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International Reference Centre for Community Water
Supply and Sanitation (IRC)

WADS - Project Nyala

PROPOSALS FOR A VILLAGE
WATER SUPPLY PROGRAMME IN
SELECTED RURAL COUNCILS IN
SOUTHERN DARFUR PROVINCE

Mission Report - Working Document

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This Report was prepared by IRC on request of the Institute of Applied Geoscience in the Netherlands (TNO-DGU), in the framework of its collaboration with the National Corporation for Rural Water Development of the Sudan.

The views expressed in the Report do not necessarily coincide fully with those of TNO and NCRWD.

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PREFACE

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This document was composed by the International Reference Centre for Community Water Supply and Sanitation (IRC) on request of the Institute of Applied Geoscience.

It is the result of a joint mission by Mr. Jacob Vos of the Institute of Land Reclamation and Improvement (ILRI) and Mr. Teun Bastemeyer of IRC. Staff members of the WADS project in Nyala, the regional office of the National Corporation for Rural Water Development (formerly NWC), and senior staff of the headquarters of this corporation contributed greatly to the report.

The objectives and main activities have been discussed with officials of the Regional office of the Ministry of Agriculture in Nyala, and with representatives of other agencies working in South Darfur Province. The proposed set-up of the project is derived from these discussions.

The report means to provide a basis for further discussions within NCRWD, TNO, and the Director General for International Co-operation in the Netherlands.

The comments of the above collaborating agencies and financing institutes will provide a final basis for the preparation of a draft plan of operations in November 1986.

1. INTRODUCTION

1. Purpose of this report

This report concerns the future activities by the WADS programme in South Darfur Province. Its purpose is to define the main fields of action of the Nyala based project. The activities, at present carried out in Khartoum and Kassala on the basis of the 1986 Plan of Operations, have not been considered. Considering the proposals contained in this report, it would seem that the organisational and financial links between these different components of the WADS project need to be adapted.

For that matter, it would seem that the management of the WADS project could greatly contribute to the Plan of Operations for 1987 and 1988 by clearly defining the short term objectives and expected results of the WADS activities in Khartoum and Nyala. *and Kassala*

1.2 Terms of reference

The terms of reference (see Annex 1) put great emphasis on the identification of priorities on the basis of the available information, and systematic analysis of the needs by defining "typical" water problems in rural areas of Southern Darfur. Further emphasis is put on the need to balance between the need to satisfy the basic need for drinking water, and the sustainability of the constructed facilities.

It is stated, that the WADS project in Nyala will develop rural water supply activities complementary to existing programmes and projects in Southern Darfur Province.

1.3 Starting points for a project formulation

The following starting points have been adopted as a basis for the adopted approach:

- (a) The objectives of the project need to be formulated as long term and short term objectives.
- (b) The long term character of rural water supply development needs to be fully considered in order to ensure the sustainability of the facilities.
- (c) Long term maintenance requires that available financial and organisational resources are taken into account in the planning of rural water supply facilities.

1.4 Methodology

For the preparation of this report, the following methodological steps were taken:

- (a) Identification of priorities at the national level. It was found, that sustainability of water supplies (maintenance, management and rehabilitation) are the first priority. A second priority is to construct more systems. In this, priority is given to projects with a foreign component.
- (b) Identification of needs on the basis of available information. It was found that information on available resources and needs is un-systematic, and not suitable for the planning of village water supply activities.
- (c) Consultations with Project Staff and agencies at the provincial level. These consultations resulted in general identification of needs and definition of the area to be covered by a village water supply programme. (Several Rural Councils).
- (d) Defining objectives and main fields of action. This step consisted of a series of discussions with all parties concerned, both in Nyala and in Khartoum.
- (e) Identifying specific activities of the project. Proposed activities were identified through field visits and experience acquired during WAPS I and WAPS II. Further, information from other projects was used to judge the feasibility of the activities.
- (f) Reaching agreement on main activities. This final step was made through discussions at the Netherlands Embassy and the headquarters of the NCRWD in Khartoum. The detailed contents of this report have not been discussed.

2. PLAN OF OPERATIONS 1986: PROGRESS MADE

2.1 The original objectives

The objectives in the 1986 Plan of Operations are broadly formulated:

- "to contribute to the improvement of rural development in Southern Darfur Province through supporting the Regional Government in the draft of a rational water development plan, the execution of water supply activities and the maintenance of water supply systems.
- to contribute to the improvement of the rural development in the Sudan through supporting the National Water Corporation in its task of rational water development and adequate water management in the rural areas."

These objectives have not provided guidance in carrying out the activities mentioned in the Plan of Operations.

During this first year, emphasis should be given to the identification of short and long term water needs in order to plan rationally domestic and irrigation water supply activities. High priority should be given to a socio-economic baseline survey to be carried out in Southern Darfur.

2.2 Progress made

The planned activities concern:

(a) Rural water supply.

- inventory of hydrogeologic basic data and survey in Southern Darfur
- socio-economic baseline survey
- well inventory
- inventory of hafirs.

Only a minor part of these activities (inventory of boreholes in water yards) have been carried out. Existing socio-economic data from recent studies are being studied. These data are of general character or are unsuitable for further use.

(b) Groundwater irrigation. These activities could not be carried out. A windmeter was installed in Nyala.

(c) Surface water irrigation. These activities have not been carried out. A mission by ILRI concluded that there is not much potential for both groundwater and surface water irrigation.

(d) Water development plan. A general geohydrological map is being prepared for Southern Darfur. Needs have not been studied. No synthetic results are available so far.

(e) Support to technical committees. Not relevant, because the institutions have not been established.

(f) Support to Regional Office. The activities mentioned have not been carried out. Some technical support was given on request of the Western Savannah Development Corporation.

2.3 Identification of information gaps

From the above, it can be concluded that there is very little accessible information as to needs and resources. The main information base was expected to be a resources study by the Institute of Environmental Studies. However, no results have been made available. Further, no field work was done for this study. Information was collected through local and regional authorities. It was confirmed by IES, that its study would not provide a basis for the detailed planning of village water supply activities.

During the last months, the WADS team could therefore concentrate on preparing these village-specific activities.

In view of this approach and the village water supply projects to be carried out, the project's organisational set-up and its formal and informal working relations need to be redefined. These points will be taken into full consideration in the Plan of Operations for 1987-1988, on the basis of further preparatory work by the project team, NCRWD, TNO and IRC.

3. PROPOSED APPROACH FOR A VILLAGE WATER SUPPLY PROGRAMME

3.1 Experience elsewhere

During the first half of the International Water Decade, high numbers of rural water supply facilities have been installed. However, many of these facilities do not function or are not being used as planned. Maintenance problems have been caused by selecting inappropriate technology, poor quality of installed systems (often hand pumps), lack of commitment ~~of~~ maintenance on the part of both users and responsible agencies, lack of spare parts, lack of training and poor management.

Recently, both national governments and donors have become aware of the need to find long term solutions for the recurrent costs and maintenance problems. Emphasis is being put on community participation in construction and maintenance in order to reduce the annual recurrent costs, and to improve the effectiveness of community water supply activities in rural areas.

Experience in different African countries shows that communities may take full responsibility for maintenance if they consider the facilities as their own. However, village level maintenance has only been successful when adequately supported by governmental or relief agencies.

