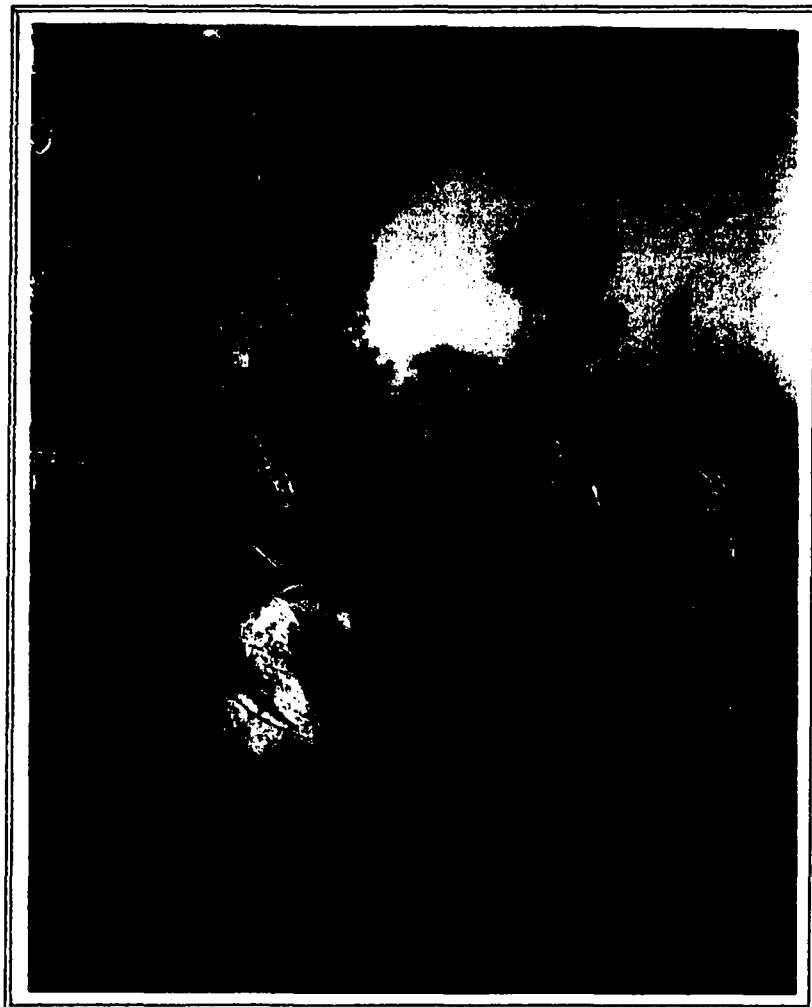




IRC R824 TZM092

Water for Health

MOROGORO



VOLUME I

Proposal for the Rural Water
and Sanitation Programme
Tanzania
1993 - 1997

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SECOND DRAFT

JULY 1992

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LIST OF ABBREVIATIONS

Afya	Ministry of Health
AMREF	African Medical and Research Foundation
ARDHI	Institute in Dar es Salaam
CDA	Community Development Assistant
CTA	Chief Technical Advisor
DANIDA	Danish Development Cooperation
DED	District Executive Director
DFA	District Field Assistant (under Maji)
DGIS	Directorate General for International Cooperation, The Netherlands
DHV	DHV Consultants, The Netherlands
DPM	District Programme Manager
DSU	District Support Units
DWP	Domestic Water Points
EC	Electrical Conductivity
FINNIDA	Finnish Development Cooperation
GTZ	German Development Cooperation
GWS	Groundwater Survey Ltd. Kenya
GoN	Government of The Netherlands
GoT	Government of Tanzania
HESAWA	HEalth and SANitation through WATER development
IRC	International Water and Sanitation Centre
IWP	Improved Water Points
IWS	Improved Water Supply
Maendeleo	Ministry of Community Development
Maji	Ministry of Water, Energy and Minerals
MWEM	Ministry of Water, Energy and Minerals
NEPP-plus	National Environmental Policy Plan 1990-1994, The Netherlands
NORAD	Norwegian Development Cooperation
OOP	Objective Oriented Planning
PMO	Prime Minister's Office
PSU	Regional Programme Support Unit
RC	Regional Commissioner
RDD	Regional Development Director
RNE	Royal Netherlands Embassy
RWSP	Rural Water and Sanitation Programme
SIDA	Swedish Development Cooperation
SWL	Static Water Level
SWN (80)	Handpump used in RWSP
TWSSC	Handpump factory Morogoro
UNDP	United Nations Development Programme
VHA	Village Health Assistants
VWSC	Village Water and Sanitation Committee
WSU	Watersector Support Unit

EXECUTIVE SUMMARY

The design of the Rural Water and Sanitation Programme (RWSP) in Morogoro for the next five years focuses on two related objectives: water supply for domestic consumption and reducing water related health risks by hygiene education and improved sanitation. The downward trend in the percentage of population that has access to reliable and safe sources of water is to be changed into an upward trend with clearly defined coverage targets for the programme period. The programme is concerned primarily with rural domestic water supply.

Approach to formulation

The proposal for an extension of the RWSP has been formulated as a major new step in a process of water development that has been undertaken in the past twenty years. During the seventies the focus was on production of new waterpoints. It was quantity that counted; the coverage of Improved Water Points (IWP) increased significantly. During the eighties the need for community involvement was identified and translated into a new approach. The focus was on participation and community based operation and maintenance. With this focus on 'quality' a solid foundation was formed for sustainability at village level, but new construction of IWP got little emphasis. As a consequence, the coverage of operational IWP in the region as a whole deteriorated. The present proposal aims to offer a formula in which the merits of the former two approaches are combined; further strengthening of the community approach, together with a significant improvement in the water supply situation of the region. In view of the past experience, it was clear from the outset that the reintroduction of new construction should not in any way suppress or diminish the community orientation of the Programme. Hence the challenge to find a mode of operation that realises rapid expansion of programme activities into new areas, within the framework of a community driven programme. Implementation of the National Water Policy would require a massive operation, which, in terms of size goes much beyond anything that has been done so far and hence does require well defined Programme targets. In working on the formulation, it became clear that no 'blue print' can be provided for a large operation like this. There are two main reasons that stand in the way of a detailed planning of Programme targets. The first result from the community based approach. The degree in which communities actually give priority to improvements in water supply, and are willing to mobilize resources for that purpose, is unknown and hence introduces an uncertain factor in the planning. Secondly, the feasibility of implementing high output targets, depends apart from funding and technical expertise, on the actual human resources available to the Programme. Although an assessment has been made of the existing human resources situation, the actual availability can only be determined after working-consultations with District and Regional Authorities and other potentially supporting organizations.

For this reason the following approach has been used for the formulation of Programme targets. Based upon the development objectives as formulated in the National Water Policy and an analysis of the present situation with respect to water supply, reference targets have been formulated for the number of IWPs to be realised by 1997. For the above mentioned reasons the actual Programme targets cannot be equated to the reference targets.

Purpose of the proposal

The present proposal is not the last step in Programme formulation. The final Programme targets can only be defined through thorough consultation/negotiation on district level during the inception phase of the new Programme. In order to support these discussions during the inception phase, the present document provides detailed calculations of the reference targets for outputs and inputs (human resources, equipment, funding). It should be stressed that these figures are for reference purpose only, and cannot yet be treated as planning figures. It is envisaged however that the present document provides sufficient information to work out a detailed 'plan of operation' for each of the districts and for the region as a whole.

Community Based Approach

The strategy to be followed for the next five years will be to combine the new participatory approach with targets for new construction. The approach is community based. This implies that the community determines the pace with which technical interventions can take place.

Once awareness exists on the risk of using unsafe sources of water, communities must be supported in their activities to reduce these risks. Hence, construction of water supplies will always be in response to a request from the community. This has major implications for the way the programme operates:

- Awareness building should precede any other Programme intervention.
- Interventions should directly respond to community initiative. Hence flexibility is needed.
- Quick response of the Programme to community requests is needed to ensure effectiveness of mobilization efforts.
- The community should take responsibility for the operation and maintenance of the IWPs. The Programme must ensure that basic conditions for good maintenance, such as the availability of spare parts are fulfilled.

The number of villages with implementation activities is likely to be smaller than the total number of villages in the Programme Intervention Area (PIA), because villages which have not taken any initiative after initial mobilization efforts will not yet be served by the programme. This implies that quantitative targets need to be interpreted in a flexible way and adapted if the need occurs. Annual Programme reviews are proposed, so as to recommend on alterations in Programme targets and budgets.

Reference targets based on National Policy

According to the data collected in field research the present installed water supply capacity is sufficient for 45% of the population in the region. However, the operational water supply capacity for the rural areas is only 28%. The National Water Policy aims at full coverage by 2002. Since for Morogoro achievement of this objective is not considered impossible, the reference targets for Morogoro region have been derived from the level prescribed by this policy. Assuming an average number of 300 people (= 50 households) per Improved Water Point (IWP), it implies that an additional 4484 water points need to be constructed and 725 rehabilitated by the year 2002 to reach full coverage. This would require a very ambitious programme, whereby the production gradually increases to a level over 500 improved water points per year.

The development objectives and related reference targets can be formulated as follows:

- A. To substantially increase safe and reliable sources of water in Morogoro region through a community based approach. The reference targets for 1997 are:
 - Over 1600 IWPs constructed or rehabilitated (including improvement of traditional water points).
 - The coverage to be increased to over 54% by the end of 1997.
 - Effective and regular use of IWPs by a maximum number of stipulated users households.
 - Participation of users (particularly women) in planning, implementation and management of IWS.
 - Low percentage of wells running dry during the dry season.
- B. To ensure sustainable operation and maintenance of IWPs at village level. This should be reflected in:
 - Low percentage of IWP out of operation.
 - Availability of spares in all districts.
 - Short period required for repair (eg. less than two weeks).
 - Number of well functioning users' organisations, with sound financial management.
 - Number of women in village government committees concerning water supply, health, and sanitation.
- C. To minimize the health risk related to water. In view of the very high percentage of population still using traditional sources, a realistic assessment of the most urgent health risks needs to be made. If the risks from traditional water sources can be reduced by improving them, these measures should be included. A phased system might be adopted in which priority is given to basic improvements in a large number of villages (eg. spring protection, improving open wells, regular quality inspection/disinfection), whereas the more sophisticated solutions (installing pumps on shallow wells, piped water systems) are done in successive phases. Success can be measured by:
 - Increased use of water from IWPs, as compared to utilization of traditional (non-improved) water sources.

- The number of improved wells with handpumps, relative to the total number of improved wells.
 - Frequency of preventive inspection/disinfection of existing open wells.
 - Decrease of water related diseases.
 - Number of good latrines built and general cleanliness in the village, with special focus on water waste disposal.
- D. Developing village based implementation capacity for IWPs. Sustainability of safe and reliable community water supply, needs to be realised primarily at village level. The ability at village level to improve existing water sources and to make new wells should be supported. Success in this respect is to be measured by the number of fundi's (i.e. local craftsmen and small contractors) operating in the area and the number of IWPs constructed by fundi's.
- E. Institutional development at district level to ensure that crucial functions of the Government in support of community initiative can be performed.
- F. Programme implementation shall be environmentally sound. This implies that no activities shall be undertaken with high environmental risks.

Participation of women

The main gender issue in the new Programme is to increase the involvement of women in and commitment towards improved water supply. The strategy will be to involve them in planning, implementation and management at grassroot level and strengthen their contribution to the decision making process by their effective participation in users committees and the Village Water and Sanitation Committee.

This will imply:

- Formation of users committees at each improved water point, with a high representation of women.
- Representation of users committee members in the Village Water and Sanitation Committee.
- Special emphasis on participation of women in training, to strengthen their leadership skills and their knowledge of financial management in relation to the improved water supply.
- Female staff in field teams, to allow for better communication with the village women.

Acceleration of programme implementation

The reference targets as indicated above would require a major acceleration of implementation activities. Thus a strong achievement motivation is needed among all parties concerned with the programme. Because the government capacity is limited it should be augmented with implementation potential elsewhere, especially within the communities supported. The programme shall make efforts to allow craftsmen and small contractors to execute part of the work.

Both with respect to simple water supplies and sanitation, the government activities in implementation should be looked at as 'seeding' (demonstration, education) whereas the communities thereafter take over the activities. Gradually the Programme and GoT might confine themselves to some financial and technical support to these community activities.

Activities to be undertaken by the programme

It is envisaged that eight groups of activities shall be undertaken by the Programme:

1. Community mobilization and strengthening of village level capabilities for sustainable operation and maintenance of IWPs.
2. Mobilisation of and training for women to strengthen their participation in users committees and VWSC.
3. Training of villagers to ensure proper O&M of IWP.
4. Hygiene education campaign, training of village health assistants and development of health education materials.
5. Construction and rehabilitation of IWPs.
6. Development of village based implementation capacity for IWPs.
7. Cooperation with training institutes and other organizations for health education, community development, financial management and training of fundi's.
8. Miscellaneous studies, including an investigation of the desirability and feasibility of a credit scheme for financing of equipment for fundi's and small contractors; a small study on the institutional aspects of rural water supply (e.g. water board, water companies), and a study on type of services to be rendered by the district government to ensure sustainable domestic water supply.

Technological options

The technological options used at present for water development in Morogoro are: hand-augered wells, shallow (ring) wells and gravity schemes. It is clear that hand drilled tube wells will remain the main water development option in the region. However for the next phase additional options will be considered as well.

Mode of implementation

The present implementation capacity of Maji, Afya and Maendeleo departments in the districts is not sufficient to achieve the ambitious targets set. Therefore the formulation mission proposes to set up a small but highly professional management team, which has the capability to manage and supervise all programme activities within each district. This team will consist of the following highly skilled specialists, seconded to the programme from the various departments involved:

- Programme Manager, overall programme management.
- Community development specialist, in charge of all CD activities and training.
- Specialist on health issues related to water supply and sanitation, in charge of all hygiene education and related training;

- Water engineer, in charge of design, supervision of construction and quality control.

The team will be supported by:

- Mobile team of supervisory staff for CD and construction.
- Office support staff, including accounts officer.

Implementation

The volume of work required to achieve reference targets goes much beyond the existing Government implementation capacity. It is therefore proposed to subcontract an increasing portion of the construction programme to local entrepreneurs (fundi's and small contractors).

Organization

The programme will be executed on District level under supervision of the District Development Director (DED). The DED will appoint a Programme Manager, with delegated authority from the DED to run the Programme.

The donor will establish District Programme Support Units (DSU) to provide the Districts with additional means to implement the Programme. Two advisors are proposed for the Regional Programme Support Unit (PSU) overseeing the District Support Units. The PSU is attached to the Regional Planning Unit.

The major deviation from the institutional structure of the previous phase is that implementation is fully done by the districts, and that donor support is organised through DSUs. In accordance to the regular Government structure, the District can get assistance from the regional level. Since the Regional Water and Sanitation Steering Committee will remain the focal monitoring body for the Programme, reporting of district activities and monitoring data to the regional level is required.

It is recommended that the Programme shall no longer be combined with Shinyanga region, so as to facilitate efficient decision making at regional and district level.

In order to facilitate coordination at the national level, it is recommended that PMO shall act as coordinating Ministry for the Programme.

Programme requirements and budget

In view of the acceleration of output, considerably more staff will be required for programme implementation. Most crucial for the implementation of the community based approach is the allocation of additional Community Development Assistants (CDAs) to those districts with a shortage. PMO should be requested to support applications from the districts in this respect. During the inception period this issue is to be sorted out for each of the districts.

Details on staff and equipment required, as well as the budget are elaborated in chapter 16. If reference targets are to be achieved, TAS 1550 million will be needed for local expenses (for the period 1992-1997). The total budget, including the technical assistance (Dutch experts, consultancy missions, etc.) is estimated at TAS 2150 million for the five years period.

Part 1

Background

1. INTRODUCTION

1.1 TERMS OF REFERENCE AND MISSION COMPOSITION

In the first quarter of 1992 a mission was carried out for the formulation of a new phase for the Rural Water and Sanitation Programmes in Shinyanga and Morogoro Regions. The first Terms of Reference for the formulation was suggested in the evaluation report of 1991. Preliminary discussions were held by the DGIS desk in November 1991 with representatives of the three Ministries involved in the Programme. In January, the team leader and the rural water supply expert of the formulation mission concluded discussions with the three Ministries and the RNE on the Terms of Reference (Appendix I refers). An approach was agreed in which first a fact finding mission would be carried out synchronously in the two regions, aimed at producing District Water Profiles for each of the nine districts involved. This phase of data collection was carried out in four weeks for each region by two expatriate researchers (a water engineer and an expert in training/extension and gender issues) and two Tanzanian team members recruited from within the current RWSP. In each District data were collected and verified and preliminary discussions were held with District authorities. Most districts had already produced a five year plan or budget for the RWSP. On the basis of this information, the actual formulation was carried out in March 1992, with one week of consultations both in Shinyanga and Morogoro, and a week of final discussions and report writing in Dar es Salam. The consultations in the two regions involved discussions with the authorities of each district and the regional authorities. In both regions a debriefing meeting was organised with all these representatives of the region and the districts, which led to lively and very fruitful discussions on the preliminary observations of the mission. The mission consisted of the following members;

- Mr. M.M.D. Rukiko, Construction Engineer, Ministry of Water, Energy and Minerals.
- Mr. L.G. Msimbe, Assistant Commissioner for Community Development, Ministry of Community Development, Women Affairs and Children.
- Mr. C.A.L. Swai, Environmental Health, Ministry of Health
- Mr. A.R. Tarimo, Project Management Officer, Prime Minister's Office.
- Mr. J. de la Rive Box, Institutional aspects (team leader), Matrix Consultants, Utrecht.
- Mrs. M. Boesveld, Community development, training and gender issues; IRC, The Hague.
- Mr. P. van Dongen, Rural water supply specialist; Groundwater Survey Ltd Kenya.
- Mrs. C. Mulders Environmental issues; GWS, Kenya.

