seven state ministries (Health, Local Government, Information, Education, Public Utilities, Planning, Works and Economic Development) as well as the Water Board, the River Basin Authority and the University. The State Steering Committee is the policy-making body that issues guidelines for the funding, staffing and implementation of the project in the State.

5.1.2 Coordinating Ministry

The function of coordinating the activities of the various project teams, and thus integrating the inputs of the various ministries, has been fulfilled by the Ministry of Local Government in Imo and Kwara States. However, in Gongola State the function of coordination rests with the Governor's Office and in Cross River State, the Ministry of Health undertakes this role. With the recent establishment of the Federal and State Directorates for Food, Roads and Rural Infrastructures, it may be appropriate to place the project under this body at the state level.

The coordinating ministry or office in a State provides the following important facilities:

- a) the Project Office, out of which the management and administration of the project is carried out, and
- b) the central project workshop.

The coordinating State body also seconds or recruits the State Project Manager. Other project staff are normally seconded from the various ministries, which continue to pay their salaries. This helps the Project to develop as a joint venture or partnership between a number of ministries and parastatals.

5.1.3 LGA-Level Operation

The next tier in the project framework is the local government area. The LGA administration provides housing for project staff working in the area, and seconds staff, usually from the Works and Health Departments. These project staff at the LGA-level form the LGA Community Mobilization, Health Education, Sanitation and Water Supply Maintenance Teams.

5.1.4 Community-Level Activities

The project is implemented at the community level within the traditional leadership and administrative structures consisting of the chief with his council of chiefs as well as civil servants such as health workers and school teachers based in the village, working through project-created Village Steering Committees. All these participate together with project staff and CBWs to implement and sustain the project in their community. In addition, the community shares responsibility with the project teams during the implementation phase.

5.1.5 Integration with ORT and EPI

The infrastructure developed for the Water and Sanitation Project is shared with other primary health care projects. Major components of the integrated approach are:

- a) a shared project office and workshop resulting in information sharing and improved vehicle maintenance;
- b) enhanced training of CBWs in ORT and the benefits of immunization:
- c) the provision of handpumps and VIP latrines to health facilities.

5.2 <u>Selection of LGAs and Communities</u>

There are a number of conflicting criteria for the distribution of project benefits within a State. These criteria are as follows:

- a) Water-borne infectious diseases such as cholera, Guinea worm and diarrhoea can be controlled or eliminated by providing potable water and sanitation to the affected communities. The areas of greatest need should be established by means of a baseline survey, and served first.
- b) The full health and economic impact of the project can only be achieved by the complete coverage of a district, autonomous community or clan at a rate of one handpump to a maximum of 500 people.
- c) The support of drilling operations is more difficult and more expensive if the two operating rigs are not working in the same district.
- d) The EPI and ORT Programme should be supported by providing Federal or State-funded health clinics with handpumps and demonstration latrines where reliable piped water supplies do not exist.
- e) The benefits of the project must be distributed equitably throughout the State if popular/political support for the project is to be maintained.

These conflicts can not be fully resolved but the following system has been adopted:

- (i) Establish the "worst" district in each LGA, i.e. the district with the greatest need, on the basis of health criteria.
- (ii) List the LGAs on the basis of their worst districts; the district with the greatest water and sanitation related health problems is served first.
- (iii) Cover one district and all the government funded health clinics in each LGA in turn.

The rate of implementation of the project with two rigs operating is relatively slow (approximately 150 boreholes serving 75,000 people per annum) and it takes six months to provide the 50 to 70 boreholes, protected springs, upgraded wells or rainwater catchment systems which are required to serve one district, autonomous community or clan.

6. PROGRAMME CONSTRAINTS AND PERSPECTIVES

The expansion of the Water and Sanitation Programme is based on the lessons learnt and experience built up over a number of years in Nigeria and elsewhere. Nevertheless, no programme is free of problems; a critical look at the future of the programme identifies some areas for caution.

6.1 Going National

Each WATSAN project serves about 75,000 people per annum or approximately 2.5 per cent of the rural population of the State. Since the estimated annual increase in rural population is also 2.5 per cent, much larger projects will be required to make a significant impact on the rural population. However, experience during the past four years has indicated that considerable expansion of the existing WATSAN projects may pose problems:

- a) significant improvements are required in the recruitment and remuneration of Nigerians to maintain the drilling equipment and vehicles (a programme component still largely dependent on expatriate expertise);
- b) improvements are also required in project management, mainly through decentralization and adequate allocation of resources to the community mobilization and sanitation components.

Unless these crucial areas are dealt with effectively, the present institutional structures will not be able to cope with substantial expansion while continuing to deliver the programme's objectives in a cost effective way.

6.2 Federal Government Funding

If the programme is to expand substantially in the near future, Federal Government funding is essential, otherwise the proposed rate of implementation is unlikely to be achieved.

6.3 Private Sector Involvement

Although the private sector finds it difficult to regulate itself in Nigeria, considering its size and technical development the use of carefully selected companies for borewell construction under a system tightly controlled and regulated by the State must be seriously considered.

6.4 <u>Domestic Production of Hardware</u>

As the country goes through austere economic times, the local manufacture of equipment becomes more attractive. Where UNICEF or other relevant UN or bilateral Agencies, e.g. UNDP, World Bank, EEC, etc. can assist particularly in the areas, of design and quality control, they should be encouraged to do so.