3.2 The concept of a village project

In view of the above experiences, it is proposed to adopt the concept of "village project".

In this concept, the village communities are expected to express their needs. Technology is selected on the basis of technical feasibility and analysis of the financial and organisational capacities of the village community. A village water supply system is constructed after the executing agency and the village concerned have reached a formal agreement (contract). In this agreement, the planning of the construction activities and responsibilities for maintenance are defined. Normally, the village would contribute to the construction and take full responsibility for maintenance.

Implementing village projects requires sound co-ordination of the activities of survey teams, ~~community development workers~~, technical supervision and construction teams.

Maintenance is a main point of consideration in all steps of the village project preparation and implementation process.

3.3 Involvement of the rural councils

The programming of the above village projects requires that priorities are identified. The required information to set priorities can best be obtained through requests formulated by the villages. However, in order to obtain reliable information, it is necessary that the rural councils are involved. These local authorities are well aware of the conditions in the villages and can collaborate in preselecting a suitable number of priority villages in view of the implementation capacity of the project.

3.4 Role of the Department of Land Use, Soil Conservation and Water Programme

This department carried out village water supply feasibility studies, including a general assessment of the available land and water resources. At present, this department does not have the resources to play a leading role in the preparation of village water supply projects. However, it can contribute to defining priorities through its relations with the rural councils. In addition, it could participate to some extent in feasibility studies carried out by the project.

4 . GENERAL IDENTIFICATION OF THE NEEDS

4.1 Limitation of the project area

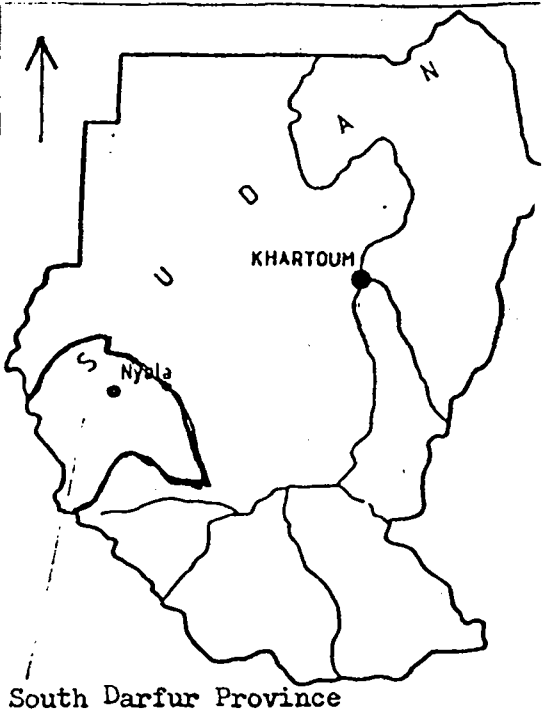
There are 2 reasons not to extend the village water supply activities over the whole of Southern Darfur during the coming years:

- (a) the size of the province (see map)
- (b) activities carried out by other agencies.

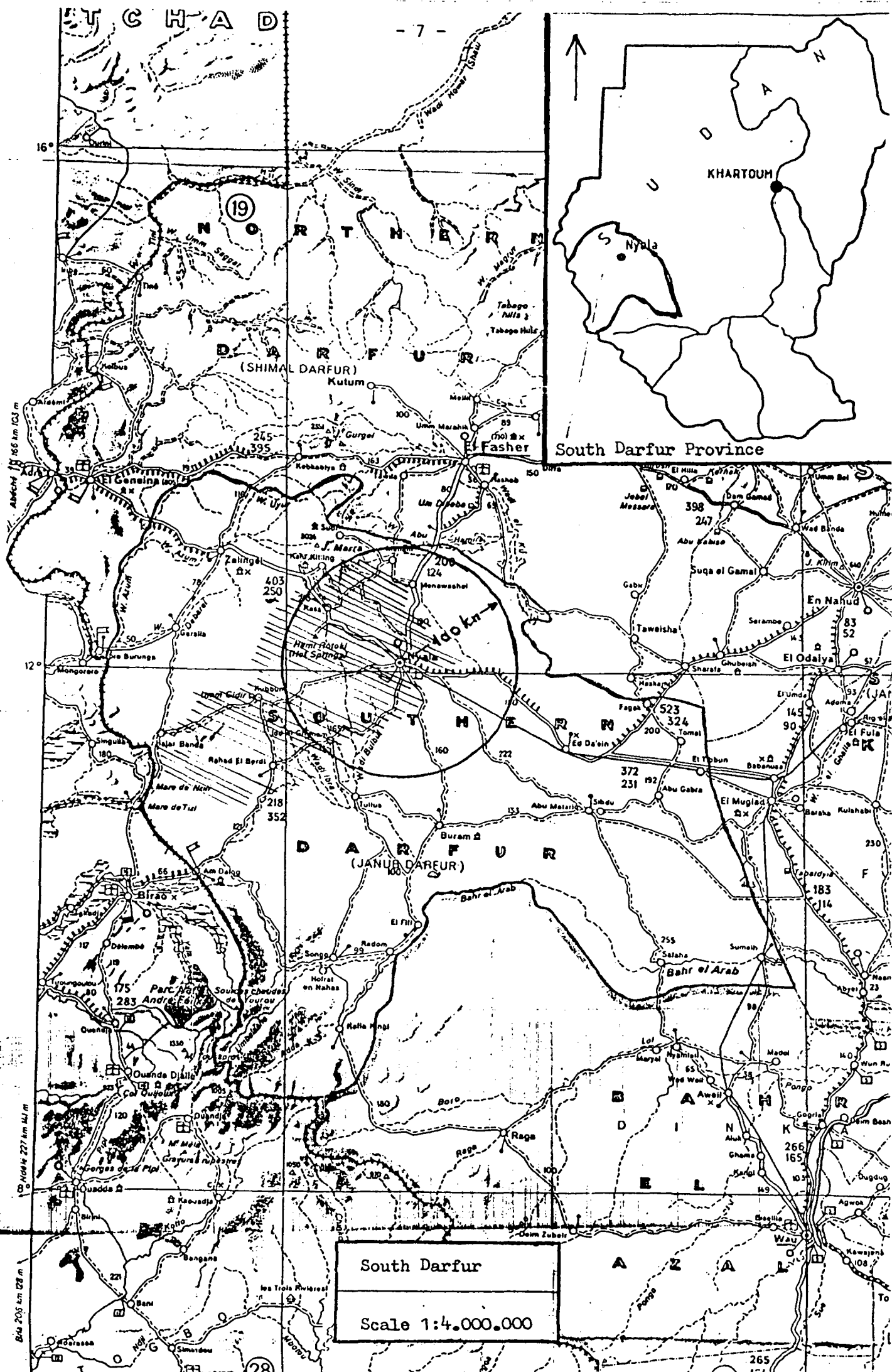
For these reasons, the village water supply activities will be confined to those areas where no rural water supply activities are carried out through the programmes of WSDC, the Jebel Mara Corporation and the handpump programme financed by the Lower Saxony Regional Government. At this stage, this limits the area of implementation to (see map):

- part of Nyala Rural Council
- Kass Rural Council
- Idd el Ghanam Rural Council
- Kubum Rural Council
- Rahad el Berdi Rural Council

ST C H A D



South Darfur Province



South Darfur

Scale 1:4.000.000

This area is mainly basement area with the wadi beds as important sources of water.