Three mission members, i.e. Mr. Swai, Mr. Tarimo and Mrs. Mulders, have not participated in the fieldwork in Shinyanga and Morogoro. The District Water Profiles in Morogoro were made by Mrs. M. Kroon, D. van Enk (GWS, Kenya), Mr. Nganga and Mrs. Chisunga. In Shinyanga the profiles were made by Mrs M. Boesveld (IRC), Mr. Karanja, Mrs. Sana and Mr. Kalomo.

1.2 APPROACH TOWARDS FORMULATION

1.2.1 Strategy for continuation of the Programme

The strategy to be considered for the next five years would be to combine the new participatory approach (in accordance to the System Design) with new construction, so as to effectively contribute towards the Water Policy objectives. The overall development objective for the programme will be derived from the GoT Water Policy, while the approach is community based. The approach implies that the community organisation component determines the pace with which technical interventions can take place.

The Programme should be concerned primarily with domestic water supply. Other uses of water distinguished in the Water Policy, such as water for irrigation, livestock, industry etc. will not be included in the objectives for the Programme.

1.2.2 Formulation of Programme objectives and targets

Implementation of the National Water Policy would require a massive operation, which, in terms of size goes much beyond anything that has been done so far and hence does require well defined Programme targets. In working on the formulation, it became clear that no 'blue print' can be provided for a large operation like this. There are two main reasons that stand in the way of a detailed planning of Programme targets. The first result from the community based approach. The degree in which communities actually give priority to improvements in water supply, and are willing to mobilize resources for that purpose, is unknown and hence introduces an uncertain factor in the planning. Secondly, the feasibility of implementing high output targets, depends apart from funding and technical expertise, on the actual human resources available to the Programme. Although an assessment has been made of the existing human resources situation, the actual availability can only be determined after working-consultations with District and Regional Authorities and other potentially supporting organizations.

For this reason the following approach has been used for the formulation of Programme targets. Based upon the development objectives, the national Water policy and health, and an analysis of the present situation with respect to water supply, reference targets have been formulated for the number of IWPs to be realised by 1997. The reference targets assume full cooperation of the communities and availability of human resources. For the above mentioned reasons the actual Programme targets cannot be equated to the reference targets.

1.2.3 Environmental aspects

Water supply is known to create an environmental risk, especially when new wells are constructed. If this leads to growth of livestock numbers, it could result in overgrazing in areas where the limits of carrying capacity have been reached (or exceeded already). In the present programme livestock is kept outside the well-site. Moreover wells are mostly located in villages or cultivated area's, with a caretaker on the spot. Provided that the normal precautions are maintained, the environmental risks seem to be fairly limited.

It is known however that cattle farmers approach the Programme for assistance in well construction specifically for animal husbandry. In these cases, an appropriate environmental impact assessment should be made. The approach to be followed for this assessment will be worked out in detail in the formulation report.

1.2.4 Identification of local pump production/assembly capacity

Programme extension would hardly be justified, if no local solution can be found for the supply of pumps and parts. The evaluation mission recommended that prior to formulation (or in close conjunction) a mission be fielded to identify local producers and to carry out test production. The mission should also recommend on the type of pump to be advocated for future use. A Terms of Reference for this mission has been discussed in January 1992 with all parties concerned, as part of the consultations on the formulation mission. The draft text was supported by all parties, and its execution prior to (or in conjunction with) the formulation mission was deemed necessary. The ToR for this mission is appended.

1.3 PURPOSE AND STATUS OF THE FORMULATION REPORT

The present report is a draft proposal, for purpose of discussion by all parties concerned. It is recommended that the present proposal be presented to the Regional Steering Committee in Shinyanga/Morogoro for their consideration, as well as to the Directorate General for International Cooperation (DGIS) and the Royal Netherlands Embassy (RNE). Suggestions for amendments from the region and the districts could be compiled by representatives of the RNE. In order to avoid a lengthy procedure of redrafting and new discussions with all parties, it is suggested that a separation be made between comments that would change the concept of the present proposal (and hence require modification of the proposal itself), and those comments that leave the basic concept in tact, and hence can be compiled in an addendum to the report.

The report is to be judged in connection with the proposal on the supply of pumps and spares, which is produced separately. The latter report was not yet ready upon finalization of the present draft proposal.

1.4 LAYOUT OF THE FORMULATION REPORT

The report contains three volumes; the first volume contains the full proposal; volume two contains the District Water Profiles with a summary of findings and volume three contains the five year budgets presented by the Districts to the formulation team. The latter volume is not distributed for discussion, it will be made available however to programme implementors. In the first volume, a separation is made between background information and review of past experience (Part One), and a description of the Proposal for the next phase of RWSP (Part Two). The first chapter in part two (chapter 6) provides an outline of the proposal as a whole. In subsequent chapters details for the various aspects are worked out.

In view of the recommendation to execute the Programme separately for the two regions, also the formulation report has been separated into a proposal for Shinyanga and a proposal for Morogoro. The text of the two proposals is identical to a large extent, with exception of the following paragraphs/chapters:

Chapter 3: 3.3

Chapter 5: all

Chapter 6: all except 6.3

Chapter 7: all

Chapter 9: 9.5

Chapter 14: all

Chapter 16: all

As well as Appendix III and IV.

2. DESCRIPTION OF THE WATER SECTOR IN TANZANIA

2.1 NATIONAL WATER POLICY

Since independence in 1961, the Tanzanian Government has given high priority to the development of rural water supplies. In 1971, the Government issued a 20-year programme of supplying potable water at accessible distance to all people in the rural areas.

The Government water policy was reinforced further by the global declaration of the International Drinking Water Supply and Sanitation Decade (1981-91) which linked the water supply and improved sanitation facilities. At the end of 1991, the people served with improved water supplies was 44% for the whole of Tanzania. However, the actual coverage is lower because about 40% of the installed water facilities are not in working condition for various reasons, such as lack of spare parts, fuel for the pumping plants, etc. In general, the economic setback suffered by Tanzania during the last 15 years has contributed significantly to the low coverage.

Realizing the water problem, the Party in its 15-year programme (1987-2002) directed that all people should be supplied with potable water at accessible distance (400 m) by the year 2002. Based on this the Ministry of Water, Energy, and Minerals (MWEM) has issued a Water Policy detailing the approaches and strategies in achieving water for all by the year 2002.

Emphasis is geared towards the involvement of communities in the planning, construction, operation and maintenance of the rural water supply schemes, in order to attain sustainability of the water projects.

As the availability of GoT development funds is very limited, the GoT is looking for assistance from various agencies for the implementation of these ambitious goals.

2.2 MAIN STRATEGIES OF THE GOVERNMENT

In order to implement the above targets MWEM has planned the following main strategies:

- Rehabilitation of major rural and urban water supply schemes.
- Develop new rural water supply schemes, in cooperation with international funding agencies.
- Include rural sanitation as an integral component of the water supply programme.
- Preparation of long-term water development plans for small urban centres.
- Promotion of supportive activities, i.e. training of technical staff, rehabilitation of facilities at national, regional and district level (eg. water quality laboratories), execution of special studies, revision of water master plans, etc.

- Promotion and use of local consultants/contractors and artisans. The Water Sector intends to engage small contractors and consultants close to the project areas to be contracted to execute identified projects under supervision of the Ministry as opposed to direct use of technicians and artisans employed by the Ministry which is the current practice. This will result in increased implementation capacity of the Sector in general (quoted from: DAILY NEWS, Maji Week Supplement, March 26, 1992).
- Adoption of low-cost technologies will be emphasized. These include rain-water harvesting technologies in the dry regions, construction of open wells, hand pump wells, gravity schemes, and promotion of small scale slow sand filter as a means of treating water for domestic use.
- Gradual establishment of cost recovery will be promoted.

2.3 DONOR AGENCIES ASSISTING GOT

A large number of bilateral and multi-lateral funding agencies are assisting the GOT with the implementation of the National Water Policy. Multi-lateral agencies, are mainly:

- UNICEF setting up rural water supply activities in] District (Ruvuma Region), Masasi District (Mtwara R) and Kisarawe and Rufiji Districts (Coast Region).
- UNDP, providing a support team for the Water Department, providing inputs for the Arusha Water Master Plan, implementation of the Shinyanga Rural Water Supply and Sanitation Programme (in Kishapu & Negezi Divisions of Shinyanga Rural District).

Bilateral agencies actively involved in rural water supply and sanitation programmes are:

- FINNIDA, supporting the implementation of the Mtwara - Lindi Rural Water Supply Project in southern Tanzania, and support to the Zanzibar water supply programme.
- DANIDA, Rural Water Supply Programme for Iringa, Mbeya and Ruvuma Regions.
- SIDA, supporting the Rural Water Supply, Environmental Sanitation and Health Education Programmes in Mara, Mwanza and Kagera Regions.
- NORAD with the execution of the Kigoma and Rukwa Regional Water Programmes.
- GTZ in Tanga Region and a few smaller programmes elsewhere in Tanzania.
- DGIS (Netherlands) with Shinyanga and Morogoro Rural Water Supply and Sanitation Programme.

The figures given in the table below are very approximate estimates which were gathered from project documents. These are by no means authoritative, and only meant to be indicative!

Table 1: Approximate contributions for External Funded Programmes

Agency	Direct Costs	Over heads	TOTAL COSTS	p/yr M US\$
SIDA (1 year)	12 M SEK	26	38 M SEK =	6.3
NORAD (1 year)	8 M NOK	12	20 M NOK =	3
DANIDA (5 years)	110 M DKR	70	180 M DKR	5.6
FINNIDA (3 years)			45 M FIM	4
GTZ (per year)			4 M DM =	2.5
DGIS			5 M DFI	2.7
Total/yr				24.1 M

The total input by various multi-lateral donors and NGOs is considerable. We estimate the total turnover in the Water Sector to be in the range of US \$ 30 million per year.

2.4 EXPERIENCE FROM SIMILAR RURAL WATER SUPPLY PROJECTS

Over the last 20 years ambitious targets have been set and considerable resources have been spent to reach these goals. Still, Tanzania remains very far from achieving the goals of universal access to safe water and sanitary means of excreta disposal. In addition to the large proportion of communities still to be covered with improved water supplies, many of the existing schemes are not functioning.

The main problem has been that the rural water supply and sanitation programmes have all been too pre-occupied with technological solutions rather than the social context in which these technologies are expected to function. Furthermore the Government has tried to take sole responsibility for providing safe water to its citizens.

All bilateral funded programmes of SIDA, NORAD, DANIDA, FINNIDA and Netherlands after struggling for a considerable number of years with problems of sustainable operation and maintenance, have recognized this problem and follow now all a community-based approach to solve the maintenance at village level.

The emphasis in most programmes for rural water and environmental sanitation development in Tanzania is now to incorporate these aims in a wider context of more fundamental social development objectives. Improved water supplies and sanitary facilities should be people's own concerns, but it should be the responsibility of the Government, external agencies and NGOs to assist families and communities in making cost effective technologies accessible and affordable. (In part quoted from UNICEF programme document.)

Implementation is done in all four programmes by a combination of Maji and Maendeleo with sometimes Afya joining, mostly at regional level. Successes are not spectacular, and implementation rates are relatively low, in most cases these do not even match the population growth. SIDA is following the HESAWA approach (HEalth and SANitation through WAtER development), recently adopted by NORAD as well for Kigoma Region. In all projects a large proportion of the funding goes to training and institutional development.

3. SHORT REVIEW OF RWSP

3.1 BACKGROUND

The Netherlands assistance to the water sector in Tanzania dates back to 1971. The general objective of the assistance in the Morogoro and Shinyanga region remained the same: sustainable improvement of the living conditions and health situation of the population of the Morogoro and Shinyanga regions by the permanent availability of good quality drinking water.

Up to 1982 the main emphasis was on achieving quantitative targets and clearly defined physical outputs. Little or no attention was paid to involving the rural population concerned in any of the actions taken. In conformity with the policies of Tanzania at the time, water supply facilities (wells, handpumps and sometimes piped water supply-schemes) were provided free of charge to the rural communities concerned, and repair and maintenance were supposed to be taken care of by the government.

In 1982 an evaluation mission revealed that 11 years of technical and financial support to improved rural water supply in Tanzania had not produced substantial results, mainly because of inadequate repair and maintenance provisions. Most of the facilities created at village level were non-operational. It was therefore recommended to delegate the responsibilities for the schemes already rehabilitated to district and village levels in order to enhance the prospects for involvement of the villagers. This recommendation coincided with the District Authorities Act of 1982 which decentralised almost all relevant functions of the central government to local government authorities at district and village levels, including operation and maintenance of domestic water supply schemes. The new approach of the programme was first evaluated in 1987. It was concluded that as the system for operation and maintenance was still in the process of being developed, there was a need for additional support. Emphasis was given to the availability of spare parts to ensure that they are easily accessible to the villagers. The mission recommended to extend RWSP with a second phase putting more emphasis on the elements of community participation and health. Furthermore, it was suggested to separate the manufacturing of pumps and spare parts from the project.

The Plan of Operations for the next phase was prepared in 1987/88 by the Dutch water specialist attached to the Netherlands Embassy. The Plan of Operations refined the 'System Design' of the Programme, which included a step-by-step approach on how to approach the rehabilitation or construction activities in the villages. The approach aimed at securing full participation of the village communities in all stages of programme implementation, so as to enhance sustainability of O&M. The implementation of this new approach has denoted a major shift in programme strategy, from a construction-oriented approach towards one giving priority for community based O&M.

Targets were set for the rehabilitation of 281 shallow wells and the construction of 82 new ones. In 1991 the programme was evaluated. As the evaluation laid down the basis for the current formulation, the main conclusions and recommendations of the 1991 evaluation mission will be dealt with in the paragraph below.

3.2 MAIN FINDINGS OF THE EVALUATION MISSION

3.2.1 Programme preparation and objectives

The evaluation mission of 1991 concluded that the Plan of Operations was sound in concept but poor as management structure. It was found that the present formulation of objectives was somewhat ambiguous on the relative priority to be attached to water-supply objectives vis-a-vis community development objectives. For the future a strategic choice was to be made in this respect. The application of a process approach without performance indicators and service targets, made it difficult to keep the programme on track.

3.2.2 Performance and achievements

The progress of activities got delayed for almost one year. The expenditures by the end of 1990 were only 63% of the approved budget for the corresponding period. Only 2 out of 160 water-points had been handed over to the villages as yet. Various reasons can be mentioned for the delays such as late approval of the Plan of Operations, the collapse of the supply agreement with TWSSC and slow budgeting and disbursement processes. A spirit of 'common purpose' and genuine collaboration appeared to be lacking.

The step-by-step approach, which provided a framework for activities at community level, seemed to have been adopted well by all parties concerned.

The strict procedures of the Plan of Operations resulted in excessive workload for the consultants team. This reduced their professional contribution to the Programme to an unjustifiably low level. Performance in data-collection and analysis had been very poor.

3.2.3 Institutional framework

The evaluation mission considered the institutional structure cumbersome. The organization was top-heavy and there was confusion about distribution of tasks in the Programme, which hampered clear demarcation of responsibility. This created a management vacuum, drawing the advisors into executive roles. This, in turn, reduced the sense of responsibility of the officers in charge. Undue complexity of functional relations within the structure made that the system consumes a lot of energy just to keep it going and to keep everybody informed.

The envisaged district focus had not been realized sufficiently. The regional level continued to feature prominently in decision-making and programme design and implementation. Largely as a result of lack of genuine agreement with respect to decentralisation provided for in the programme's Plan of Operations. The coordinating role of the Community Development Department had become effective and useful at field level but had remained constrained at higher levels as a result of lack of agreement between the ministries concerned and Maendeleo's limited authority over other implementing parties.

3.2.4 Water supply and sanitation aspects

The SWN 80 handpump used in the Programme turned out to be a durable pump, which limits maintenance requirements. Meanwhile even more maintenance-friendly hand pumps had been developed, and hence the present choice should not be unchallenged.

3.2.5 Hygiene education and sanitation aspects

Hygiene education and sanitation aspects have been somewhat neglected; they have received less support from the District Health Departments than expected, mainly due to a lack of proper guidance and properly trained staff.

3.2.6 Community participation, women involvement and sustainability of the village water supply system

The step-by-step approach safeguarded that minimum conditions for community involvement and motivation were met. Women have been very marginally involved, however. Development of some basic skills on village level (caretakers, village mechanics) has been satisfactory. Non-availability of spares is mentioned by the villagers as the major handicap for proper maintenance.

3.2.7 Programme extension and formulation

The mission concluded that ample justification for extension of the Programme existed, on the basis of a number of factors:

- the O&M concept has a good potential;
- water is considered among the most essential village level facilities;
- present distribution of water-supply facilities is very uneven;
- replicability, which is not yet achieved, should be the final objective for donor intervention.