6.5 Purchase of Locally Produced Materials

The local procurement of materials which were until recently being imported (e.g. PVC casing for borewell construction) must be encouraged. The Federal Government should support industries that can produce materials required by the Programme (handpumps, galvanized iron and steel rising mains, leather components for sub-surface handpump cylinders etc.). This will not only reduce the foreign exchange needed but also give the Programme a more autonomous nature.

6.6 Government Commitment to Health Education and Sanitation

The Water and Sanitation Programme has a slow gestation period especially when the health elements related to the change of habits of the entire community have to be set in place. Authorities are usually anxious to see water flow in as wide an area as possible in a short period. This often leads to ignoring and down playing the health education and sanitation aspects of the programme. This defeats the very purpose and concept of employing water and sanitation tools for disease control and enhancing community participation. Thus the challenge of the programme is to maintain the enthusiasm of the authorities and at the same time, not to let the water component overwhelm the health education and sanitation aspects. If this happens the impact on health will be greatly reduced. Past experience and research by UNICEF and several other agencies in different countries lead to this conclusion.

7. COSTS AND FUNDING

7.1 Cost of Implementation

The annual expenditures for a UNICEF - assisted State Project during the first five years of implementation are given below. These are estimated costs for a two rig operation serving 75,000 people per annum. The costs are based on previous experience in Imo, Gongola, Kwara and Cross River and have been adjusted to 1986 prices.

Table 1.

Expenditures/Year		<u>1st</u>	<u>2nd</u>	<u>3rd</u>	4th	<u>5th</u>
Imported Equip. & Materials Amortization	s(US\$ millions) (US\$ millions)			0.26 0.39	0.26 0.40	0.26 0.41
Total	(US\$ millions)	2.27	0.63	0.65	0.66	0.67
Personnel Locally Procured Equip/Mat.	(Naira millions) .(Naira millions)					
Total	(Naira millions)	1.79	1.53	1.57	1.61	1.65

The foreign exchange needed to initiate the project is in the order of US\$ 1.91 million while an additional US\$ 0.26 million for handpumps and accessories, spare parts and vehicles for LGA level operation is required annually after the first year. The annual amortization of this capital investment is in the order of US\$ 0.36 million, which means that if equipment is to be replaced in time, this amount should be put aside every year.

The locally procured equipment and materials includes PVC casing, fuel and lubricants, tyres and batteries, cement and bentonite. In the first year there are extra costs in this category for the construction or reconstruction of stores, workshop and office premises.

7.2 Maintenance Costs

The cost of maintaining and sustaining the project components are as follows:

<u>Water Supply</u> - Naira 250 per handpump equipped borewell per annum or 50 kobo per capita, assuming one handpump serves 500 people.

Health Education - An allowance of Naira 360 per year for each Project trained Community Based Worker (CBW) or 72 kobo per capita, assuming one CBW serves 500 people. The support of this "service" will increase the population's awareness about diarrhoea management in the home through Oral Rehydration Therapy, the prevention of communicable diseases through the Expanded Programme of Immunization, the advantages of using improved excreta disposal facilities, and the optimal way of transporting, storing and using potable water.

Where one district of 30,000 people is served in a LGA the total cost of maintenance would be Naira 36,600 per annum. The cost per capita is thus Naira 1.22 per year or Naira 12.2 per year per taxable adult assuming 10% of the population is considered as taxable.

7.3 Cost Recovery

A contribution by villagers to the capital and maintenance costs would have several positive effects:

- a) The water source provided is less likely to be considered as a government facility for which government is responsible. A feeling of ownership and responsibility for maintenance will be developed in the community.
- b) Any contribution by communities will release funds to expand the project more rapidly.
- c) If maintenance is financed directly by the community it will continue when government funds are limited.
- d) Possibly the sanitation component, which is essentially the responsibility of the individual, will be more readily accepted if it is seen that water must also be paid for.

A careful analysis should be made to find out the capability and willingness of communities to pay. The adoption of cost recovery should not discriminate against those communities with the least capacity to pay but perhaps the greatest need.

7.4 Funding

At the meeting of the Inter-ministerial Steering Committee for the UNICEF - assisted Programme in August 1985, it was recommended that costs should be shared as follows:

State Government	50%
Federal Government	40%
UNICEF	10%

This recommendation was subject to Federal Government approval and has yet to be implemented. At present 70% of the programme costs are borne by the State Governments and 30% by UNICEF. The UNICEF budget for the next four years will continue at a slightly reduced level and therefore the share of the Programme costs provided by UNICEF must reduce as the Programme expands.

If the first five years of the project are considered the foreign exchange component amounts to approximately 40% of the total costs. This portion could be allocated to State Governments by the Federal Government on a grant or loan basis. The local currency element could be shared by the State Government, the Local Government and the communities themselves.

A reasonable contribution from an LGA would be 10% of the installation costs of the handpump fitted borewells at the beginning of project implementation in its area. Each completed borewell costs approximately Naira 15,000 and assuming an initial 60 borewells serving 30,000 people, this payment would amount to Naira 90,000 and ensure that the LGA was committed to the Project.

8. Assistance From External and International Agencies

UNICEF and the World Bank (the latter through loans to the agricultural development projects - ADPs), have already provided considerable assistance to the sector. UNDP has funded some small projects and has indicated its willingness to consider a larger programme of assistance. It is recommended that the emphasis for assistance by international, multilateral and bilateral agencies is placed on training in the managerial and technical aspects of the programme; the various agencies have a wealth of experience in these fields and could make a valuable contribution to the programme.