4.2 Current activities by other agencies

Current rural water supply activities are:

- Rehabilitation of water yard systems in Goz areas of Southern Darfur
- Construction of a limited number of new water yards
- Construction of boreholes with handpumps in the North East of Southern Darfur
- Assistance to NCRWD in developing a maintenance system for water yards (including revenue collection).

Considering the ecological problems associated with increased numbers of rural water supply facilities and current studies by WSDC on land use approaches and growing management, the WADS project should not install new systems in the Goz areas.

Collaboration should be sought with the project financed by Lower Saxony in the field of monitoring of facilities, geo-hydrology and maintenance system development.

The water supply activities of the Jebel Mara Development Corporation is involved in a variety of activities in its programme areas. Additional work by WADS in the Jebel Mara area would not increase the effectiveness of the programmes executed by the Jebel Mara Corporation, which has already developed experience over the past 30 years.

4.3 Identified needs

Before 1982, village requests for water supply improvements were channelled through rural councils to the Department of Land Use, Soil Conservation and Water Programme. This department, under the Nyala office of the Ministry of Agriculture, has not been able to carry out so-called feasibility studies for many years due to financial and logistic constraints.

On the basis of the requests from 1975 to 1982, (map being prepared by the project), it can be concluded that for the 5 rural councils mentioned:

- there is an important unsatisfied need for improved village water supplies since more than 10 years
- no projects have been carried out since almost 10 years
- most requests concern dug well systems near wadis
- certain villages are in basement areas where boreholes with handpumps are the only feasible option
- no quantitative estimate can be given of the minimum number of systems to be provided.

4.4 Constraints at village level

Villages meet with environmental (limited land and water resources), financial and organisation constraints (how to maintain water supply systems). The most important constraint for the development of sustainable water supply systems, is the environmental constraint.

In the proposed project area, water resources are found in shallow aquifers in the wadi beds and in semi-weathered basement in the vicinity of the wadis. Water resources in joints and fissures are very limited,

Thus, only small scale and low technology systems seem sustainable. Therefore, the project will concentrate on dug wells, small diameter boreholes and simple water lifting systems. Installation of handpumps will be subject to further study on the quality of handpumps and their maintenance characteristics.

Some lower wadi beds represent a potential for increased use of water supply systems for watering vegetables, or for cattle. The potential for these increased water uses will be treated in the ILRI report.

The above mentioned constraints at village level call for village project feasibility studies before technology is selected and projects implemented.

In view of the lack of systematic village specific information, much attention must be paid to systematic use of collected data and to collaboration with villagers, rural councils and regional level agencies.

5. OBJECTIVES

5.1 Long term objectives

- Improvement of water supplies for the rural population of Southern Darfur
- a sustainable maintenance system for village water supply facilities (not including the water yard systems)
- to contribute to the sustainability of water supply systems in Southern Darfur Province by developing practical guidelines for the planning, preparation and execution of water supply programmes and projects.
- to contribute to the improvement of community health through reliable water supply facilities and improved drinking water quality in rural areas.

5.2 Short term objectives

- To agree with relevant local authorities, NCRWD and the Nyala office of the Ministry of Agriculture about the priorities of a village water supply programme in selected rural councils

- to develop a suitable procedure for low technology village water supply programmes
- to identify suitable technologies for pilot studies and small scale improvements in the field of village water supply
- to develop an integrated approach to prepare and execute village water supply projects on the basis of priority criteria, village resource analysis and community participation
- to collaborate with the NCRWD in developing a sustainable management system for village water supplies to support village level maintenance
- to develop draft guidelines for development of water supplies in Southern Darfur
- to provide professional support to other agencies, provided that this will not interfere with the main activities of the project
- upgrading of technical capabilities of NCRWD staff through "on the job" training and short courses.

The above objectives mean that the development of village water supplies will be combined with applied research activities, training activities and pilot studies.

6. ACTIVITIES IN 1987 AND 1988

6.1 Types of activities

In a village water supply programme, the actual village project preparation, construction and maintenance activities need to be clearly distinguished from research activities and training activities. The purpose, methodology and expected results of these activities need to be explicitly formulated, before project resources are allocated to carry them out. This would allow for monitoring and for evaluation of costs and effects.

X Explicit formulation of activities is also necessary to avoid ad-hoc trials without any clear purpose relating to the project's short term objectives. *or long-*

6.2 Village water supply improvements

These activities concern the planning, preparation and execution of village projects. The activities by the WADS project will fit into a working process on the basis of community participation. WADS project inputs concern technical know how, siting of wells, and boreholes, supply of handpumps and other water lifting systems, supply of spare parts and tools, cement, and borehole construction when necessary. The project will also train villagers to maintain their systems (this may include the local manufacture of tools).

The village inputs concern:

- financial contribution to construction costs
- labour for construction
- all materials for dug well construction, pump foundations and drainage systems.

These contributions should represent at least 50% of the construction costs.

Further, the village should make a full commitment to maintenance by:

- installing water lifting systems themselves, and to pay 50% of the purchase value (for boreholes, this arrangement may be different)
- appointment of village caretakers to be trained by the project, and rewarded by the village
- establishing a community revenue collection system to cover maintenance costs.

To carry out village projects, a general map of the project area will be prepared. This map (1 : 250,000) will indicate the location of villages and general water resources as far as data is available. Additional surveys will be carried out after:

- identification of priorities and preliminary study of requests from villages
- establishing a preliminary contract with villages expressing the village's willingness to co-operate in further preparatory activities and feasibility study.

In order to prepare selected villages, the use of audio-visual methods is envisaged in order to create a general understanding of the different aspects of water use and the environmental impact of water supplies.

The village project preparation and implementation process is further explained in the Flow Chart. (See Annex 2).

Village water supply improvements will be carried out according to the specific needs and resources in villages:

- 1) construction of new dug wells
- 2) construction of new dug wells with low technology water lifting system (winch, handpump, chadouf)
- 3) construction of boreholes equipped with suitable handpump
- 4) improvement or rehabilitation of existing dug well systems
- 5) improvement or rehabilitation of existing water lifting systems.

6.3 Research activities.

Research activities will aim at selecting and developing suitable technology solutions and developing a viable maintenance system. Technology and maintenance options may be tested through pilot studies. The following research will be carried out:

- study of reliable and economical well construction and siting techniques
- monitoring of handpumps installed by NCRWD in collaboration with the Lower Saxony financed project. Monitoring will concern functioning, maintenance activities and utilisation of the systems. (Refer to Minimum Evaluation Procedures by WHO). Handpumps installed by WADS should be included in the activities
- hand pump selection and development. This activity needs to be developed in close collaboration with the Ground water Research Department, and the UNICEF-supported handpump project in Khartoum. Emphasis should be placed on VLOM technology and local production of spare parts and pumps
- monitoring of maintenance work of all low-technology village water supply systems. This activity is complementary to the cost studies carried out for maintenance of water yards
- development of criteria for technology selection in view of available water resources. This activity should contribute to the draft guidelines mentioned in the objectives of the project.