It was recommended that a new phase of five year should be formulated.

In view of the fact that almost all rehabilitated water-points still needed to be handed over, and that rehabilitation had been still under way for many villages, a prolongation of the present phase until 31 December 1991 was recommended. It was presumed that by this date all rehabilitated systems would have been handed over to the villages.

3.3 FINDINGS OF THE PRE-FORMULATION STUDY TEAM

The findings of the pre-formulation team are elaborated in volume II. A summary of the main findings is presented below.

Coverage

The present coverage of population served with operational IWP is 28% with a variation between 26% and 39%.

Cost recovery

It is apparent that cost-recovery is not yet an issue in the districts. None of the district staff was actively pursuing this issue. However it was found that the supply of water influences the attitude of the target groups of the programme. In Morogoro Rural and Kilosa, the willingness in the villages to contribute to the water fund is for instance better than in Ulanga.

At present cost recovery of the water supply at village level is slowly taking shape. For example the balance of the O&M fund per village in the Morogoro district is on average Tsh. 26,337, in Kilosa it comes to Tsh 47,107 in Kilombero to Tsh. 17,912 and in Ulanga to Tsh 6,456.

Handing over

In Morogoro Rural 14 out of the 28 villages will be handed over to the village governments. In Kilosa this will be 11 out of 27, in Kilombero 20 out of 21 and in Ulanga 12 out of 20. The main reasons for delays are lack of materials (spare parts), non-availability of transport and the long time needed for the Regional Department of Water to design and approve new waterpoints to be developed in the villages. For the field staff these delays affect their work negatively as the villagers lose confidence. In terms of the RWSP's step by step approach the main delays occur in steps 4,5 and 11.

Occurrence of diseases

In the districts of Kilombero 849 cases of cholera were registered in the period December 1991 January 1992. Part of the problems is caused by latrine pits collapsing due to high water levels.

Impact of hygiene and sanitation education

The impact of the hygiene and sanitation education is not optimal due to the following:

- training has been targeted too much to leaders such as ward secretaries, village secretaries and not to the final beneficiaries;
- HA's methods of educating villagers is done by e.g. inspecting their houses and latrines. This creates resistance;
- HAs miss skills in communication and community mobilization. So far little training is done in the villages with the final users.

Gender issues in relation to hygiene and sanitation

There are hardly any female staff in the preventive health care system in the districts concerned. Gender issues are not considered and gender specific data are not available.

Gender issues in general

The main factor hindering the participation of women in the RWSP is their absence in the village decision making process. Their priorities are therefore not heard. Even the VWSC, as it is functioning currently in most districts does not represent women's views, as the female members are elected in a non-democratic way and thus miss the back-up of the rest of the women in the village.

At district level only few female staff are involved. The lack of sufficient female extension workers hinders that women are reached sufficiently.

Field staff

At present sufficient field staff is available in each district. The motivation of the CD staff is good. The staff realizes that in the present programme the beneficiaries are not reached with training courses as training stops at the level of village government. For example, the caretakers have not received any training. The same applies for the Village Health Workers (VHW), who except for the training in monitoring did not receive any training. The weak position of VHW is even aggravated as they do not receive any salary.

The Community Development Departments have in general sufficient staff. However most of the staff in the RWSP is male. The CSD and the women income generating projects are allocated to the female staff.

Implementation capacity in the district

At District level, planning of the water sector is difficult as GoT contributions are uncertain. The District Councils have not contributed to the developments of the water sector. Thus each district depends for the developments of its rural domestic water supply on the Netherlands input. The plans received for the next phase do not provide an overall picture of the developments in the districts water sector. However these indicate that the district largely depend on donor input for improved water supply. Without exception the submitted plans are more than budgets.

Management at district level

In some districts the Programme management is poor. Especially in those Districts, the extent to which transport is being used for other purposes than RWSP is rather high. This situation has a negative effect on the Programme, as performance depends on the transport of materials by car.

The functioning and thus the impact of the District Water and Sanitation Committee (DWSC) vary per district. For instance in the District of Kilombero the Heads of the Departments involved are supportive to the district team and the RWSP in general. Their involvement is considered valuable. In other Districts the DWSC are more of a token using programme allowances, without providing the necessary support to the programme.

3.4 ASSESSMENT OF THE SYSTEM DESIGN APPROACH

The System Design, which was the basis for the Plan of Operations of 1988, gives a clear and comprehensive overview of roles and responsibilities of all functionaries, water committees and village committees, etc. involved in the implementation of the Programme. The institutional framework and task descriptions are worked out to a great level of detail.

It also includes a step-by-step approach (Appendix VI refers) which spells out a total of 17 steps to be taken towards implementation activities in the villages, and also gives some indication of time inputs and people involved. The training manual "Pamodja Tupate Maji" elaborates on the content of each step, and gives some indications as to training components.

A Monitoring System has been developed which provides possibilities for all functionaries on village, district and regional level, to follow closely the proceedings and some of the effects of Programme activities.

The following problems were identified:

- The System Design and the step-by-step approach as they are presently used, tend to be executed fairly "mechanically" rather than serving as a guide to Programme activities.
- The Approach lacks guidance in methodology: what methods and techniques could be used in discussions with the villagers; what are good ways for spreading information and knowledge.
- The System Design and the Monitoring System emphasize a hierarchical work structure, with a long chain of control on what is happening in the villages. This suggests a top-down approach which does not leave much room for the villagers to take up responsibilities for themselves.
- In the System Design no references are made to the necessity of having female staff to work with women in the communities. In the step-by-step approach indications are missing on when and how to take gender differences and socio-economic differences into account, and on how to promote the participation of women and less well-off people in the community.
- The manual Pamodja Tupate Maji is somewhat out-dated, particularly in its focus on the village government as principal partner for community participation and organization. It has now been recognized that the village leadership may have quite different priorities from what the villagers consider necessary or desirable ¹. A revised manual should focus more on water supply users' groups to ensure direct involvement and appropriate cost sharing and cost recovery.

¹ Dr. C.S.L. Chachage, e.a., 1990, Rural Water and Sanitation Programme in Morogoro and Shinyanga Regions. A Study on Women Involvement in the Implementation of the Programme. (pages 4 - 9).

- The time estimates given for some items in the step-by-step approach (Appendix VI) seem not quite realistic. For instance, 3 months in Step 4 and another 5 months in Step 7 and 8 indicate an excessive amount of time for work in offices on design, budgeting and procuring materials for the construction of some shallow wells or a simple piped scheme.
- The Monitoring System in its present form is very elaborate and time consuming, particularly where it concerns time inputs of District and Regional officials. The monthly visits to the field which the system requires from them, are not felt to be really important.
- Although all people involved have been trained on the monitoring procedure, no proper guidance has been given on its meaning and on good methods for an analysis of the data. This results in an inefficient use of the system: there is no proper follow-up on problems reported by the villagers; at the Districts and in the Region there is no insight in the general progress of community-based operation and maintenance, as well as financial management in the villages.
- Findings from the Monitoring System are at present not accessible to the community. It is not used as a tool to create awareness and self-reliance in the communities.

Based on the above, the following conclusions can be drawn:

- A review of the step-by-step approach is needed in order to follow a more appropriate and sound community-based approach, with sufficient attention to needs and resources of the community and an emphasis on the participation of women. The planning of steps must be goal-oriented. It should be clear what the criteria for goal achievement are. Also, there should be a good guidance in methodology. It should be indicated clearly what should be done in each step, why it should be done, and how it can be done. An updated and thoroughly revised version of the manual Pamodja Tupate Maji could probably serve this purpose, but only when it is introduced and discussed in a well-organized, comprehensive training programme. Also realistic time estimates for each step, or cluster of steps should be introduced.
- It is necessary to review the Monitoring System, cutting it down to the essential data needed to support and understand the progress of activities in the villages, and to solve any problems. The Monitoring System and its findings are to be made accessible to the communities.

3.5 JUSTIFICATION FOR CONTINUATION OF PROGRAMME

With a view on the continuous prevalence of water related diseases (e.g. cholera, typhoid, bilharzia, malaria) in Morogoro Region, it is felt that major efforts are still required for improving the availability of safe and accessible water for domestic use. At the same time people need to be aware of the health risks of using traditional water sources. To realize the full health benefits of an increased number of improved water points, their planning, construction and management should be accompanied with a much stronger emphasis on hygiene education and sanitary improvements than has been adopted so far.

In the past four years a major investment has been made in building up experience and institutional capacity for a community based approach in water supply, so far focusing mainly on community participation in construction and community based operation and maintenance. For the approach to be effective and sustainable, more attention has still to be paid to community based planning and monitoring, particularly also concerning cost sharing and financial management. The participation of women in all Programme activities, and particularly in planning and financial management needs to be improved. To implement these improvements, a further update of knowledge and skills in modern participatory methodology and cost sharing/cost recovery practices is needed for the local project implementers, especially field staff.

In the previous phase the Programme intervention area has been relatively small, and new construction has been very limited. The percentage of coverage (ratio of total population to water supply equivalent of operational IWPs within an accessible distance from the homestead) in both Programme regions is still disappointingly low; a substantial increase is certainly required. This is not only so from the viewpoint of government policy; it has become clear that safe and accessible domestic water supply ranks high in terms of community priorities, especially among women. Therefore, increased allocation of development funds towards this sector is considered fully justified.

Besides the above mentioned improvements in terms of a stronger focus on hygiene education and sanitation and an update in modern participatory methodology, the organizational structure of the Programme needs to be strengthened. An improved performance should have clear targets and a proper control structure. An important precondition for a new Programme refers to the effectiveness with which activities will be undertaken in the future. The proposal for the new Programme therefore attaches much weight to performance indicators and internal as well as external monitoring.

A major concept for a future Programme is a strong focus on sustainability and replicability on community level, since the Tanzanian Government is very much constrained as to the burden of development activities it can sustain. Tanzania is moving into a new era, in which private initiative and self determination will get better chances. The new Programme offers ample opportunity to support this process at grassroots level.

4. THE REGIONAL AND DISTRICT ADMINISTRATION

4.1 INTRODUCTION

During the decentralization period from 1972-1984, central government was in charge of administration of the district and regional level. In 1984, the local government system was introduced at the district level but the regional administration established during the decentralisation remained basically unchanged. The regional administration is important in the district councils affairs for a number of reasons.

The regional administration is headed by a Regional Commissioner who is also Proper Officer of the district councils in the region. The District Commissioners are the Assistant Proper Officer in each district. Proper Officer have authority to control specific aspects of the district council activities.

The Regional Development Committee and District Development Committee are central government organs headed by Regional and District Commissioners respectively. Their function is to coordinate development activities in their respective areas and to ascertain that central government policies are implemented.

Regional Development Director (RDD) and District Executive Director (DED) are chief executive of Regional and District Administration. The Regional Development Director's Office is providing technical advice, support and supervision in district councils so that appropriate solutions and standards are used.

The sectoral ministries dealing with rural development are coordinated by the Prime Minister's Office and reach down to the regional and district level.

4.2 DISTRICT PLANNING PROCEDURE

4.2.1 Planning

The planning and budgeting cycles involves in principle both a top down and a bottom up process. Preparation of one budget involves up to 22 steps and involvement of up to 23 different organs (amongst others District Development Committee and full council). The proposal for the investment budget is in principle made first by village councils then by the Ward Development Committee and finally by District Councils. Grass root participation is limited because the council staff may have a strong influence on the formulation of the project proposal. Funds are scarce and the time available to make a proposal is short. Consequently few projects are actually funded and few of those originated from the village level get priority of funding.

The proposal for recurrent budget are basically made by council staff. The technical and financial scrutiny of the proposal are made by staff at district, regional and central level. The main purpose of the scrutiny at the regional and central level is concerned with enforcing budget ceiling.

4.2.2 District financial procedure

In principle a council operates with four different budgets and two different periods.

Budget	Own funds	Grants
Recurrent	I. Jan. - Dec.	III. July - June
Investment	II. Jan. - Dec.	IV. July - June

The District Councils revenue consists in principle of own funds including income generating activities, grants provided by the Central Government or donors' loans and overdraft.

The District Councils have the authority to set the rates of various revenue e.g. sources subject to the approval by the Prime Minister (like developing levy). This rate should be made by issuing rating rules whereby councils issue by-laws.

Projects' investment funds are released quarterly after request for the release to the Planning Commission through regional administration and local government. The request for the first release has to be accompanied by an action plan and subsequent releases depend on the physical and financial reports which have to be compared with the action plan. After approval, the Planning Commission advises the Ministry of Finance to release the funds.

4.2.3 Expenditure

There are formal procedures for spending investment funds and recurrent funds. Thus all payments are now made by cheques. The funds for investments are administrated by the District Planning Officer and for recurrent expenditures they are administrated by the Treasurer who handles councils revenues.

Financial control

There are several internal and external control mechanisms. The external financial control is mainly exercised by the central government through the power to audit, inspect and approve accounts and budgets.

External Financial Control	Internal Financial Control
1. Audits inspection by central government.	1. Budget.
2. Reports inquiries and definite power of the Prime Minister.	2. District Treasurer.
3. Approval for spending funds and incomes by Proper Officer (RC) and Prime Minister.	3. Internal Auditor.
4. Approval and appointments dismissal and confirmation.	4. Standing orders and financial regulations.
5. Public.	5. Finance and Planning Committee.

5. EXISTING IMPLEMENTATION CAPACITY IN SECTOR INSTITUTIONS IN THE PROGRAMME AREAS

Implementation capacity in the Districts, is determined not only by staff numbers and qualifications, but also by local funding capacity (recurrent and development budgets) and existing equipment. In purpose of Programme implementation, especially the staffing situation has been taken into account. The local funding capacity is limited and may vary from year to year. Hence this needs to be subject to negotiation of the Programme implementation agreement. The existing equipment in the districts is neglected here because of its insignificance in relation to what is needed for Programme planning.

5.1 DEPARTMENT OF COMMUNITY DEVELOPMENT

The staff in the Department of Community Development currently involved in the Programme is shown in table 2.

Table 2: Morogoro: District Community Development Department. Personnel currently attached to the Programme per district.

District	Supervisory staff			Field staff		
	men	women	total	men	women	total
Morog. rural	2	-	2	3	2	5
Kilosa	1	1	2	5	1	6
Ulanga	1	1	2	4		4
Kilombero	2		2	2	1	3
Total	6	2	8	14	4	18

The educational background of the supervisory - as well as the field staff is mostly certificate or diploma of a (Rural) Development College or Institute (2 years). None of the supervisors and field staff attached to the Programme had ever attended any refresher courses on community participation or related issues. There is little knowledge on systems for cost sharing and cost recovery. Modern participatory methodology and techniques are unknown. The general attitude is to "educate" the villagers, and to work "for" them, not "with" them. Information materials and visual aids are not used.

All districts mentioned to have sufficient CD personnel in the field to meet the demands for an extended Programme. The limited representation of female CD staff in the Programme is due to the fact that they are allocated to projects/programmes that have a more "obvious" impact on women such as the UNICEF projects. For including more female staff particularly in the field teams, the CD department will have to take the major share of the posts as they have compared to Health and Water departments a higher percentage of female staff.

The field staff has been able to benefit from several other development programmes and projects in the region, as for instance the Child Survival Development Programme (UNICEF), who provide some training in methodology for community participation and health education. A Regional Community Development Officer had recently attended a PROWESS workshop.

Some attention is being paid to gender issues and women's involvement (e.g. in Kilombero), perhaps also initially through activities introduced by other projects.

5.2 EXISTING IMPLEMENTATION CAPACITY: HEALTH DEPARTMENTS

Table 3 provides an overview of the numbers of Health Department staff attached to the Programme.

Table 3: Morogoro: District Health Department. Personnel currently attached to the Programme, per District.

District	Supervisory staff			Field staff (HA)		
	men	women	total	men	women	total
Morog. rural	2	-	2	5	-	5
Kilosa	1	-	1	6	-	6
Ulanga	2	-	2	3	1	4
Kilombero	2	-	2	2	1	3
Total	7	-	7	16	2	18

The educational background of most of the supervisory - as well as the field staff is a 2 years certificate level course in primary health care; limited numbers of women attended this course.

Programmes such as the UNICEF, Child Survival Development and the UNICEF/WHO Facts For Live, which is part of the primary health care, provide attention to hygiene and sanitation. Training programmes for various levels such as districts councillors, ward development committees, village health committees and village health workers are developed or in the process of being developed. A missing element is the training of the Health staff itself in modern methods for discussions and sharing knowledge with communities. The general attitude is to 'educate' and 'teach', instead of informing people and discussing with them.

5.3 EXISTING IMPLEMENTATION CAPACITY: WATER DEPARTMENTS

5.3.1 District Water Departments

The tables below provide an overview of total staff working in the Water Departments on District level, and of personnel attached to the Programme.

Table 4: Morogoro: District Water Departments. Staff currently attached to the Programme, per District.

District	Supervisory staff (men only)	Field staff (DFA) (men only)
Morog.rural	6	11
Kilosa	1	9
Ulanga	4	4
Kilombero	3	5
Total	14	29

At the Districts only very few facilities are available, in terms of equipment, transport, spare parts, etc. There are virtually no government funds for water development. Some construction work is being done for the Programme. It is estimated that on the average 20 to 30 water points per year can be constructed in each district with the present capacity. This is still far from what will be needed.