Research activities should be prepared on the basis of compilation of information and experience elsewhere in Sudan, and if possible, in other countries.

6.4 Training activities

These activities concern all levels of staff as well as villages. A human resources development plan will be developed in view of village level maintenance and support to villages on the part of the project. This plan will take into account career perspectives. Supervisors will have a formal responsibility for training and will receive guidance in carrying out on-the-job training.

7. EXPECTED RESULTS AFTER 2 YEARS

7.1 Village water supplies improvements

On the basis of an estimation of the project's capacity to prepare and to implement village projects, the following rough targets have been defined:

	1987	1988
New ^{dry} wells	10	30
New dug well with water lifting systems	15	35
Boreholes with handpumps	0	10
Improvement or rehabilitation of existing wells	5	10
Improvement or rehabilitation of existing water lifting systems	5	20
TOTAL IMPROVEMENTS	35	105

These targets indicate that during 1987, working relations will be established and technology research carried out.

7.2 Maintenance

From the monitoring activities, community developed activities and village projects, conclusions will be drawn concerning the organisation and the financing of maintenance. A proposal for a phased implementation will be developed before the end of 1988. This proposal will include the development of community based financial management systems for maintenance.

7.3 Technology development

The project will prepare a report on the feasibility of a local production of handpumps, standardisation and establish criteria for hand-pump selection. Cost analysis will be included.

7.4 Draft guidelines

Draft guidelines will be prepared before the end of 1988 and will serve to prepare the follow-up of the 1987/1988 Plan of Operations.

8. PROJECT ORGANISATION

8.1 Internal organisation of the project

8.1.1 General principles

Considering the activities to be developed, the Nyala-based project is proposed to become a separately managed project under a project director based in Nyala.

Linkages with other activities in the WADS programme can be established through appropriate channels within the NCRWD, and the supervisors,

The proposed internal organisation of the Nyala-based project needs to be adapted to the tasks to be carried out (see Internal organisation chart),

In order to ensure good co-ordination and efficient use of resources, great emphasis needs to be placed on strong management, and a definition of the roles and responsibilities of all components of the project organisation. The activities as described in Chapter 6 are carried out by the Sections. The planning of the project activities is at 2 levels:

- over-all planning by the management
- detailed water planning by the heads of the sections.

Co-ordination is ensured by:

- a) the management (Vertical Co-ordination)
- b) meetings of the heads of the section.

The heads of sections take management decisions at their level on the basis of the over-all planning set out by the management.

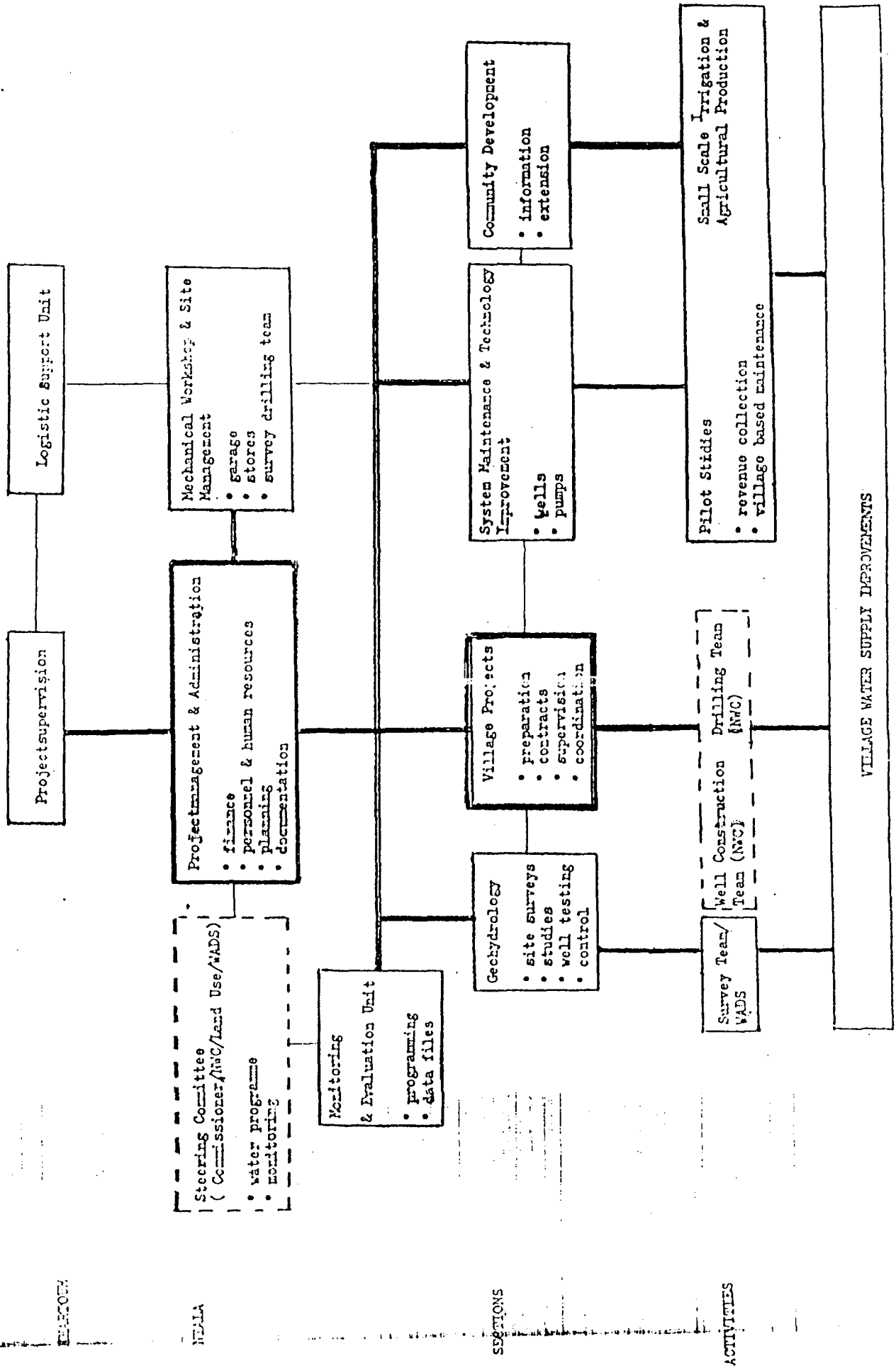
All heads of sections are responsible that working relations with other agencies are maintained on a regular basis. The results of joint activities, meetings and plans should be reported to the management.

Research activities and new pilot activities should be planned on the basis of separate sub-project documents in order to facilitate the over-all planning, the allocation of resources and evaluation.

Costs of all activities undertaken should be estimated and maintained. This will enable the administration to manage the financial resources analytically and flexibly.

In view of the targets under Chapter 7, the liquidity of the project should be ensured through independent management and early transfer of allocated financial resources on the basis of bi-annual financial resources.

WADS Project Organisation Chart (Internal)



RELATIONS

NEPAL

SUPPORTS

ACTIVITIES

8.1.2 Tentative job description for departments and Sections

- a) Project management and administrative department. The role of the management is to plan the activities of all personnel on the project to ensure efficient use of resources in terms of finance, personnel, equipment and transport, as well as to find solutions to carry out the activities with the available means. It is necessary for the management to find suitable ways to delegate responsibility through regular consultation and reporting procedures, and to allocate resources for planned activities in the sections. The systematic use of a cost registration and financial control system is essential for flexible management. The management is supposed to evaluate the financial and personnel consequences of the new activities proposed by the project staff and to make a programme of activities per 6 months.

The responsibilities of the project management are:

- to ensure that the project is carried out according to the objectives as defined in the Plan of Operations
- to ensure that personnel and financial resources are available and used efficiently
- to support and to supervise the activities carried out by the section
- to make sure that there is effective collaboration between the sections
- to maintain effective working relations with regional agencies, related projects, as well as local and regional authorities
- to collaborate with other members of the Steering Committee in programming the Village Water Supply Projects
- to ensure the coherence of other project activities within the programmes carried out in the province
- to ensure that acquired information and documentation on project activities and experience by others is available and used by the project personnel.

- b) Monitoring and evaluation unit (attached to management department). The role of the monitoring and evaluation unit is to collect and to treat all data required to take management decisions. Further, the unit should identify information gaps, propose study activities and additional surveys. It should collaborate with other agencies and authorities in developing an information base concerning village water supply systems. The unit will emphasise the availability of data concerning the functioning and utilisation of village water supply systems, village level maintenance, community level management structures, and costs of maintenance.

The responsibilities of the monitoring and evaluation unit are:

- treatment and storage of geohydrological, socio-economical, technical and financial data in files per village (as far as relevant for the project), per rural council concerned and per catchment area

- exchange of data with relevant agencies and the databank in Khartoum
- setting up a continuous data collection system to support the village water supply programming, and planning of follow-up support activities to villages in collaboration with rural councils
- x - analytic costs analysis in view of long term^m sustainability village water supply systems
- collaboration with the RWSC, WSDC, rural councils and the Ministry of Agriculture in developing a financial and organisational solution for long term maintenance
- monitoring of pilot projects
- reporting to the management on project effectiveness (every 3 months)
- evaluation of village water supply projects carried out under co-ordination of the Village Projects Section
- support to the System Maintenance and Technology Improvement Section in studying the feasibility technical and organisational options.

c) Mechanical workshop site management and Logistic Department. The role of this department is to provide all necessary means for the other departments and section to carry out their tasks. This includes maintenance and repair, technical assistance for drilling, testing of new techniques, and many other tasks deriving from the project's activities.

The responsibilities of the Mechanical and Logistic Department are:

- maintenance of buildings, equipment and vehicles
- co-ordination of transport
- storekeeping (all materials, equipment, spare parts and other requirements)
- fuel supplies
- site management (utilisation of offices, treating waste equipment etc.)
- technical and logistic support for the sections.

d) Geohydrology section. The role of the Geohydrology Section is to provide technical support to other sections and to study water resources. It will contribute to technology selection and site location with special emphasis on technical feasibility, system reliability, costs and quality control. Its support and advisory role is extended to rural water supply activities. These activities will be carried out in view of draft guidelines to be developed (see Chapter 6). The section will give priority to the activities associated with the village projects.

The responsibilities of the Geohydrology Section are:

- to carry out site surveys
- to carry out water resource studies of limited scale

- borehole design
- supervision of borehole construction
- well and borehole testing
- water quality control
- hydrogeological data collection and monitoring
- exchange of data with the monitoring and evaluation unit.

e) Village projects section. The role of the Village Projects Section is to ensure that Village Water Supply Projects are judiciously prepared, formulated through contracts, and carried out according to a planning agreed with the villages concerned. The inputs of the various sections (and when necessary other agencies) are co-ordinated by the Village Projects Section, according to the planning set out by the management. The Village Projects Section will put emphasis on consultations with other sections in the elaboration of detailed work plans.

The responsibilities of the Village Projects Section are:

- maintaining informal relations with Village Authorities
- planning of village projects on the basis of an indicative programme by the management
- co-ordination of village resource and feasibility studies
- ensuring coherent project preparation and execution for individual villages
- preparation of contracts with villages and contractors
- co-ordination of inputs from other sections of the project, collaborating agencies, and villagers
- ensuring the quality of constructed systems on the basis of supervisory work by other sections
- application of the conditions established in the contracts
- preparing village level maintenance during project preparation and execution with support from other sections.

f) System Maintenance and Technology Improvement Section. The role of this section is to develop maintainable village water supply technologies on the basis of traditional well construction techniques, experience in other projects in the Sudan, and pilot studies. The maintainability of village water supply systems depends on technical, organisational and financial factors. These factors need to be identified as a basis for technology selection and for organisational solutions concerning maintenance. During the initial phase of the village water supply programme, this work shall be carried out in close collaboration with the Village Project Section.

The responsibilities of the System Maintenance and Technology Improvement Section are:

- technical supervision of construction of dug wells and the installation of water lifting devices, including hand pumps on boreholes
- supervision of improvement or rehabilitation of water systems, including drainage systems and irrigation systems
- installation of water lifting devices on a pilot basis (mainly hand winches, possible hand pumps)
- training of village mechanics and artisans for well construction and maintenance and hand pump installation (when applicable)
- system design
- development of improved well types and/or construction methods
- training of village caretakers in collaboration with the Village Projects Section
- developing a distribution system for spare parts and other supplies
- studying the feasibility of local production of hand pumps
- technical monitoring of installed systems.

g)

Community Development Section. The role of this section is to collaborate with the rural councils and the Ministry of Agriculture in informing the villages about the project's activities, minimum conditions to be respected when submitting a request, procedures, and priorities. The section will give special consideration to the involvement of local authorities in all steps of the preparation of village projects. The Community Development Section will not work in villages without the consent of relevant local authorities, and traditional leaders at the village level. (Preliminary contract).

The responsibilities of the Community Development Section are:

- informing villages concerning the project's activities, priority criteria and preselection procedures for village water supply projects
- support to the Village Projects Section in carrying out village resource studies, and in preparing village projects
- transferring socio-economic data to the Monitoring and Evaluation Unit
- to prepare small scale pilot projects to study the viability of small scale horticulture in selected villages
- to carry out the above pilot activities in close collaboration with the horticulture department of the Ministry of Agriculture (Nyala)
- to stimulate the correct use of water and maintenance of facilities installed.

8.2 External relations

8.2.1 Supervisors

The role of the supervisors is to ensure the general coherence of the project activities in the context of the national policies, and within the framework of the agreements between the Netherlands and the Sudanese Government. The supervisors may also intervene in project management in the case of conflicts, misuse of resources, and poor performance according to the project document or Plan of Operations. Further, the supervisors should have a leading role in organising internal evaluations and the preparation of follow-up projects or programmes.

The responsibilities of the Sudanese and the Netherlands supervisors are:

- to be informed on a regular basis about the activities of the project
- to verify that these activities are carried out as set out in the project document, and in line with the long term and short term objectives
- to contribute to the effectiveness of the project through their relations with relevant authorities at the national level, the Netherlands Embassy, the executing agencies, and officials in the Netherlands
- to ensure that the activities carried out by the WADS-Nyala project are carried out in line with the general aims of the WADS programme of Sudan
- to identify possible shortcomings and operational constraints in an early stage, and to discuss these with the management as well as relevant authorities.