Each district has a small staff of technicians (not a single professional works in the districts) and a fair amount of support staff (artisans, etc). See Table 5. The capacity for site survey of shallow wells and other water points is very limited at District level, no equipment, no transport and no properly trained human resources.

Table 5: Human resources of Water Department - Morogoro Region

	Morogoro Region HQ	Morogoro District	Kilosa District	Kilombero District	Ulanga District	TOTAL
ENGINEERS						
Civil Eng	7					7
Mechanical Eng	2					2
Electrical Eng	2					2
Hydrologist	2					2
Hydrogeologist	2					2
subtotal	15	0	0	0	0	15
TECHNICIANS						
Principal Techn. I	1					1
Senior Technician	8	1				9
Technicians						
Civil	33	5				38
Mechanical	3					3
Electrical	2					2
Hydrological	15					15
Hydrogeological	4					4
Laboratory	3					3
Other	10					10
Technician I						
Technician II			1		1	2
Technician III			1	4	1	6
Technician IV			2	10	1	13
subtotal	79	6	4	14	3	106
ASSISTANT TECHNICIANS						
Civil	32	3	9	4	5	53
Mechanical	13	5	1	2	6	27
Electrical	2					2
Hydrological	1					1
Hydrogeological	4					4
Laboratory	2					2
Other	28		2	3	1	34
subtotal	82	8	12	9	12	123
SUPPORT STAFF						
Techn. Auxiliaries						
Civil	28	9	6	7	71	121
Mechanical	14	5	6	4	8	37
Electrical	3	1				4
Hydrological	1					1
Hydrogeological	1					1
Laboratory						
Other	70	19	61	7	4	161
subtotal	117	34	73	18	83	325
TOTAL	293	48	89	41	98	569

5.3.2 Regional Water Department

The implementation capacity at the Water Department for construction of water points was built up mainly at regional level during the earlier phases of the Programme, and reached a peak during the late seventies when a very high production level was achieved. As became evident at that time, construction had to go hand-in-hand with community development work as otherwise no sustainability could be achieved.

At present the capacity for implementation at regional level has virtually disappeared, although a very high concentration of professionals and technicians can be found at the Regional Water Office. Apart from a large number of staff very little facilities are available, little or no transport, very little equipment, laboratory facilities no longer in operational condition, no funds for running cost of vehicles, nor for maintenance or replacement of equipment. As little or no Government funds are available for water development, the capacity for implementation is actually diminishing from year to year.

5.4 EXISTING IMPLEMENTATION CAPACITY: SEX DISTRIBUTION

In a programme for domestic water supply, hygiene education, and sanitation it is important to have sufficient female staff available to specifically support women's involvement. At present the number of female supervisory and field staff at the District Community Development and Health departments is disappointingly low. It is recognised that at village level for effective communication with women a female extension staff is required. None of supervisory or field staff had any training or information on gender issues related to water and sanitation.

Table 6: Morogoro: total staff and number of female staff in the Community Development and Health Departments, currently attached to the Programme.

	Supervisory staff		Field staff	
	total	women	total	women
Morogoro, 4 districts	13	2 (15%)	36	6 (17%)

In each district there are possibilities to have at least one female in each field team. This is a condition for the implementation of the new Programme, as it is crucial for meaningful involvement of women at village level. A better participation of women will increase the chances of sustainability and thus the ultimate success of the new programme.

Part 2

Proposal

6. OUTLINE OF THE PROGRAMME FOR 1993-1997

6.1 KEY ELEMENTS OF THE PROGRAMME

The proposal for a new five year phase of the Morogoro RWSP is best characterized by the following key elements:

- a. The main objectives of the programme is: water for health.
- b. The community based approach is to be applied for all implementation activities.
- c. The target is to achieve a 100% coverage in the year 2002 for the rural population.
- d. Involvement private sector to enlarge significantly the implementation capacity.
- e. Wide range of low-cost technological options.

A summary of the programme design is given in Appendix IV, with a systematic definition of development objectives, programme objectives and activities undertaken, together with measurable indicators and targets for programme evaluation and review.

6.2 WATER FOR HEALTH

6.2.1 Development objectives

The Programme design focuses on two related objectives; to provide safe and reliable supply of water to the rural population of Morogoro region with an accessible distance from the homestead and to reduce water related health risks by hygiene education and improved sanitation. The downward trend in the percentage of population that has access to reliable and safe sources of water is to be changed into an upward trend with clearly defined coverage targets for the programme period. The Water Policy of the Ministry of Water Energy and Minerals states that in the period 1987 - 2002 people should be provided with clean and safe water within easy reach from their households.

6.2.2 Programme objectives

Reference targets based on National Policy

As described in chapter 3 the present installed water supply capacity is 45%. However, it has been established that the operational water supply capacity for the rural areas is only 28%. The National Policy states that universal access to safe water should be achieved by the year 2002. During this period there will be population growth from about 1.26 million to 1.7 million people (3% per year) in the rural areas of Morogoro. Assuming an average number of 300 people (some households) per improved water point, this implies that a total of 5670 improved water points is required by the year 2002 to reach full coverage. It has been established that 725 water points can be rehabilitated, which means that an additional 4484 water points need to be constructed. The reference target for the next five years of the programme has been estimated at 1614 new water points.

The mission believes that only a strategy aiming at a substantial coverage in any particular area of intervention can secure sustainability and replicability of domestic water supply in the long run. The main reasons are;

- a. When only one or two wells are constructed in any village, the community as a whole cannot be expected to participate in construction cost, construction work and ongoing O&M activities. The community as a whole can only be successfully mobilized when there is a prospect for the large majority in the village that benefits equally.
- b. The supply of pumps and spares can only be taken up profitably by the private sector when a certain volume of turnover has been established. When this is the case however, the private sector will assure availability of spares more or less automatically, just as bicycle parts are being sold.
- c. Community organization and mobilization becomes much more efficient and cost effective when undertaken in a concentrated manner. In such case a lot of 'awareness building' is done spontaneously by word of mouth, and users will ultimately start organizing themselves on their own account.
- d. Support operations can be much more efficiently organized by the district when a certain density of IWPs has been achieved.

In Appendix III (Projection of Activities to be carried out from 1993-1997 for Morogoro Region) estimates have been made on the basis of these reference targets. The consequences in terms of human resources, equipment, transport and funding have been worked out. It is clear that this would lead to a very ambitious programme, whereby the production gradually would have to increase to a level of over 500 improved water points per year.

Objectives

The following objectives can be formulated for the five year period of the Programme with provisional targets (reference level):

- A. To substantially increase safe and reliable sources of water in Morogoro region through a community based approach. The reference targets for 1997 are:
 - Constructing or rehabilitating over 1600 IWPs (including improvement of traditional water points). The coverage is to be increased to over 54% by the end of 1997.
 - Motivating users of domestic water supply (in particularly women) to participate in planning, implementation and management of the improved water points.

Success to be measured by:

- . the number of IWP built or rehabilitated, as planned by the users:
- . effective and regular use of IWPs by a maximum number of stipulated user households.
- . low percentage of wells running dry during the dry season (test for reliability of supply).

- B. To ensure sustainable operation and maintenance of IWPs at village level. This implies:**
- Supporting the establishment of a strong users' organisation for every waterpoint (shallow well) or cluster of waterpoints(pipe water), in which particularly women, as primary users are represented. These organisations are responsible for operation, maintenance and financial management of the IWPs.
 - Supporting women to take part in community decisions concerning water supply, health, and sanitary improvements in the village.
 - Availability of spares and technical support in the districts.
- Success is to be measured by:
- Number of well functioning users' organizations, with sound financial management system.
 - Low percentage of IWP out of order and short period required for repair (e.g. less than two weeks).
 - Number of women in village government committees concerning water supply, health, and sanitation.
 - Low percentage of IWP out of operation.
 - Availability of spares in all districts.
 - Short period required for repair (e.g. less than two weeks).
- C. To minimize the health risk related to water. In view of the very high percentage of population still using traditional sources, a realistic assessment needs to be made of the most urgent health risks.**

Considerations:

- Where measures can be taken to reduce the risks from traditional water sources by improving them, these should be included.
- A phased system could be adopted in which priority is given to basic improvements in a large number of villages (e.g. spring protection, improving open wells, regular quality inspection/disinfection).
- The more sophisticated solutions (installing pumps on shallow wells, piped water systems) can be done in successive phases upon initiative of the community.
- Support to general health and hygiene, hygiene education and introduction of sanitary improvements.

Success can be measured by:

- Increased water use from IWSs, as compared to utilization of traditional (non-improved) water sources.
- The number of improved wells with handpump, relative to the total number of improved wells.
- Frequency of preventive inspection/disinfection of existing open wells.
- Number of good latrines built and used in the villages and general cleanliness in the villages.
- Decrease of water related diseases.

- D. Developing village based implementation capacity for IWPs. Sustainability of safe and reliable community water supply, needs to be realised primarily at village level. Hence, the ability at village level to improve existing water sources and to make new wells should be supported. Success in this respect is to be measured by the number of fundi's (i.e. local craftsmen and small contractors) operating in the area and the number of IWPs constructed by fundi's.
- E. Institutional development at district level to ensure that crucial functions of the Government in support of community initiative can be performed. Exactly which functions need to be sustained by the Government after termination by the Programme, must be defined during the course of the Programme. The more successful the involvement of communities and the private sector, the less dependence exists upon continued Government support.
- F. Programme implementation shall be environmentally sound. This implies that no activities shall be undertaken with high environmental risks.

6.3 COMMUNITY BASED APPROACH

General

A community based approach is crucial to gain maximum impact on health of improvements in water and sanitation. It also aims to stimulate mobilization of resources from within the community and to ensure sustainability of improved water supply at village level. The approach is fully in line with the national strategy recently published in the framework of the National Water Supply Programme². It states: 'Mobilization of beneficiaries to establish their own water fund with the aim to contribute not only to operation and maintenance costs but gradually on capital cost of their water supplies'. 'The involvement of women in promoting water supply and sanitation services will be given priority'.

The potential health benefit of improved water supply depends on hygiene education and community involvement. Once awareness exists on the risk of using unsafe sources of water, communities must be supported in their activities to reduce these risks. Hence, construction of water supplies will always be in response to a request from the community. This has major implication for the way the programme operates:

- **Awareness building:** Activities aimed at demonstrating the risk of unsafe water sources need to precede any other Programme intervention.

- No interventions should be undertaken, unless it is as a response to **community initiative**. This implies that the programme must be able to operate in a flexible manner.

- Community mobilization makes people act. Unless the programme is able to react swiftly to community requests, the mobilization effort will be wasted. **Quick response** of the Programme is a prerequisite.

- The community (water users) are the owners of the water sources and supply systems and hence to accept **responsibility** for its operation and maintenance. The Programme must ensure that basic conditions for good maintenance, such as the availability of spare parts are fulfilled.

A direct consequence of the community based approach is that villages that have not yet taken any initiative, after the initial mobilization effort, are not (yet) served by the Programme. Hence the number of villages with implementation activities might well be smaller than the total number of villages in the Programme Intervention Area (PIA). It is proposed that in the new phase the PIA shall comprise of approximately half of all villages in the districts that so far have not been served by the Programme.

² Source: 'Plans and Strategies to meet the target'; National Water Supply Programme, Maji Week publication in Daily News, 26 March 1992.

Participation of women

Women being responsible for the water supply in the households, have a main interest in a good functioning IWS. The study on " Women Involvement in the Implementation of the Programme" by e.g. Dr. Chackage, indicates that the existing approach of dealing mainly with VWSCs and village councils does not guarantee that the interest of women in the community are being brought forward. Where IWS are being installed without the full consent of the users (women), sustainability proves to be a problem. The Government is fully aware of the importance of women participation. The Deputy Minister of Water recently stated that 'under the new approach, all the villages in the country would be required to establish village water committees of about ten people but a bigger number of the members should be women' ³.

To reach the objectives of the new Programme it is crucial that the strategy to increase women's participation is well defined at the start of the implementation. Particularly the initial mobilisation effort has to include the views of the final users and should not stop at the level of village government. To ensure users (financial) commitment to the maintenance of the IWP and thus realize sustainability a structure by which the members of the VWSC are elected from the users committees of the IWPs is to be set up. This will be a better basis for the women's views to be represented. To support this effort of mobilising women as part of the community based approach, field teams should have at least one female member fully trained in new techniques of community mobilisation and with knowledge of gender issues.

6.4 ACTIVITIES UNDERTAKEN BY THE PROGRAMME

It is envisaged that eight groups of activities shall be undertaken by the Programme.

- a. Community mobilization and strengthening of village level capability for operation and maintenance of IWPs. It is envisaged that by 1997 approximately 179 villages shall have been served by the Programme, and that out of these approximately 75% shall have been handed over. Hence by the end of 1997 there should be 130 new villages with functioning Village Water & Sanitation Committee, User Committees, Village Mechanics, Caretakers and Village Health Workers.
- b. Strengthening of women's involvement in planning, implementation and management of improved water supply, to support their effective participation in users committees and VWSC.
- c. Training of villagers to ensure proper O&M of IWPs. This includes members of the Village Water & Sanitation Committees, Village Mechanics and caretakers.

³ Newspaper report on a speech made by the Deputy Minister for Water, Energy and Minerals, Ernest Nyanda, March 1992, Tanga.

- d. Hygiene education campaign, development of health and hygiene education materials (visual aids, etc.) and introduction of sanitary improvements.
- e. Construction and rehabilitation of IWPs ⁴:
 - Around 1100 shallow wells (new; rehabilitation and improvement of traditional wells);
 - some 40 piped water supplies, 400 IWPs;
 - over 100 IWPs through spring protection and river wells.
 These reference targets require a major acceleration of implementation activities. The implications of such implementation programme have been worked out in the projection of Programme Outputs and Inputs (human resources, equipment, funding), as appended in Appendix III.
- f. Developing village based implementation capacity for IWPs through training of craftsmen (fundi's).
- g. Cooperation with training institutes and other organizations for health education and community development.
- h. Miscellaneous studies, including an investigation of the desirability and feasibility of a credit scheme for IWP financing and financing of equipment for fundi's and small contractors.

The acceleration of implementation activities requires a very strong **achievement motivation** among all parties concerned with the programme. Achievements must be visible and recognised by the community. The factor of motivation is crucial and hence incentives should all be geared towards achievement.

6.5 TECHNOLOGICAL OPTIONS

The technological options used at present for water development are: hand-augered wells, shallow (ring) wells and gravity schemes with DWPs. These are all well documented in various programme reports and need not further be elaborated here. It is clear, that hand-drilled wells are likely to remain the main water development option in the region.

Additional options which need to be considered for the next phase are:

- drilled boreholes to tap the deeper aquifers; these have the advantage of providing a safe year-round supply, but are relatively more expensive;
- spring protection, by which both the catchment and the intake are protected to provide a clean and safe water supply;
- roof catchments and other rain-harvesting structures, to be promoted especially for institutional buildings;
- sub-surface and sand dams, by which an artificial groundwater store is created, applicable especially in areas where no alternatives are available;

⁴ In order not to suggest more precision than realistic round figures have been used.

- small earth dams, charcos and water pans, to store surface water; these are not really safe water supplies, but should be considered as a supplementary source if necessary;
- piped supplies, either gravity or pumped, by tapping small streams in the hilly and mountainous areas.

These options are further discussed in Chapter 7, where available water resources are matched with possible development options.

For the purpose of budget preparation preliminary estimates were formulated for the various types of supplies that can be envisaged. Although these can not be treated as hard targets, they give an idea on how the over all coverage target might be met.

Table 7: Types of water points (reference number of IWPs to be made until 1997)

	M-rural	Kilosa	Ulanga	Kilombero	Total
Shallow wells (mainly tube wells)	456	320	81	247	1104
Gravity schemes	100	100	50	50	300
Pumped schemes	10	50	20	20	100
Spring protection	10	20	20	20	70
River wells	20	20	0	0	40
	596	510	171	337	1614

6.6 ORGANISATION

6.6.1 Mode of implementation

The programme will be executed on District level under supervision of the District Development Director (DED). The DED will appoint a Programme Manager, with delegated authority from the DED to run the Programme.

It is proposed to set up a small but highly professional management team which has the capability to manage and supervise all programme activities within each district. This team will remain relatively small and could consist of the following highly skilled specialists, seconded to the Programme from the various departments involved:

- Programme manager, overall management;
- Community Development specialist, in charge of all CD activities, training and hygiene education;
- Water engineer, in charge of design, supervision of construction and quality control;
- Mobile team of supervisory staff for CD and construction;
- Small office support staff including accounting officer.

Some further details are worked out in Chapter 10.

6.6.2 Involvement of the private sector

Since the government capacity is limited, it should be augmented with implementation potential elsewhere, especially within the communities supported. Many tasks do not necessarily need to be executed by the Government. They can be subcontracted to local entrepreneurs, such as supply and transport of materials to site, construction, installation, and could even include site surveying, design of piped water supply systems and water quality testing. The programme shall make efforts to allow **craftsmen and small contractors** to execute part of the work.

This policy is supported by the Ministry of Water. "The Water Sector intends to engage small contractors/consultants close to the project areas to be contracted to execute identified projects under supervision of the Ministry as opposed to direct use of technicians and artisans employed by the Ministry which is the current practice. This will result in increased implementation capacity of the Sector in general." ⁵

To this end training must be undertaken of these fundi's and methods must be worked out to facilitate their investments in the equipment and working capital required to carry out the work. It is proposed that a through a short consultancy during or shortly after inception, the approach for mobilization of private initiative shall be worked out. It has been assumed that the private sector involvement in implementation will gradually increase from 10% in 1993 to 65% in 1997.

6.6.3 Organization of donor assistance

The donor will establish District Programme Support Units (DSU), to provide the District with means to implement the Programme. The head of this unit is attracted by the donor, and answerable to the expatriate heading the Regional DSU. The DSUs exist for the duration of the Programme and need not to be sustainable.

Cooperation is done on the basis of five year and annual implementation agreements. As far as the Programme organization within the GoT structure is concerned, the set up as described in the 1987 'System Design' still applies. The major deviation from the institutional structure of the previous phase is that implementation is fully done by the districts, and that donor support is organised through DSUs. In accordance to the regular Government structure, the District can get assistance from the regional level. In that case the District Programme Manager (or the DED) is to arrange for this assistance, and the DSU can provide any type of support required for its implementation.

6.6.4 Discovering more efficient methods of work

Within the programme a sense of 'cost consciousness' is to be introduced on all levels. Standards of cost effectiveness will be introduced and monitored.

⁵ Source: 'Plans and Strategies to meet the target'; National Water Supply Programme, Maji Week publication in Daily News, 26 March 1992.

In order to realize a substantially more efficient mode of working, a spirit of collaborative effort needs to be maintained.

When implementation is undertaken in a more decentralized manner, it often can be done more efficiently. Hence in general the 'lowest' possible option (i.e. closest to community level) for programme implementation should be used, unless the benefits of the contrary can be shown. Incentives should preferably be linked to performance.

6.7 PROGRAMME REQUIREMENTS

In view of the acceleration of output considerably more staff will be required for Programme implementation. However the precise number of staff required should be established per district based on:

- a. the actual availability of staff (i.e. those who are not attached to other programmes)
- b. how many staff members are sufficiently qualified and motivated to work in the programme
- c. which parts of the programme can be contracted out.

The projections also indicate the equipment requirements, assuming that the Government would be fully responsible for implementation. To the extent that work can be contracted out, less equipment is needed. It is assumed that in the five year period the level of contracting out can gradually be increased, by training of craftsmen and small contractors in the villages. This is shown in table 10.

Table 8: Rate of Programme expansion and degree of contracting out

Year	1993	1994	1995	1996	1997	Total
Activity level	10%	30%	60%	80%	100%	280%
Activity as % of total	4%	11%	21%	29%	36%	100%
Number of IWP installed	58	173	346	461	577	1614
Percentage contracted out	40%	60%	70%	80%	80%	
Number of IWP contracted	23	104	242	369	461	1199
Nr. of IWP by Gov't	35	69	104	92	115	415

If reference targets are to be achieved, TAS 1557 million will be needed for local expenses (for the period 1992-1997). The total budget, including the technical assistance and training (Dutch experts, consultancy missions, training programme) is estimated at Dfl. 2147 million for the five years period.

7. AVAILABLE WATER RESOURCES AND DEVELOPMENT OPTIONS

In this chapter a short review is given of the available water resources and an overview of options available for its development. At present the options used are almost exclusively: hand-augered wells, shallow (ring) wells and, to a very limited extent, gravity schemes with Domestic Water Points (DWP's). Other options to be considered are: drilled boreholes, pumped supplies from surface water, spring protection, roof catchments, sub-surface and sand dams, small earth dams, charcos and hafirs.

7.1 SURFACE WATER RESOURCES

Several permanent rivers are found in Morogoro Region. Direct abstraction of surface water is done by means of river intakes for pumped schemes and gravity schemes. Other options for surface water include small earth dams, charcos and hafirs. These latter options could provide alternative solutions in the two dry northern districts, while piped schemes are in particular feasible in the two southern districts.

7.1.1 Piped water schemes

In all four districts numerous piped schemes, both pumped and gravity fed, are found which are mostly run and maintained by the Water Department. However, the incidence of breakdown, due to various factors (lack of fuel, spare parts, etc) is so high that the Formulation team does not advocate further development of such systems, unless a very well organized system can be set up which is sustainable at local level by the consumers, and does not require any intervention from district or regional level. It should for instance be investigated whether a small consumer organisation can be set up for each piped water scheme, which runs and maintains its own scheme, collects payments from the consumers and employs its own technician.

7.1.2 Small earth dams

In the dry parts of Morogoro Rural and Kilosa Districts, it is feasible to create surface water reservoirs by constructing a low earth dam across a stream valley and collecting thus a large proportion of the total annual surface run-off. Local water requirements would determine the size of such a dam. Storage capacity should also make allowance for water losses due to evaporation and seepage, and for storage reduction due to gradual silt accumulation in the reservoir. The environmental impact of earth dams should certainly be taken into account when these are considered for construction. A serious disadvantage of such a dam is the poor water quality.

7.1.3 Charcos

A charco or valley tank is normally built in gently sloping terrain. It consists of an excavated storage reservoir (capacity about 4,000 m³), located immediately downstream of a small collecting reservoir (10,000 m³) formed by a low bund. A catchment of between 0.3 to 0.6 kilometres is normally suitable for a charco. From the reservoir which also acts as a settling basin, the water is discharged through a pipe into the storage tank. Consumers usually draw their water from a well in the tank.

In Morogoro Region what is actually referred to as a charco by the population as well as by District officials, does not conform to the above design. In the strict sense it is actually a small earth dam. However in place of these pseudo charcos, properly designed charcos could be constructed.

Also for charcos the environmental aspects need to be taken into account before construction. Particularly the large number of charcos and dams desired by the population for the watering of cattle in the northern plains will make a critical assessment of the need in relation to the environmental appropriateness necessary.

7.1.4 Hafirs

Hafirs are based on the same principle as charcos, but the storage tank is built upstream of the bunds in the collecting reservoir itself. During the wet season the tanks are submerged so water must be drawn from the shallow reservoir. In the dry season however, the small tanks contain the total storage. Due to the layout, the storage tank(s) of a hafir silt up continuously. In Morogoro Region there is no clear-cut demarcation between a charco and a hafir. The terms "dam", "charco" and "hafir" are used in relation to the sizes of the water bodies, while little or no attention is paid to the differences in design.

7.1.5 Water quality of surface water sources

In general the chemical water quality of the surface water sources is good. In the rainy season water in the rivers mainly consists of the rainwater that fell a few hours or days before. In the course of the dry season the quality of the water in surface water reservoirs is influenced by incoming baseflow and groundwater flow and deteriorates further due to evaporation.

The bacteriological water quality of surface waters stored in reservoirs in the region is generally very poor, especially due to contamination by cattle. Bilharzia is a major problem in nearly all the surface water sources.

Whereas it would appear possible to safeguard in general the quality of both deep and shallow groundwater sources, it seems unrealistically optimistic to assume that the quality of surface water can be sufficiently controlled. In view of this constraint, it would be logical that:

- preference is given to groundwater as the source of supplies which distribute untreated water for human consumption;
- to limit the exploitation of surface water resources for drinking water supplies only to small urban schemes, where water treatment is possible and can be maintained.

- water supplies constructed for livestock should be strictly used for that purpose; hygiene education should ensure that people are not tempted to use this heavily contaminated water for domestic use.

7.2 RAIN HARVESTING

Mean annual rainfall in the Region ranges between 500-2000 mm. However, for the planning of most water utilization projects, it is not so much the mean precipitation which is important, but the reliability of the rains, which is the frequency of occurrence of relatively dry and/or wet years. The variation in yearly rainfall is some 25% over a period of 10 years. Variations in monthly rainfall during the entire wet season are in the order of 60% or more. The very local nature of precipitation in particular in the drier parts of the Region disrupts the general pattern even more. Showers are usually formed in situ, and as a result rainfall intensity varies considerably even within an small area.

Besides roof catchments, other types of rainwater harvesting exist, such as rock catchments and ground catchments. Rock catchment is not considered, as suitable large bare rock outcrops are not found in Morogoro.

7.2.1 Roof catchments

Rainwater can be collected by constructing corrugated iron roofs with gutters and a storage tank. The effective run-off from the roof is considered to be around 80%. Roof catchment systems should only be considered for use at schools and other community institutions where a large area of corrugated iron roofing exists.

The water quality from roof catchment is normally good as it contains little sediments and the organic pollution is low. Nevertheless, precautions should be taken to prevent contamination. Such systems require guttering and storage (either small above ground ferro-cement tanks, or large below ground tanks up to 70 m³ capacity, fitted with a handpump). Given their limited utility in the provision of large volumes of water, they can only function as a supplementary water supply, either on the basis of individual ownership or for utilization by public institution. Construction of large tanks at schools should be encouraged, and supported by the Programme.

7.2.2 Ground catchments

Such catchments collect rainwater running off sloping and half-hardened surfaces, such as roads, compounds and flat-surfaced rock outcrops. About half of the annual run-off can be collected, depending on the porosity and slope of the catchment surface.

The run-off is led by way of a ditch to a storage tank dug into the ground (a so called "ground tank", usually a ferro concrete construction). The reservoir can easily be covered with a simple roof, diminishing evaporation losses and minimizing contamination of the stored water. Since the water is collected from ground surface, it is usually of very poor quality and unfit for human consumption; it is advisable that the water is used only for livestock or watering the vegetable garden.

7.3 GROUNDWATER RESOURCES

7.3.1 Physiography

Physiographically, the Region is dominated by the large wide valleys of the Kilombero River and the Mkata/Wami Valley, and the mountain ranges, the Uluguru, Usagara, Ukaguru and Nguru Mountains surrounded by foothills and plains. The plains and hills of the Mgeta, Ruvu and Ngerengere Rivers form the eastern parts of the Region. The highest peaks of the Uluguru Mountains reach about 2600 m while the plains in the east are as low as 200 metres above MSL.

7.3.2 Geology

The mountains and foothills consist mainly of metamorphic Pre-Cambrian Basement rocks: acid gneisses and other granitoid rocks, and crystalline limestones. The deposits in the down-faulted Mkata/Wami Valley are of Upper Tertiary and Quaternary age. They are up to 400 m thick, deposited in fluvial, alluvial fan and swamp environment. Elsewhere, the plains are dominated by Tertiary and Quaternary erosional products of the Uluguru and Nguru Mountains but Basement outcrops and predominantly Mesozoic deposits are also found. Narrow strips of shallow Quaternary deposits are found along most rivers and streams.

7.3.3 Occurrence of deep groundwater

Aquifers with deep groundwater (>30 m) are mainly found in:

- deep sedimentary basins;
- fractured and faulted zones in the fresh bedrock;
- decomposed and weathered bedrock (regolith), a zone of variable thickness (0-50 m) in which the hardrock has decomposed due to chemical processes in interaction with percolating groundwater;
- alternating sandy, clayey or cemented layers overlying the weathered bedrock.

In Morogoro Region the most promising areas are estimated to have exploitable potentials of more than 5,000 m³/km².year. The average yield per borehole varies between 40-80 m³/day. The average total depth ranges from 50-100 m, with an average static water level (SWL) of 10-20 m. Deep ground water in this region may be exploited by sinking boreholes. Boreholes can be constructed successfully in most parts of the region (see the maps in the appendices), provided that a detailed hydrogeological and geophysical survey is carried out to determine the precise location.

7.3.4 Water quality of deep groundwater sources

Deep groundwater is in general not bacteriologically contaminated. The groundwater table is so deep that contamination is prevented by the natural purification process during infiltration. A serious constraint is the incidence of high fluoride levels in deep groundwater.

The quality of groundwater in the northern regions of Morogoro Rural, and some parts of Kilosa District is likely to be a constraining factor for the utilization of groundwater.

However, with a view on the question of reliability of data presently provided by the Region and the Districts, it may be advisable to make a thorough reassessment of deep groundwater quality in the Region before any consideration of its utilization.

7.3.5 Shallow groundwater

Shallow aquifers that may be exploited by means of digging (ring wells) or hand auger drilling (tube wells) with depths of less than 30 metres are defined as shallow aquifers.

In Morogoro Region they can be classified as perched aquifers, and comprise:

- alluvial deposits in river beds and old buried, fossil stream beds;
- weathered lateritic layers;
- weathered Basement rock and other sandy (subsurface) layers;
- colluvium near outcropping bedrock.

Wells constructed in the above environments can yield an average of 10 m³/day, while exploitable quantities may amount to about 2,000 m³/km².year. The technique of surveying and construction of large diameter ring wells or hand-augered tube wells is very well documented by the Programme and does not need to be elaborated here.

7.3.6 Sand and sub-surface dams

Sand dams are constructed to retain sand, carried suspended in flood water of small seasonal streams. Sand-dams are built up gradually, every dry season one foot height is added. This ensures that the water flowing across the dam during the floods has such a flow speed, that the coarse sand particles precipitate, while silt and clay particles are carried downstream over the dam. An average sand dam of about 3 metres height takes thus about 5 years to construct, although water can already be supplied after the first year.

Sub-surface dams are constructed in the bed of (large) sand rivers, where a considerable amount of sandy sediment in a drainage channel has already accumulated. The dam has the purpose of increasing the storage of water in the sediments upstream of the dam. A typical sub-surface dam is only about 1 metre high and lies buried below the sandy surface. It can either be constructed from clay or from concrete (only on hardrock).

A few river channels in the Region, especially in Kilosa and the northern regions of Morogoro Rural, may provide suitable sites for these type of dams, but the exact locations can only be pinpointed by carrying out a detailed survey.

Water can be abstracted by simply digging in the traditional way in the sandy river bed, or much better by constructing a shallow well just upstream of the dam besides the main channel. Another possibility is to install within the dam close to the bottom a filter tube which drains the water through a pipe to a tap station further downstream. The disadvantage of this latter solution is that water will be depleted much faster as it is easier available or a tap might get broken leaving the water running away.

7.3.7 Water quality of shallow groundwater sources

The bacteriological water quality of shallow wells is generally poor; the quality of river wells is usually even worse.

Good quality will only be found in shallow wells which have an effective covering (apron) and drainage system, prohibiting infiltration of waste water.

For the river wells careful execution of the well structure is not sufficient to guarantee safe water quality. Pollution occurs due to easy infiltration through the sandy river bed of dirty water from nearby watering places of livestock, or from people using these places for washing and defecation. Protection of the catchment (for at least 100 m upstream) by means of live fences (sisal, cactus) to prevent contamination is essential.

The likelihood of pollution of shallow wells points to the absolute necessity of making thorough and regular water quality analyses, if the occurrence of water-borne diseases (cholera, dysentery, typhoid) in the Region is to be prevented. At the same time much attention needs to be given to health and hygiene education.

7.3.8 Springs

There are many springs in Morogoro, especially in the southern districts Kilombero and Ulanga Districts, with fresh, clean, uncontaminated water. The number and yield of these springs is unknown, and should be investigated systematically. There exist a good potential for safe gravity piped water supplies, by using the spring water and by constructing a proper "protected spring". If well protected they can provide safe, clean water to the villages in the immediate vicinity.

A serious problem is arising in the Uluguru Mountains as much forest is being cleared and the catchments are destroyed by felling most of the trees around the springs. Yields of the springs are reported to be diminishing and water can easily become contaminated when agriculture is done within the catchment close to the spring. If this situation is not rectified soon, springs may dry up. In the two southern districts the forests are still relatively untouched and therefore springs are abundant and yield still clean water.

7.3.9 Systematic survey of available water resources

It has been stressed on several occasions that there has never been carried out a Morogoro Water Master Plan Study. We feel that a full-fledged Water Master Study is not quite necessary, as it would entail a large amount of work and thus of money, which would eventually result in a large amount of paper. Instead we strongly recommend to carry out a simple Regional Water Resources Availability Study which would provide all necessary information for the continuation of the Water and Sanitation Programme.

7.4 WATER RESOURCES DEVELOPMENT OPTIONS

A summary is given of the relative importance of each development option per district (details in relation to the respective divisions are in the appendices) in the form of a short table.

Table 9: Option for the development of water resources in Morogoro Region, per District

District	Options							
	E/D	C&H	SS/D	R/C	B/H	S/W	G/S	S/P
Morogoro R	+	+	+	+	+/-	+/-	+/-	+/-
Kilosa	+	+	+	+	+/-	+/-	+/-	+/-
Kilombero	+/-	+	+	+	+	++	++	+
Ulanga	+/-	+	+	+	+	++	++	+

E/D low earth dams
 C&H charcos and Hafirs
 SS/D sand and sub-surface dams
 R/C roof catchments
 B/H boreholes
 S/W shallow wells (ring wells and tube wells)
 G/S gravity supply
 S/P spring protection

- ++ highly viable option; should be given priority for water resources development in the Region.
- + viable option; needs attention and development.
- +/- possibly a viable option; needs some attention to estimate its particular value.
- not a very viable option; may only be developed if there are no alternatives.
- not a viable option at all.

8. COMMUNITY PARTICIPATION

8.1 BASIC CONCEPTS

It has been widely appreciated that meaningful and sustainable improvements in water supply and sanitation are only possible when the communities concerned are actively involved in planning, implementing and managing their own development activities. While there are many reasons why costly facilities may stay unused or fall into disrepair too soon, one critical factor no doubt has been the failure to take the communities' own priorities, their wishes and their knowledge into account.