X The Sudanese supervisor is the head of the ground^{water}~~work~~ research department.

8.2.2 Regional Director of NCRWD (El Fasher)

The role of the Regional Director of NCRWD is to see that WADS activities comply with regional priorities and programmes. The Regional Director verifies that financial control is adequately carried out, and assists the Project Director in preparing annual reports. The project's programme of activities (every 6 months) is discussed with the Regional Director who may ask additional written motivations for certain activities.

It is the Regional Director's responsibility to contribute to the project's effectiveness in view of long term regional objectives. To this end, the Regional Director or his representative participates in the Steering Committee (see 3.2.3) and has periodic consultations with the supervisors.

8.2.3 Steering Committee

The Steering Committee, composed of WADS, the regional office of NCRWD, and the head of the Land Use Department, sets the priorities of the village water supply programme, and monitors its progress. It will indicate when it appears necessary to change the priorities and to adapt the planning. The Steering Committee does not interfere in the management of the WADS project.

8.2.4 Rural Councils

The rural councils will be asked, within the limits of the capacities of the project, to propose priority villages. They will select these villages on the basis of motivated request. Rural councils may decide to form a village water supply committee to monitor the projects carried out, and to support village maintenance activities.

8.2.5 Department of Land Use, Soil Conservation and Water Programme

This department will collaborate with the project's community development section. It will assist rural councils to select priority villages to the Steering Committee. It will also participate in village resource studies, by putting staff at the disposal of the project for shorter and longer periods.

8.2.6 Provincial office of NCRWD (Nyala)

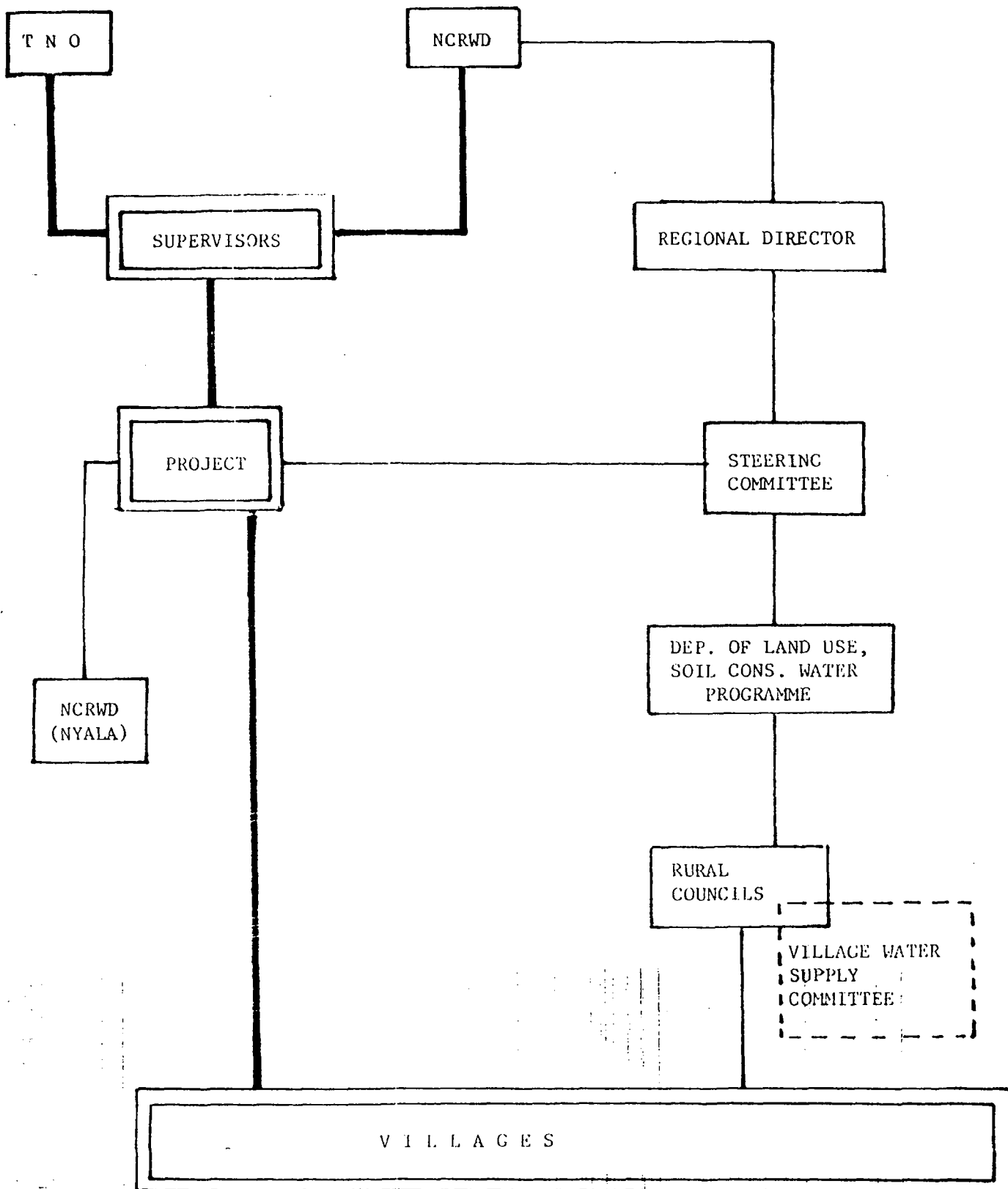
The project will collaborate with the provincial office in developing long term capacities for maintenance of village water supplies. Their collaboration may concern:

- a) the training of pump caretakers and mechanics
- b) construction wells
- c) technology selection.

The ~~provisional~~ ^{provincial} office has the competence to construct water supply systems (both boreholes and wells), and will be approached to implement village water supplies. However, its prices should be competitive and the quality of the work up to standard.

It should not be excluded that private contractors construct village water supply systems. The transfer of a constructed system to the village should take place only if its technical quality is verified. The procedures for control and transfer need to be worked out by the project before contracts are signed.

EXTERNAL RELATIONS OF THE WADS - NYALA PROJECT



9. FINANCIAL MANAGEMENT

9.1 Budget spending authority

The execution of a village water supply programme necessitates that the Project Director receives full powers to manage the financial resources.

The budgets allocated ^{by} ~~to~~ both the Sudanese and the Netherlands government would be transferred as lump sums. The Director, with prior control by the chief administration of the project, would have powers to make the necessary payments. He would prepare financial reports bi-annually, in order to allow monitoring by the executing agencies.

These procedures need to be further worked out by the project and NCRWD. A realistic solution for this problem of budget allocation and budget spending authorities is a condition "sine qua non" for the execution of the proposed programmes.

9.2 Powers of the TNO Chief Technical Advisor

The CTA will be authorised by the Project Director to make payments from the Netherlands financial contribution up to a proposed maximum amount of 1,000 Sudanese Pounds. This authorisation is not extended to other expatriate staff. Other payments from the Netherlands financial support require joint signature from the Project Director and the CTA. In the absence of the CTA, the Project Director will consult the Netherlands Embassy. Budgets for expatriate personnel and supervisory missions, will be controlled by TNO and the Dutch Government. The Project Director will be consulted in all decisions. Expenditures for external consultants need prior approval from the Project Director, who has final responsibility for the utilisation of all financial resources available to meet the objectives.