Achieving full and effective community participation in development activities is a difficult job and much depends on the way members of the community are approached by field workers and technical staff. One common approach in water supply programmes is to define community participation in terms of people's contributions in construction and maintenance of the improved facilities. The assumptions are that the contributions increase the people's identification with the new water system; by having expressed their willingness to invest part of their meagre resources in constructing and maintaining the system, they will take pride in it and will maintain it in good order. However, experience shows that people's interest in using and sustaining any new facilities on a long term basis depends very much on what their other priorities might be. Findings of the studies in Morogoro indicate that the women, who generally have not been involved in planning and decisions concerning the new water supply, will never use it when they feel it to be in an inconvenient place. Also, they will easily go back to their old water sources as soon as a pump is not functioning adequately. As agreements for operation and maintenance have been made mostly through the village leadership, and water committee members or village mechanics have been appointed by the village government, villagers, and particularly women, often do not feel committed.

In the light of these difficulties, a substantially different approach is proposed for the new Programme, to create a strong sense of community responsibility for using the improved facilities well, and for sustaining them in good order. Key elements of this approach at community level are:

- taking priorities of the community serious; initiatives should be taken by a broad base of the community, including women; the community will then be supported by the Programme;
- involving not only the leadership, but a broad base of the community including women and the less well-off in planning and decision-making right from the start;
- utilizing existing knowledge and skills at community level, e.g. women's knowledge concerning traditional water sources; technical and repair skills, as for mending bicycles, etc.;
- enhancing competence and skills of various groups of community members through a professionally executed training programme;
- promoting awareness of health risks and the necessity of hygiene measure by a comprehensive programme for hygiene education and sanitary improvements;

- improving support and assistance of communities by Programme implementing agencies through the utilization of modern participatory methodology.

In the following two sections some more details will be provided on implications of gender and socio-economic differences for a community-based approach.

8.2 COMMUNITY PARTICIPATION: GENDER ISSUES

From the findings of the study it became clear that men and women have different interests in water supply. Although men are also concerned about water for human consumption, their first interest is often in the availability of water for their cattle. The study did not directly focus on this issue, but a similar situation can be presumed at least for some districts with large numbers of cattle owners.

Women, because of their responsibility for the provision of water for their families, are the primary users of water sources for domestic purposes. Usually they have a good knowledge of existing water sources and traditionally they often are responsible for keeping these in good condition. As primary users, they have a direct interest in an efficient and reliable water supply system.

The importance of involvement of people and especially women in the planning and execution of water projects was also emphasized by the Deputy Minister for Water, Energy and Minerals. In a recent newspaper edition of *Maji* he stated that under the new approach of the Ministry all the villages in the country would be required to establish village water committees of about ten people, but a bigger number of the members should be women [6].

Therefore, it seems quite logical that especially women should be directly involved in planning, implementing, and managing any improvement of the domestic water supply in their communities. If the new water supply is planned and designed according to their needs, they will certainly use it more efficiently. If they are encouraged to share fully in operation and maintenance, and in financial management, they might even feel more responsible than men in taking good care. The participation of women in these responsibilities is an important precondition for the sustainability of the new water supply facilities.

In the present Programme an attempt has been made to involve women by stipulating that in Programme villages the Village Water and Sanitation Committee should have at least two women members. In most cases, these two women members have been selected by the Village Council from among the members of that Council.

⁶ Report on a speech made by the Deputy Minister for Water, Energy and Minerals; Mr. Ernest Nyanda, for the launching of the 1992 *Maji* week in Tanga, March 1992.

No discussions have been held among the women users of the new water supply on who should represent them. Nor have the opinions and the knowledge of women users been taken into account in planning for rehabilitation of existing water points or for the construction of new wells. With only a few exceptions, men have been chosen as caretakers.

Generally, the obstacles for women's participation are higher than for men. Because of the traditional division of labour women participate less in general meetings and public affairs. To overcome these obstacles, some special efforts are needed. The following points have to be included in a revised step-by-step approach:

- Taking gender differences into account in gathering data (baseline studies, needs and priorities assessments, monitoring and evaluation data).
- Support of women, in promoting their active participation in all steps taken towards acquiring, maintaining and managing an improved water supply.
- Support of women, in promoting their active participation and leadership in community organization for management of an improved water supply (e.g. Village Water and Sanitation Committees).
- Assistance in training particularly women for leadership and other tasks concerning operation, maintenance and management of an improved water supply.

It is very important that sufficient female staff is made available to work with the women. Traditional gender beliefs and attitudes may inhibit women, particularly married women, to meet and speak freely with a male extension worker.

8.3 COMMUNITY PARTICIPATION: SOCIO-ECONOMIC DIFFERENCES

No reliable data are available on the willingness and ability of communities to pay for improved water supply. It is generally observed that the willingness varies with the degree of urgency in the water supply situation, and the perception of villages of related health risks.

In both Shinyanga and Morogoro, socio-economic differences within communities have been investigated only superficially. In Shinyanga the general impression is that the communities included in the investigation are not very poor. With cotton growing, rice and maize farming, and livestock breeding as main economic activities they looked reasonably well-off. This impression is confirmed by their willingness and ability to pay for an improved water supply, which they expressed during the meetings of the mission.

However, it needs to be considered that within the villages some groups could be less well-off, for example landless families or female-headed households who do not have the means for cash-crop farming. In planning for community development activities, socio-economic differences must be taken into account. Particularly in discussing and planning a cost sharing and cost recovery system for the new facilities, any less well-off group or individuals in the community should get the opportunity to express their views and articulate their ability to share.

As it is often not easy for the poorer members of a community to take part in general discussions and planning of development activities, a special effort may be needed to ensure their participation. In general, this can be done by animators through:

- Getting to know the poorer members of the community. This should be done as early as possible, to ensure their participation right from the start.
- Ensuring that they are included in the information of the community about the programme, and in any needs and priorities assessment. If necessary, they should be visited at their homes to inform them and to discuss matters with them.
- Ensuring that they get the opportunity to take part in all activities concerning the planning, implementation and management of the new facilities.
- If necessary, discussing alternative ways of sharing in financial obligations.

8.4 COMMUNITY PARTICIPATION: ACTIVITIES

A good framework for Programme activities at community level could be provided by a revised version of the Step-by-Step Approach which has been used in the previous Programme. A revision should include the following changes:

- introduction of realistic time estimates for each step or cluster of steps;
- a flexible time schedule and possibility to adapt the approach according to the situation;
- a clear explanation of what should be done in each step, as well as on why and how it should be done;
- sufficient attention to needs and resources assessment, and to planning and decision-making with the community;
- sufficient attention to gender issues, and to socio-economic differences within the community;
- a good integration of hygiene education and sanitary improvement with activities related to the improvement of water supply;
- revision of the monitoring system; data gathering should be done in a participatory way; findings should be equally accessible to the communities and to the agency.

The revised Step-by-Step scheme will contain roughly the following steps:

- **preparatory activities** (time input: about 30 days in total, in intervals of 1 to 3 days weekly or twice weekly);
- **construction** (time input: about 1 or 2 months);
- **training** (different courses of a few days for various groups, with attention for refresher courses);
- **hygiene education** (with various groups, as an ongoing activity);
- **sanitation campaigns** (in relation to hygiene education, during different phases of the project);
- **monitoring** (during 1 year after construction);
- **evaluation** (after 1 year of monitoring).

More detailed suggestions for a Step-by-Step scheme can be found in Appendix VI. It should be noted that the steps as suggested need to be further developed and reviewed by the future Programme staff, notably by the Community Participation and Training Expert. Also, it should be emphasized that any Step-by-Step scheme must be treated as a facilitating guide, and not as a set of binding, inflexible rules.

8.5 REQUIRED IMPLEMENTATION CAPACITY

It was generally observed that supervisory and field staff at the District Community Development Offices need to update their knowledge and skills in working with communities. To support a general improvement of the community-based approach, the new Programme will employ a Programme Expert (an expatriate) in community participation and in training in participatory methodology. This expert will be based at the Programme office at regional level. She or he will work in close cooperation with Tanzanian Experts in this field who are attached to a Tanzanian training institute for Community Development.

At present, particularly Community Development Assistants do not have sufficient knowledge of modern approaches for community-based development. With a view on the amount of work, and the special skills and motivation required for the new Programme, some of the existing staff will perhaps not meet the demands.

In addition, there are not enough Community Development Assistants at the districts to fill all posts required for the new Programme. In some districts the number of female CDAs is disappointingly low. The Programme would require more female animators to promote the participation of women.

Finally, for a good estimate of available personnel, possible demands of other programmes and projects have to be taken into account.

Very likely then, the recruitment of additional staff, specifically for the Programme, must be considered. Current staff needs to be screened on suitability before being taken into the new Programme.

For this screening and recruitment it is proposed to form a special recruitment team, consisting of:

- District officials (e.g. the Head of the CD Department);
- a Tanzanian Expert on Community Participation, preferably a lecturer or head of one of the Community Development Colleges (see the list attached in Appendix V);
- the new Regional Programme Expert (expatriate) on Community Participation and Training.

On the basis of the results of screening and recruitment, the Tanzanian Expert, together with the Regional Programme Expert, shall determine training needs and curricula for courses in modern participatory methodology for field staff. District and Regional supervisory staff will receive information on participatory methodology in short orientation workshops.

To enhance capacity for construction, it is proposed to consider enlisting the services of the Community Development Rural Construction Units based at the districts. The Units could be trained by the Programme specifically in the upgrading of traditional sources and simple well construction. They could also assist with the construction of demonstration latrines, washing slabs and bathing facilities.

9. HYGIENE EDUCATION AND SANITATION

With the present low level of effective coverage, the majority of the population is still using traditional sources of water supply. Even in villages with improved water supplies, traditional sources tend still to be used, partly because some of the wells run dry during the dry season and partly because the well may be considered too far off for all water requirements. When water from traditional sources is used for consumption, the potential health benefits of improved water supplies could well be jeopardised. This underscores the fact that even in villages with adequate improved water supply of water, hygiene education is crucial for achievement of the Programme objectives.

In Shinyanga and Morogoro there is a high occurrence and prevalence of water-related diseases, such as: cholera, diarrhoea, bilharzia, malaria, skin diseases and worm infestation.

Providing safe and readily available water is not enough to cut the transmission cycle of these diseases. To increase the long-term effectiveness of the improvement of village water supply, it has to be accompanied by appropriate, affordable sanitation and hygiene education.

9.1 HYGIENE EDUCATION

A comprehensive hygiene education programme will be set up, with the following main objectives:

- to increase awareness of the relation between diseases and unsafe water, poor hygiene, and poor sanitation;
- to encourage people to improve or change their environment in such a way that it can facilitate and reinforce a behaviour pattern which is in agreement with principles for proper health, hygiene and sanitation.

Important subjects to be covered in the hygiene education programme are:
Water use at home: handling water; household storage of water and food; cleanliness of eating, drinking and cooking utensils.

Water use at the water point: keeping surroundings of the water point clean; good drainage of spill water; washing of clothes, utensils, etc.

Water use at traditional sources: contamination due to nearby grazing and watering of animals; nearby farming with pesticides or fertilizers; unhygienic use by people.

Sanitation and personal hygiene: acceptable sanitation facilities; handwashing and bathing; household hygiene; hygiene of public toilets.

Domestic liquid and solid waste disposal: soakaways and drainages; burial and burning of refuse; general cleanliness of village and public places.

Cattle/livestock keeping: separate watering places, separate shelter; handling of dung.

Primary focus will be on the following target groups:

- village health workers;
- women groups;
- schoolteachers;
- schoolchildren;
- religious leaders and other influential persons, e.g. midwives, traditional healers, etc.

9.2 SANITATION

A special programme will be set up for the improvement of sanitary facilities, and general village cleanliness, including garbage collection and disposal.

General objectives are:

- to encourage proper use and strict cleanliness of communal sanitary facilities in government institutions and other public places;
- to encourage general village cleanliness;
- to encourage every family to build its own acceptable low-cost latrine;
- to encourage the building of a washing slab and bathing facility near an improved water point (this is particularly important in areas with bilharzia);
- to encourage proper use and strict cleanliness of family latrines, water points, bathing facilities and washing slabs.

Methods:

- hygiene education;
- introducing a low-cost demonstration latrine, to be built at a popular place, by the community, on their request;
- holding "clean-village" and "clean-public-places" campaigns;
- training village masons and other interested community members, in making good squatting slabs (san plats).

9.3 ACTIVITIES

For the implementation of the hygiene education and sanitation programmes, the extension workers (CDA and HA) have to take the following steps:

- Discussing with the community about having a hygiene education and sanitation programme.
- Assisting in training members of the community, particularly village health workers (who should preferably be women) and schoolteachers, who will promote hygiene in the village and among the schoolchildren; village health workers should be paid a honorarium on seasonal or monthly basis by the Water & Sanitation Committee, or Village Health Committee, for their work in informing community members about health and hygiene issues.

- Setting up women's health groups, to discuss important hygiene and sanitation subjects.
- Encouraging and supporting the schoolteacher to inform and teach the schoolchildren on hygiene and sanitation matters.
- On request of the community, getting technical assistance to build a low-cost demonstration latrine and to introduce the construction of san plats.
- Particularly in areas with bilharzia, encouraging the community to build a bathing facility and a washing slab.

To prevent an abrupt end to all hygiene education activities at the end of the Programme period, the District Health Services should be prepared to fully take over the hygiene education programme activities which have been started by the Programme.

A proper planning for this slow "phasing-out" of the Programme and "catching-up" by the District Departments should be made in direct relation to the planned activities for the hygiene education programme. The monitoring and evaluation data from the villages can help in closely monitoring the "catching-up" process.

9.4 INFORMATION AND EDUCATION MATERIALS, AND OTHER COMMUNICATION METHODS

Relevant and appropriate materials are needed in support of hygiene education, the promotion of improved sanitary facilities, and general clean-village campaigns.

These could include:

- posters and flip charts;
- brochures and booklets;
- a regional newsletter on water, hygiene and sanitation.

Additionally, different communication methods could be used to catch the attention of a wider audience. These include:

- ngomas (dance-drama) and drama;
- songs, poems, etc.;
- slide, video and film shows;
- radio broadcasts.

To avoid replication of already existing materials, it is proposed to make an inventory of existing materials produced in Tanzania, indicating usefulness and relevance. This could best be done before the start of the hygiene education programme, by an expert on a short-term assignment.

It is also recommended that co-operation between different donors is established for the production and distribution of information and education materials on health and hygiene.

9.5 REQUIRED IMPLEMENTATION CAPACITY

District staff in the Health Department need to update their skills and knowledge concerning hygiene education and sanitation issues. Supervisory staff will need to be oriented on modern, participatory approaches.

Also, some support might be needed in planning the proposed programmes for hygiene education and improved sanitation. For these tasks a special Programme Expert in Hygiene Education and Sanitation should be employed on a short term basis.

At present, most Health Assistants seem to be insufficiently skilled to implement a comprehensive hygiene education and sanitation programme with a participatory methodology. Another draw-back is the general lack of female field staff. With a view on the necessity of engaging more women in hygiene education, it will be unavoidable to recruit more female Health Assistants specifically for working in the new Programme.

For the screening and recruitment of personnel it is proposed to form a special recruitment team, consisting of

- District officials (e.g. the Head of the Health Department);
- a Tanzanian Expert on Hygiene Education, possibly to be recommended through AMREF, or a similar organization;
- the Programme Expert on Hygiene Education and Sanitation, or the Regional Programme Expert on Community Participation and Training.

On the basis of the results of the screening and recruitment, the Programme Expert shall determine training needs for Health Assistants in the new Programme.

10. CONSTRUCTION AND REHABILITATION

10.1 MODE OF IMPLEMENTATION

The following stages in the process of implementation can be distinguished, each requiring its particular mode of operation and level of inputs:

- 1- Preparation: the community after having been properly informed about possible alternatives for water supply including consequences in costs and other inputs, can decide on its choice. Inputs required are: capable, well-trained village extension workers, who can provide the community with good information on possible alternatives, including aspects of health and sanitation.
- 2- Survey and design: after receiving the request from the village for a particular solution of water and sanitation problems, the district sends a survey team to inspect local conditions and to check whether the selected option is feasible. This requires a well-trained team of all-round surveyors capable of assessing water resources conditions, as well as on the necessary pre-requisites for construction (eg. availability of construction materials). The survey team should prepare a (standard) design and bill of quantities for works to be carried out. It should also specify the inputs required by the community.
- 3- Construction/subcontracting: after approval, works can be carried out either by a construction team of the Water Department, or preferably by a local fundi (or small local contractor) who is contracted to carry out the works as specified, under supervision by a technician of the Water Department. Casual labour and supply of locally available materials should be done by the community.
- 4- On completion of the works, a completion certificate is issued after approval by the supervising engineer, after which payment can be made to the contractor. The completed water point can now be handed over to the community.

10.2 SURVEY & DESIGN

For shallow (augered and dug) wells, the systematic survey is well established and can probably be done by the district teams. However, refresher courses should be given. The survey and design for piped schemes has been done by Regional Maji up till now, but could also be done at District level, assuming additional equipment and transport is made available.

Both these activities can very well be contracted out to local qualified consultants. Once it becomes known that such consultancies are being given out, it is quite likely that several small consulting firms will be in the market.

10.3 CONSTRUCTION & REHABILITATION

As explained in Chapter 6, it is intended to carry out the construction programme to a large extent by subcontracting to the local private sector. Implementation capacity at District level is inadequate to achieve the ambitious targets set. It means of course that construction and rehabilitation capacity will have to be built up by setting up training courses for fundi's and small entrepreneurs.

Local contractors/fundi's can be engaged at various levels of implementation:

- supply of construction materials;
- transport: bulk transport of materials from depots to construction sites;
- construction: village technicians/fundi's to be trained and engaged for construction at various stages, i.e. drilling/digging, well installation, ring production, installation, testing and cleaning, slab construction, pump installation, maintenance and repair.

Training for local fundi's should be given to ensure adequate technical level, and proper running of their businesses (eg. accounting).

10.4 LOCAL SUPPLY OF HANDPUMPS AND SPARES

Many complaints were heard about the supply of hand pumps and spare parts. Inadequate stock is held at present. Simultaneous with the Formulation Mission, a short mission was carried out to advise on the feasibility of local manufacturing of pumps and spares, and which type would be most suitable. Reference is made to this report.

10.5 SUPERVISION AND QUALITY CONTROL

If it is decided that a large proportion of the implementation is carried by the private sector, evidently an important role has to be played by the Water Department in supervision and quality control of all subcontracted works. This work includes preparation of tender and contract documents, as well as site supervision. Additional training will be necessary.

10.6 TRAINING NEEDS

The training requirements for the construction and rehabilitation of water schemes should aim at improving the technical and managerial skills of the various personnel to be involved in the Programme. It should impart new technologies and approaches in the water sector with the particular aim of solving problems. This will greatly enhance the implementation capacity of the programme.

Technical courses should (at least) include the following subjects:

- Management of construction works;
- Survey, design and cost calculations for shallow wells, sand dams, small earth dams, spring protection, etc;
- Construction of rural water schemes;
- Water quality analysis and sampling technique;
- Survey, design and cost analysis of piped water schemes;
- Environmental health and sanitation.

11. COST RECOVERY AND COST SHARING BY COMMUNITIES

11.1 SUSTAINABILITY AND COST RECOVERY

Experience from different countries show that the water supply systems which provide the most reliable service are those where communities were fully paying the cost of operation and maintenance⁷. In Tanzania, the user payment is seen as a means of protecting improved water supply from the uncertainties of government financing and making sustainability more likely. It may also increase the commitment of users to a sound management and use of water supply.

At present full cost recovery of improved water supply may be difficult to achieve in Tanzania's rural areas. Partial cost recovery in terms of community contributions to construction, and full responsibility for operation and maintenance should be a possibility, however, provided that certain conditions are met. These include that:

- differences within communities in needs and demands, and in willingness and ability to pay are taken into account;
- in setting up community-based financial management of an improved water supply, provisions should be made to ensure that the less well-off people in the community do not lose out;
- users are involved in planning, are given choices of technology, and are fully aware of the cost implications for themselves as well as for the agency;
- approaches to financing and cost recovery are fully supported by the users;
- projects are designed to require minimal government support and recurrent inputs for operation and maintenance;
- water supply projects are integrated with other development efforts (e.g. hygiene education, improved sanitation), so that benefits are reinforced.

Advocating cost recovery has important implications, and these must be recognized. The greater the contribution from users, the less they can be treated as beneficiaries and the more they must be seen as partners.

Where a community does not count an improved domestic water supply among its priorities, and accordingly is not willing to take up responsibilities for its operation and maintenance, the Programme should be able to take the decision to limit its activities to hygiene education.

Especially for piped supplies the establishment of a proper cost recovery system is mandatory in order to ensure sustainability of operations. It is proposed not to engage in any piped supply scheme unless a proper mode of cost recovery and financial management is presented. The economic and institutional aspects can be taken up in a special consultancy on this issue.

⁷ Reference is made to: Phil Evans, "An overview of approaches to community financing of water and sanitation", The Hague, IRC (in press).

11.2 COMMUNITY CONTRIBUTIONS TO CONSTRUCTION

After the need for an improved domestic water supply in a community has been identified, different options for technology and service levels should be discussed, with a clear indication of costs of construction and of operation and maintenance. The community should be given ample opportunity to choose the most adequate options, taking into account different user groups.

Although the general approach in the Programme may be to subsidize at least part of the construction cost (e.g. providing tools, materials, supervision, etc.), the possibility for a community to pay for a complete well with handpump, or for a gravity piped system should not be ruled out. In those cases where the community is willing to pay, but is not able to bring together at once a large sum, the establishment of a credit system may be considered.

Community contributions to construction may consist of labour, cash and materials. Commitments of the community as a whole, and of individual households or community members, should be completely clear before construction begins. They should be laid down in a contract with the agency, which states equally clearly the obligations of the agency.

11.3 OPTIONS FOR COMMUNITY-BASED FINANCIAL MANAGEMENT

There are many options for the practical management of user payments. Which is most appropriate depends on local circumstances, on the level of service (e.g. a well with a hand-pump, or a borehole with a diesel pump, or a gravity piped supply system with communal standposts, etc.), and on the choices the users make.

Options mostly used in rural communities include:

- general community revenue;
- cooperative funds (usually as part of an already established cooperative venture);
- flat rates (all user households pay the same amount);
- graded rates (reflect differences in consumption and, in some cases, ability to pay);
- water vending (direct payment per unit used).

It is clear that any option will only be effective when the community is given insight in the use of its funds, and has confidence in how the money is being spent.

Special attention should be paid to the implications for women of paying for water. The implicit assumption made in most discussions of cost recovery is that "the household" will pay, with men being assumed to be the principle providers. In many places this may not be true and women, who are responsible for providing water for the family, may also be held responsible for paying for water. As women often have very low income levels, difficulties are sure to arise when these issues are not discussed and appropriate solutions found.

An example of a solution: water charges as fixed rates not per household, but per individual adult.

11.4 REQUIREMENTS FOR COST RECOVERY, COST SHARING, AND COMMUNITY-BASED FINANCIAL MANAGEMENT

The Programme should support communities in making appropriate choices concerning technology and service levels of an improved water supply, and concerning a management system for user payments and contributions.

It should ensure that the ability of women and less well-off people to contribute towards an improved water supply and to pay regular water charges is taken into account.

The Programme should also provide support in setting up democratically chosen Water & Sanitation Committees, which are given the authority to sign a contract with the Programme, specifying community commitments (including financial commitments) towards construction, operation and maintenance of the new water supply, and obligations of the agency (government, donor) concerning short term and long term support.

Needed is also assistance in training of Water & Sanitation Committee members in general financial management and particularly in simple bookkeeping and accountability.

12. PROGRAMME MONITORING

12.1 THE PRESENT MONITORING SYSTEM

During the previous Programme phase a monitoring system has been established aiming at providing all partners at District and Regional level with adequate information. The implementation of this system took a long time and consequently the outputs produced still cover a short period. Moreover a number of problems can be observed with the implementation of the present system:

- The total time required from field staff is requested to be very high (25% of the total time spent on the programme).
- The reliability of data is problematic: errors are made in filling out the monitoring forms and unless very thorough checking is done, these errors may jeopardise the reliability of conclusions.
- The present system, when properly used, would serve the interests of District and Regional authorities. The communities have no access to the findings.
- The feedback by the Programme on problems reported is generally very slow; hence the motivation of communities to participate in the monitoring work gets eroded.

For these reasons there is ample justification to review and adjust the present monitoring system.

12.2 COMMUNITY-BASED MONITORING

The community and the Programme both need to assess the successfulness of the approach. They need also to be able to make timely adjustments and solve problems. For these purposes, a simple community-based monitoring system will be used during a fixed amount of time (proposed: a year). Monthly data will be gathered by the Water or Well Committee, village health workers, and extension workers, who will together analyze the data and define solutions to any problems.

Appropriate criteria and indicators for monitoring will be worked out by the Programme staff. Indicators for direct village monitoring from the present Programme Monitoring System will be used as much as possible.

It is very important that the monitoring data will be equally accessible to the community and to the agency (all Programme implementers). For that purpose, simple diagrams or tables can be used, which should be filled in regularly and displayed where the community has easy access to them and can look at them frequently.

For instance, a table showing all small repairs and other operational costs on a pump or on a piped system over a certain period of time, will make clear to the community as well as to the agency the scope and importance of the work the Water & Sanitation Committee and the caretaker are doing. It will also make clear how the money is spent, which the community pays into its operation and maintenance fund.

A table or diagram showing increasing numbers of latrines built in the community, together with (hopefully) decreasing numbers of cases of diarrhoea, could be very useful in showing to everybody the need for good sanitation.

12.3 HANDING-OVER PROCEDURE

At the end of the fixed period, an evaluation will be held by the community and the agency together, to determine the communities' ability to further sustain on a self-reliant basis the operation, maintenance, and financial management of the improved water supply.

Appropriate and relevant criteria and indicators for this evaluation will be worked out by in the new Programme.

If the evaluation results are positive, the management of the new facilities can be immediately handed over to the communities. It is presumed, that the communities can themselves continue the monitoring activities. Any further support or technical assistance will be provided by the District Authorities.

If the evaluation results are not successful, a limited extension of the period in which Programme support is given can be considered. At the end of the extended period the management will definitely be handed over to the community. It is presumed that any further support should be provided by the District Departments.

The evaluation will include an assessment of the performance of hygiene education in the village, and the improvement of sanitary facilities. The data of this evaluation can help in structuring the "phasing-out" of Programme activities in hygiene education, and handing them over to the District Health Services.

For community-based monitoring and evaluation is required:

- Assistance in training members of the Water or Well Committee, and village health workers in taking part in monitoring and evaluation tasks.
- Support of the communities in monitoring and evaluation.

12.4 MONITORING FOR PROGRAMME MANAGEMENT AND CONTROL

For purpose of performance monitoring and evaluation, monitoring must be set up in such a way that the indicators for programme achievements, as mentioned in chapter 6 and in Appendix 4, are being provided on a regular basis. When an ongoing monitoring system turns out to be too expensive or labour intensive to perform this task efficiently, alternative can be considered such as surveys with regular time interval (annually or semi-annually).

13. TRAINING

13.1 TRAINING NEEDS

For the community-based approach to be successful, the Community Development Assistants and Health Assistants involved should have at their command a range of participatory methods and techniques. Preferably they should also have developed some skills and experience in using these methods in working communities.

As an example of modern participatory methods, the SARAR Participatory Methodology developed by PROWESS can be mentioned⁸. The objective of the SARAR methodology is not to teach a specific method or subject matter, but to stimulate people to think through problems themselves and to help them develop their own analytic, creative and planning abilities. It tries to change the usual teacher-pupil/bringer-receiver relationship into one which emphasizes mutual learning and dialogue.

Some of the techniques and tools with the SARAR methodology recommends, are excellent in facilitating the work of animators and hygiene educators with communities, particularly when they are adapted to specific situations. Some examples, taken from a manual for community development workers in Zambia are added in Appendix IX.

At present, little information about participatory approaches is available at the Districts. Community Development and Health Officers, who have to support the work of the field staff in their departments, must be informed about the new methods and approaches. Field staff (CDAs and HAs) who are not sufficiently trained in appropriate methods and techniques, have to acquire knowledge and skills in participatory work with communities.

To ensure a good integration of the technical and non-technical aspects of the Programme, it is strongly recommended to include supervisory and field staff of the Water Department in this orientation and training.

As cost sharing and cost recovery systems for water supply are not yet common in Tanzania, this is another area in which skills and experience are lacking. Orientation of Regional and District officials, and training of field staff on these issues, are very important.

Success of the new Programme depends not only on the knowledge and skills of District officials and field staff. Perhaps even more important is the competence of the communities to manage their own development activities. Adequate assistance of community members in acquiring that competence is not always possible through simple on-the-job training by non-professional trainers. Techniques for discussing hygiene issues for village health workers, for instance, or leadership qualities for women, or bookkeeping and accountability for Water & Sanitation Committee members, can best be trained in a professional way.

⁸ See: Lyra Srinivasan, Tools for Community Participation, PROWESS/UNDP, 1990.

13.2 GENERAL OUTLINE OF AN INFORMATION AND TRAINING PROGRAMME

To improve the general performance of implementers in the new Programme the following information and training programme is proposed:

National, regional and district level

Two national seminars for National, regional and District Officials and donor representatives are proposed. One seminar will take place to introduce the new programme. The second one, which should also be attended by programme staff and consultants and advisors, will have a review character. It should take place after approximately 2,5 years mid-way the programme period.

Three orientation workshops for Programme staff, their Heads of Department, and District and Regional Directors in the Programme area on the following subjects: participatory methodology and techniques for a community-based approach in improving water supply and sanitation; cost-sharing, cost recovery and community based financial management of water supply; basic techniques of evaluation.

Training of field staff

Two Programme training courses and two workshops are proposed for field staff; one on participatory methodology for a community based approach before the start of programme activities, one on hygiene education before the start of hygiene education and sanitation programmes, one workshop on participatory monitoring and evaluation before the start of the first community monitoring period and one refresher workshop. The training sessions are meant to promote the integration of different activities i.e. water supply, hygiene education and sanitation. All courses will be designed for CDA, HA and Maji field staff together. As the maximum number of participants for this type of training should not be more than 30, all courses will probably have to be given more than once.

Information and training of community members

For various groups of community members the following workshop and training courses are proposed:

- general orientation of village leaders on hygiene education and sanitation, technology options for water supply and cost recovery, cost sharing and community based financial management;
- training in tasks and functioning of the Water and Sanitation Committees for members of these committees and programme field staff;
- workshop on leadership skills for women for women's groups and individual women and field staff;
- training course on hygiene education and improvements in sanitary facilities and behaviour for village health workers, school teachers, special village leaders (midwives, traditional healers, etc.); women's groups and field staff;
- training in participatory evaluation for members of Water and Sanitation Committees, village health workers and other relevant community members and field staff;

- follow-up/refresher workshops on tasks and functioning of Water & Sanitation Committees; hygiene education and sanitation and any other subject considered to be relevant;
- training of technicians and artisans (fundis) in well construction and other activities related to Programme implementation.

Depending on the specific subject, courses will take at least 1 and at the most 5 days. For the best results it is recommended that the number of participants does not exceed 30.

Special courses and workshops

Training in specific issues if found relevant may be organized directly by the programme or through participation in courses elsewhere. Possible subjects are:

- production of information and training materials and pre-testing of materials;
- basic training in setting-up and management of small, district based documentation units for information and training materials needed in the programme including techniques for information exchange and services to users;
- updating of management skills for programme managers and other supervisory staff;
- orientation workshops on environmental issues related to water resources management and water use for Regional and District officials.

Further suggestions for the various training courses are elaborated in the Appendix IX.

13.3 ORGANIZATION OF THE TRAINING PROGRAMME

For the organization of the above training programme, the Programme will employ an expatriate Expert on Community Participation and Training. See for job description Appendix V.

All courses and workshops will be held at a Tanzanian training institute, or institutions, still to be identified (a list is provided in Appendix XI).

This Tanzanian institute will assign one or more members of its staff to work as counterparts with the Programme Expert. They are expected to gain experience, and gradually take over the tasks of the Expert in organizing and monitoring the training programme.

13.4 TRAINING MATERIALS AND DOCUMENTATION

At present, very little information materials and documentation are available in the Regions and Districts on the subjects mentioned for training in the Programme. Some training materials, particularly what will be needed for use by community members, will probably have to be produced specifically for the Programme. Some relevant materials might have been produced by other donors or institutions in Tanzania, but such documents are usually very difficult to obtain for Programme implementers in the Districts.

Equally, District Officials seem not to have ready access to Programme records, consultancy studies and other materials produced with the former RWSP Programme. Regional and District offices in Shinyanga and Morogoro do not have a concise Programme reference library, and in most cases they lack a reasonable method for storing and retrieving important documents and books.

Training materials and basic documentation on training subjects and other relevant issues will be needed in support of the workshops and courses proposed. Access to current information and a proper storage and retrieval system for all necessary information, from outside and produced by the Programme itself is essential to good performance. The cost of non-availability of information for training and in general for Programme output, can be quite high.

It is therefore proposed to set up in every District a small documentation unit. General objectives are:

- To provide in general support of Programme activities, appropriate information on water supply, hygiene education and sanitation on cost recovery and community based financial management, and on participatory methodology.
- To support specifically all training activities of the Programme.
- To bring together relevant materials and documents on the above-mentioned subjects, which have been produced in Tanzania, or for use in Tanzania, by different institutions and donors.
- To provide potential users with access to relevant documentation by:
 - * providing information about the collection through lists, catalogues, etc.
 - * providing facilities to consult and borrow the documents in the collection.

Users of these documentation units would be all Programme staff and other interested persons in the Districts. Specific suggestions to establish and manage a documentation unit in each District are elaborated in Appendix VII.

14. ENVIRONMENTAL ISSUES IN THE MOROGORO REGION

14.1 INTRODUCTION

According to statements of policy, issued by the Netherlands government in November 1989, environmental policy is to be the third main element in government policy, including projects carried out under the Netherlands development programme. The protection and development of nature, control of the entire waste flow, as well as the saving of energy are amongst other aspects of environmental policy which require additional action. These aspects are stated to bring measures forward so, that the long-term objectives being necessary for sustainable development can be achieved more quickly (NEPP-plus, 1990).