9.3 Special account

The project may carry out special assignments for other agencies in Southern Darfur. For each assignment, a contract will be established defining the financial conditions and a schedule for payments. The revenues from these assignments will be transferred to a special account and used for additional investments in equipment, on research projects and pilot studies.

9.4 Village contributions for construction

The financial contribution from villages in the construction costs of village water supplies will not be less than 30% of the total construction costs.

~~These financial contributions will serve to establish a village~~

water supply fund.

This revolving fund will be used to develop:

- a financial system to support village based maintenance
- distribution of materials, tools and spare parts.

The ~~other~~ ^{further} use and control of the fund will be discussed with the rural councils and the Steering Committee.

The fund may be nourished initially from down payments by villages associated with the establishment of a preliminary contract.

10. REQUIREMENTS FOR 1987/1988

10.1 Personnel requirements (Average per year)

Title of the Post	Number (man years)	Qualification
A. Supervision		
Netherlands Supervisor	0.2	P
Sudanese Supervisor	0.2	P
B. Management & Administration		
Project Director (Sudanese)	1.0	P
Senior Management & Training Advisor (CTA) - the Netherlands	1.0	P
Administrator	1.0	SP
Administrator	2.0	SS
Documentalist/archives	1.0	SP
Officer	1.0	SP
Typist	2.0	SS
Total Sudanese staff:	9	
Expatriate staff:	1	
C. Mechanical workshops & logistics		
Technical Manager (expatriate)	1.0	P
Pump Mechanic (hand pumps etc.)	1.0	P
Mechanic (vehicles)	1.0	SP
Mechanic (equipment)	1.0	SP
Assistant Mechanic	2.0	SS
Storekeeper	1.0	SP
Assistant storekeeper	1.0	SS
Typing assistant	1.0	SS
Drilling Engineer	1.0	SP
Drilling crew	2.0	SS
Clearing & logistic agent (stationed in Khartoum)	1.0	SP
Administrative Assistant (station in Khartoum)	1.0	SS
Total Sudanese staff:	14	
Expatriate staff:	1	

Title of the Post	Number (man years)	Qualification
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D. Monitoring & Evaluation Unit

Financial Economist (Business School or similar)	1.0	P
Socio-economist (expatriate) (assistant expatriate)	1.0	
Surveyors	2.0	SP
Draughtsman	1.0	SS
Administrative Assistant	1.0	SS
Typist	1.0	SS

Total Sudanese staff: 8
Expatriate staff: 1

E. Geohydrology Section

Head of Section (Geohydrologist)	1.0	P
Geohydrologist	2.0	P
Geohydrologist (expatriate)	1.0	P
Geo-physicist	1.0	P
Technicians	2.0	SP
Surveyors	2.0	SP
Support staff for field work	4.0	SS
Typist	1.0	SS

Total Sudanese staff: 13
Expatriate staff: 1

F. Village Projects Section

Head of the Section (Agro-economist or economist)	1.0	P
Water Engineer (Public health)	1.0	P
Lawyer/advocate	1.0	P
Land Surveyor	1.0	SP
Land Surveying Assistant	2.0	SS
Draughtsman	2.0	SP
Officer	1.0	SP

Total Sudanese staff: 9
Expatriate staff: 0

G. System Maintenance & Technology Improvement
Improvement Section

Head of the Section (Civil Engineer)	1.0	P
Mechanical Engineer	1.0	SP
Civil Engineer (expatriate/ assistant expatriate <i>associate expert</i>)	1.0	P
Foreman pump installation and maintenance	1.0	SP

Title of the Post	Number (man years)	Qualifications
Foreman well construction and improvement	1.0	SP
Mechanic Mason	2.0	SS
Technicians	2.0	SS
Draughtsmen	2.0	SS
Total Sudanese staff: 14		
Expatriate staff: 1		

H. Community Development Section

Head of Section (Socio-economist)	1.0	P
Horticulturalist/irrigation Engineer (ass. expatriate)	1.0	P
Community Development Worker/ information	2.0	SP

Total Sudanese staff: 4
Expatriate staff: 1

Grand total Sudanese staff excluding drivers,
watchmen and labour : 89

Total Expatriate staff : 6

P = professional staff
SP = sub-professional staff
SS = support staff

10.2 Transport

At present, the project holds 7 Landrovers, 5 Toyotas
and 3 heavy transport vehicles.

Considering the age of the Landrovers, additional vehicles will
be required:

Early 1987 - 3 Toyotas
Early 1988 - 4 Toyotas

10.3 Construction of village water supplies

Additional equipment for well construction should normally be provided by the implementing agency on the contract. Some provisions need to be made for the construction of wells by the system Maintenance and Technology Improvement Section.

10.4 Equipment (including offices)

A list of requirements should be drafted by the project for all departments and sections.

10.5 Buildings

The availability of offices should be discussed with the Regional Director. A possibility would be to use one of the present guest houses for offices and to assist professional staff in finding suitable accomodation in Nyala. The project could prepare a plan to accomodate the various sections and departments with office space.

Documentation and archives should have a separate office with suitable furniture.

An additional store will be required for geohydrological equipment, survey equipment and office supplies.

Storage of materials (PVS pipes, cement), pumps and spare parts should be arranged for with rural councils and NCRWD in Nyala.

10.6 Logistic support in Khartoum

Office space and storage space should be provided for by the logistic support unit in Khartoum. This unit will work under the Technical Director of the project, based in Nyala.

11. INDICATIVE BUDGET

11.1 Personnel

	£S (x 1000)	Dfl (x 1000)
<u>Sudanese Personnel</u>		
Professional Staff (2 x 13 x 12 000)	310	
Sub-professionals (2 x 24 x 5 000)	290	
Support Staff (2 x 32 x 3 000)	190	
<u>Expatriate Personnel</u>		
TNO Staff (3 x 3 x 200 000)		1 200
Associate Expatriates (2 x 3 x 185 000)		PM
	790	1 200

11.2 Consultants on short missions

	£S (x 1000)	Dfl (x 1000)
Local Consultants (18 man months)	45	
External Consultants (12 man months)		250
Supervisory Mission TNO		50
Supervision NCRWD	5	
Evaluation Mission (1988)	10	50
Support to documentation & information system		<u>40</u>
	<u>60</u>	390

11.3 Transport

Air transport (local)		40
Purchase of vehicles		280
Depreciation & Maintenance (20 vehicles)	150	100
Fuel	<u>500</u>	<u>200</u>
	650	620

11.4 Village water supplies

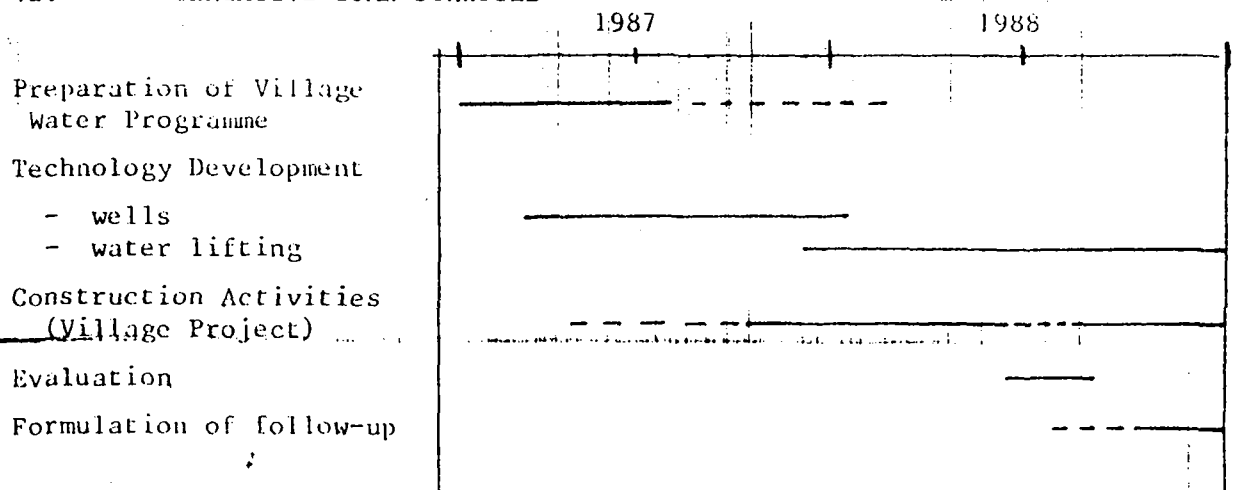
Geohydrological Surveys (120 x 1,400)	170	
Pump wells (40 x 10,000)	400	
Pump wells & water lifting equipment (50 x 15,000)	750	
Boreholes & pump (10 x 15,000)	150	
Improvement of existing system (40 x 5,000)	200	
Imported items		<u>500</u>
	<u>1,670</u>	500

11.5 Equipment

Depreciation & Maintenance	100	100
Offices	200	200
Water pumps	-	100
System Maintenance & Technolgy impr.	<u>100</u>	<u>200</u>
	400	600

	£S (x 1000)	Df1 (x 1000)
11.6 <u>Buildings</u>		
Depreciation & Maintenance	100	
Offices (200 m ² x 500)	100	
Stores (100 m ² x 500)	50	
Imported items	—	<u>50</u>
	250	50
11.7 <u>Logistic Support - Khartoum</u>		
Offices	20	20
Miscellaneous costs (cleaning etc.)	<u>10</u>	—
	30	20
11.8 <u>Support to Collaborating Agencies</u>		
Land Use Department		500
Rural Councils (5 x 20,000)		<u>100</u>
		600
11.9 <u>Pilot Studies</u>		
Hand pump development and testing		400
Well Construction & Maintenance		<u>200</u>
		600
11.10 <u>Miscellaneous</u>	—	<u>200</u>
GRAND TOTAL FOR 2 YEARS (NYALA PROJECT ONLY)	3850	4780

12. TENTATIVE TIME SCHEDULE



SHORT MISSION TO SUDAN IN SUPPORT OF THE WADS PROJECT IN SOUTH DARFUR REGION; 30 August - 28 September 1986.

Terms of reference for community water supply specialist.

1. General

The specialist will assist the national water corporation, in collaboration with the WADS project team, in defining priority fields of action to improve rural water supply in South Darfur Region, and to develop regional and local capacities for maintenance of rural water supply facilities.

During the short mission the specialist will coordinate his activities with the specialist carrying out a parallel short mission in the field of irrigation and agricultural development. Recommendations in the field of community water supply will take into account the first results of the work of the irrigation specialist.

The CWS specialist will put considerable effort in establishing dialogues with other projects in South Darfur Region, and with regional authorities.

The result of the mission should largely be supported by the various partners at the regional level in order to create opportunities for regional coordination.

2. Assessment of the level of information required

The specialist will collaborate intensively with the associate expert newly involved in developing socio-economic study activities in view of rural water supply activities.

He will make a general assessment of the present information available, the capacities to collect, process, and store information in view of monitoring, and programming of rural water supply activities,

To this end he will have working contacts with relevant organisations in Khartoum, and in Nyala.

He will identify information gaps, and priorities in information collection, compilation, and processing.

He will assist the associate expert in drafting a tentative working programme, with a detailed description of the activities to be carried out before 30 October.

3. Problem identification and analysis

Through consultation at the regional level and short field visits the specialist will identify which types of problems prevail in different situations. He will make an analysis of the different "typical" problems referring to certain geo-hydrological, or geographical situations. The analysis will concern demographic, organisational, financial, technical, ecological, and socio-cultural aspects. Considering the duration of the mission this analysis will be of general character.

4. Defining the main fields of action by WADS project

On the basis of the above information availability assessment and problem analysis, the specialist will collaborate with the project staff to define main fields of action. In defining these fields he will pay particular attention to the development of long term capacities for maintenance, including the problem of recurrent costs. His main task will be to seek a balance between the need to satisfy the basic need for drinking water and a realistic assessment of the potential to ensure the functioning of the facilities to be constructed or improved.

5. Identifying organisational solutions in view of flexible market oriented project management

The WADS project will develop its activities in rural water supply in order to fill gaps left by others. This calls for regional coordination, information exchange, monitoring, and iterative programming of activities.

This emphasis on strengthening, supporting, and complementing activities by others, calls for a market oriented type of project management. This approach has to be discussed with the project team. The specialist will identify feasible organisational solutions for discussion with TNO, NWC, IRC and DGIS.

6. Developing priority criteria for village water supply construction or improvement

Among the fields of action will probably be the construction, improvement, or rehabilitation of rural water supply facilities. The specialist will collaborate with the project team, and more particularly the associate expert mentioned under point 2, to establish draft priority criteria which will allow the project to programme its activities in a realistic, and flexible manner. These priority criteria will concern the felt needs, village priorities, accessibility, technical feasibility, costs, maintainability, and available resources at village level.

7. Technology choice

The specialist will discuss the problem of technology selection and development with the project team, and will inform himself on current experiences in the region. He will consider the possibility of introducing technology solutions on a pilot basis to allow for field testing.

8. Plan of operations

Before his departure the specialist will draft a short report (maximum 30 pages) on the above activities, and conclusions. He will describe the proposed rural water supply activities by the project, and draft a tentative time schedule. He will also indicate the required capacities in terms of personnel.

9. Other activities

Due to environmental conditions and population growth there is increasing migration towards urban centres. The migrating rural population is settling in fringe areas, where normal urban services are not necessarily provided at the normal service level. In some centres in the region there is a piped watersupply system, operated and maintained by a water enterprise. However, the rapid influx of the rural and non-solvent populations increased the demand without raising the financial means proportionally. This raises the question of the long term viability of the water systems. In view of this, increased community participation could be considered.

The specialist will identify prevailing constraints through discussions at the regional level, and indicate where the project may contribute to the development of appropriate solutions for the above long-term viability problem.

10. Reporting

The specialist will prepare a note of maximum 3 pages for use in discussion with TNO/DGIS/IRC/ILRI concerning the plan of operations. This note will summarize the conclusions and the activities of the project for 1987 and 1988.