The above-mentioned aspects are of great importance to the Morogoro Region, since its natural environment is affected to a large extent by human activities. Quick action has to be undertaken to reduce the negative impacts of several environmental factors, being discussed in this Chapter.

The development of water resources induces several interactions between the water resource and the environment. The interactions depend on the type and size of the water point, the purpose of the water supply, the origin of the water, and the quantity of water being abstracted.

The area affecting the water point can be subdivided into three protection zones:

- an inner zone (direct risk of contamination).
- an outer zone (indirect risk of contamination).
- the catchment area.

The degree of vulnerability decreases with increased distance from the water point. The impact of the water point on the environment can be outlined in the same way.

14.2 ENVIRONMENTAL CONDITIONS

The natural conditions of an area strongly influence the impact of the water point on the environment, and vice versa. The influence of environmental factors depend mainly on the physiography, rainfall, soils, vegetation cover and land-use. These so-called natural conditions need to be studied before the impact on the environment can be assessed. Suffice it to broadly discuss the natural conditions for the Region in this Section.

The physiography of the Region has a large variation. High mountain ranges are present (Uluguru, Nguru, Ukaguru, Usagara and Udzungwa Mountains) as well as wide, flat valleys (mainly Kilombero and Mkata/Wami Rivers). Consequently, three types of geomorphological zones can be distinguished: mountains, foothills/steep piedmonts, and floodplains.

The geology of the Morogoro Region consists mainly of metamorphic Pre-Cambrian Basement, for the greater part gneisses but also a small portion of crystalline limestones, of which the hills and highlands are composed. In the east of Ulanga District continental sandstones, siltstones and mudstones are found. The valleys of the Region are filled with fluvial deposits of Tertiary and Quaternary age. The Kilombero Valley is flooded annually and as a result covered by heavy clays in its central parts. The plains consist of the Tertiary and Quaternary erosional products of the different mountain ranges.

The Region is drained by parts of several big river systems. Most of the water contributed by the Region originates from the mentioned mountain ranges. The Region is, in general, characterized a tropical humid climate. The rainfall, however, is highly variable due to the physiography. The rainfall increases with altitude, and is characterized by short storms of high intensity. The mean annual precipitation is over 2500 mm on the eastern slopes of the Uluguru Mountains, while the western plains only receive 500 mm annually. Consequently, people in the mountain areas have sufficient water of good quality throughout the year, while the foothills and floodplains experience water shortages during the dry season (DHV, 1982).

The greater part of the population of Morogoro Region makes a living out of farming (by means of permanent cultivation), although the potential of the land for agricultural development is relative low. Livestock keeping is not an indigenous way of living. Only recently the Maasai and Barbaig settled in the northern plains, thus introducing cattle in the lowlands. However, the larger part of the southern lowlands consists of game reserves. Soil and water conservation is not common practice in the mountainous areas. No fertilizers have been used until recently, to reestablish the nutrient balance of the thin soils. Irrigation by means of spring-water takes place in the Uluguru and Unguru Mountains in the dry season; for this purpose irrigation canals along the contour lines are used. This is not possible in the Ukaguru Mountains due to the absence of springs.

14.3 ENVIRONMENTAL IMPACT

The environmental impact can be regarded in two ways, namely the impact of water resources on the environment, and vice versa, the impact of the (degrading) environment on the performance of the water resources. These two aspects will be dealt with in the next Sections.

14.3.1 Impact of water resources development on the environment

Water point construction

The only adverse impact on the environment brought about by rural water resources development will be transitory, and is likely to occur before and during water point construction. During this period, tracks may need to be cut, or spoil or sand may need to be won, leading to a short-time negative impact on the environment in the vicinity of the water point ('outer zone').

Concentration of population

Where a popular or reliable water supply or point exists, human populations may settle around it; this can lead to environmental degradation in much the same way as the dry season concentration of cattle around perennial water points does. Indirectly, this can lead to overgrazing, accelerated deforestation and inappropriate agricultural practices ('outer zone' and catchment area).

Overpumping of boreholes and shallow wells

It is possibly that overpumping of boreholes and shallow wells takes place in the Region. Such overpumping could have an adverse impact on the environment, in so far that it might reduce the discharge of the existing springs and seeps and might decrease the yield of wells. The possible lowering of groundwater tables has not been established so far, although gradual lowering of the water table in some shallow wells is reported by some people.

Development of surface water supply

The construction of surface water resources like earth dams may lead to the development of a breeding ground to mosquitos, and other insects, especially in the vicinity of latrines. These could lead to a serious increase in water-borne diseases.

14.3.2 Impact of the environment on water resources development

Deforestation

Deforestation or land mass denudation is one of the main causes of degradation of water resources in Morogoro Region. The severe deforestation is the result of the need for fire-wood, building purposes and the clearing of ground for cultivation. The cover loss causes accelerated erosion, soil loss and, indirectly, to reduced recharge. This process soon leads to a decline in the yields of groundwater resources. The siltation of surface water points causes a deterioration of the water quality. Deforestation may also lead to a collapse of water points; this is reported to happen in particular in the Uluguru Mountains. Re-afforestation is hardly taking place, probably due to the fact that people do not own the land they are cultivating.

Domestic waste disposal

In the direct environment of a water point (inner zone) a direct risk of contamination of the water is present. This pollution takes place due to on-site sanitation systems and the disposal of organic waste.

Livestock overstocking

In the Morogoro Region only relative small quantities of cattle are found, especially on the plains. Overgrazing is therefore not an important issue, although some degradation of land may occur around watering points during the dry season, when cattle migrate to perennial water sources. Due to the soil erosion surface water points are silted, deteriorating the water quality and diminishing the amount of water stored.

Agricultural development

Soil erosion due to agricultural practices mainly takes place in the mountainous areas. Some terraces are reported to be constructed to reduce the erosion risk, but in large parts where new clearing takes place no soil conservation whatsoever is practised. In some parts of the Region irrigation is taking place. This could affect the water availability for household purposes. The use of pesticides and fertilizers is taking place on a small scale. Little pollution is therefore expected from leaching of these chemicals into the various water sources.

Industrial activities

Morogoro town is one of the main industrial areas of Tanzania. Numerous industries are situated in this part of the Region; the main products are tobacco, canvas, shoes, oil, ceramics, polyester, sugar, carpets, sisal and the products of tanneries. These industries have no, or non-functional facilities for treatment of the effluent back to acceptable standards (see also Mkuula & Mpendazoe, 1990). It is clear that this waste disposal has a very negative impact, both on the quality and the quantity, of the surface water and groundwater in the wide surroundings of Morogoro.

14.4 WATER RESOURCE PROTECTION

Small community water supply systems need to be developed in such a way that the water source is fully protected. This protection should take place in the fore-mentioned inner and outer zone around the water point. The following measures should be taken:

- physical protection of wells and intakes;
- improvement of sanitation practices;
- improvement of agricultural practices;
- regulation of water use (Lee & Bastemeijer, 1991).

One of the strategies discussed in the National Water Supply Programme will be 'the promotion of source protection measures as integral part of water programmes, through introduction of by-laws to control agriculture, tree cutting etc. near water sources, encouraging afforestation and improved sanitation' (Daily News, March 26, 1992).

There are also problems dealing with water supply on a larger scale. The environmental factors which play a main role are domestic sewage contamination, pollution by industrial waste and changes in the hydrological regimes of larger catchment areas. Strategies to control these factors include land-use planning, enforcement of waste control and water resource management. Studies need to be carried out to establish the influence of these factors in Morogoro Region.

14.5 CATCHMENT PROTECTION

The catchment area of a water point needs to be controlled. Examples of catchment control are: re-forestation, soil and water conservation, artificial recharge of groundwater, improvement of sanitation practices and the treatment and recycling of waste water.

The government of Tanzania does not have an up to date comprehensive environmental law. Although environmental protection legislation is considerable, most of the laws are obsolete and uncoordinated (Mkuula & Mpendazoe, 1990). According to the energy policy of the government, people are encouraged to grow their own trees, but so far only marginal results have been achieved. The Tanzania Forestry Action Plan aims to ensure a sustainable supply of wood-fuel. Community and farm forestry are targeted for stimulating and developing sustainable forests at village level. Currently, wood-fuel constitutes about 92 percent of the Tanzanian total energy balance. The long-term aspiration of the Tanzanian government is to replace this energy source by electricity and other convenient energy sources (Mwandosya & Luhanga, 1991).

14.6 CONCLUSION AND RECOMMENDATIONS

It is concluded that due to degradation of the environment the region is experiencing increasing problems. It therefore has to be stressed that there is an urgent need for a separate survey to develop a clear environmental profile of the Morogoro Region. This profile could form a useful basis for the assessment of environmental risks in the next phase of the Rural Water Supply and Sanitation Programme. Due the limitation of the Programme to domestic water supply, the risk of serious negative impact of the Programme on the environment is small. However when water supply is also to be used for cattle, it is recommended that Environmental Impact Assessment be made.

There is no proper inventory of the number of springs in the Region, and the quantity and quality of their water. An assessment study of these springs, to decide if protection of the various springs is a viable option, would significantly contribute to improve rural water supplies.

The main problems related to the environment which are encountered in the Region are deforestation and pollution through industrial and domestic waste. The following strategies should therefore be applied:

- the promotion of electricity supply and other energy sources to reduce fire-wood collection;
- the reforestation of large areas;
- the rehabilitation of treatment plants, and study of the distribution of polluted water and soil;
- the promotion of soil and water conservation practices;
- promotion of land ownership.

14.7 TRAINING NEEDS

The Community Development Staff and Technical Staff should be trained in assessment techniques of environmental factors which are relevant to control, in order to anticipate the problems which can be encountered during and after development of a water source. Drinking water source protection has to be regarded as an integrated part of the management and improvement of drinking water supply and sanitation facilities.

The Department of Environmental Engineering of the ARDHI Institute in Dar es Salaam is specialized in different kinds of environmental impact studies. It is recommended to introduce this department in the programme, to do some additional environmental studies in the Region.

14.8 REFERENCES

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15. INSTITUTIONAL FRAMEWORK

15.1 OPERATIONAL SET-UP

The proposed organisational framework for the Programme is based partly upon an investigation of the requirements by the donor and the regional and district governments, as well as an assessment of the most appropriate structure for efficient Programme execution.

Requirements formulated by the Regional and Districts Government include:

- full responsibility for preparation and implementation;
- maintenance of the normal lines of accountability of the executing departments to the District Executive Director;
- transparency; it must be clear how the (donor) resources have been applied.

Minimum requirements of the donor include:

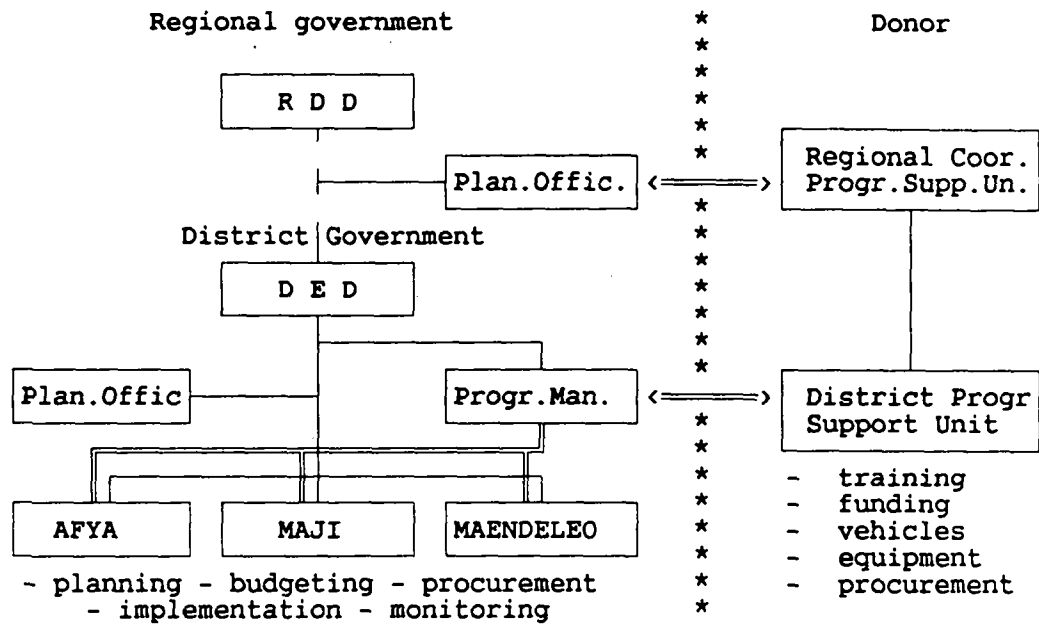
- the funds and equipment provided are used exclusively for the Programme;
- policy criteria with respect to sustainability, target group orientation (women) and environmental soundness need to be met;
- cost effectiveness and optimum use of the resources must be assured.

Other requirements are:

- single headed management of the Programme at District level (recommendation of the evaluation April 1991);
- budget and planning flexibility; the community based approach can only work when the Programme responds in a flexible manner to the requirements and the pace of the community organization;
- the ability to coordinate the use of human resources (from three departments and from outside), equipment, vehicles and materials in an optimal manner, so as to reduce cost;
- the capacity to accelerate programme implementation; the rate of implementation must reach levels many times the past rate of implementation in order to reach the targets;
- the ability to sub-contract to third parties, so as to substantially enhance the implementation capacity at District level.

In order to meet these various requirements the following institutional set up is proposed. The Programme is executed under responsibility of the District authorities. In consultation with the departments involved (and preferably also with the donor), the DED will appoint a Programme Manager (PM) from within the existing District staff or from outside, to whom authority is delegated for the day-to-day running of the Programme. Donor support is made available to the District through a District Support Unit (DSU). These district units operate under one Regional Programme Support Unit (PSU). All staff in these units are employed by the donor (i.e. not in GoT service). It is envisaged that for the regional unit two expatriates will be required and some local administrative staff and that the district units (DSUs) can be operated entirely by local staff.

Figure 1: Organization schedule for the Programme



Although the implementation of the Programme is executed in and by the Districts, the regional authorities must continue to be involved in the Programme. It is considered vital that the RDD, in his capacity as chairman of the Chairman of Regional Water and Sanitation Steering Committee (RWSSC), remains well informed about the progress of the programme. As in the past the (RWSSC) will have to be supplied with up to date reports on the progress in implementation of the programme, and the monitoring data with success indicators. In case of conflict over the implementation of the Programme that can not be resolved within the District, the regional authorities are best placed to moderate and intervene.

An active working relationship between the District and the Regional Authorities is crucial for the proper functioning of the Programme. Especially for new human resources and for secondment of staff from Regional Departments to the Districts, the active support of the RDD and the regional Departments for the Programme is important. For this reason the Programme Managers in the Districts, will report not only to the District authorities (the DED and the District Water and Sanitation Committee) but also to the RDD.

The DSU officer, hired by the donor, will report directly to the Regional Programme Support Unit. Copies of the quarterly report will be sent to the Programme Manager and the DED. The Coordinator/CTA of the Regional PSU will compile quarterly progress reports, to be submitted to the donor, with a copy to the RDD. The Regional PSU will be attached to the Regional Planning Unit. It will use the premises designated for the Programme in the previous phase.

The DED will establish a Programme account, which is to be operated with four signatories. Two signatories will have 'A' status (mandatory signatories) and two with 'B-status'. The mandatory signatories could be the DED and the Programme Manager, while the B-signatories could be the Treasurer and the accountant. A cheque requires one 'A' and one 'B' signature.

In order to facilitate coordination at the national level it is recommended that PMO shall act as coordinating Ministry for the Programme.

15.2 TASKS OF THE DISTRICT PROGRAMME SUPPORT UNIT

The District Support Units (DSUs) will have the following tasks:

- assistance in working out the district five year plan and the district annual implementation plans and budgets;
- providing support (funding, training, vehicles, equipment, procurement abroad) in accordance with the annual implementation agreement;
- providing assistance and support with respect to procurement, especially when imports are involved;
- provide technical assistance on the mode of implementation through the advisors at regional level;
- advice on the monitoring system and assist in the analysis of results;
- checking whether support request (and programme implementation in general) are in line with policy criteria with respect to sustainability and cost effectiveness.

The DSU officer is accountable only to the PSU Coordinator. Cost-effectiveness is to be ensured at all times through optimum use of staff, equipment and means of transport.

15.3 MODE OF COOPERATION BETWEEN DSU AND THE DISTRICT AUTHORITIES

The cooperation is based upon clearly spelled out agreements, dealing both with the 'inputs' towards the Programme from both sides, and the 'outputs' expected. A crucial element of the cooperation is the focus on the ultimate objectives; goal oriented planning and decision making should be developed and agreed modes of work be maintained. Whether activities are carried out by a department, by an independent institution or by the private sector is to be decided as circumstances require. Therefore the budget should be applied in a flexible manner. The basis of all agreements are the agreed objectives and related targets per district. The logframe appended may serve as a basis (Appendix IV refers). Programme execution is based upon the following agreements:

Commitment: Five year Programme Agreement between GoN and GoT, based upon acceptance of the formulation report and agreed amendments.

Inception: Five Year Programme Implementation Agreement between the RDD (for the four districts) and the Regional Coordinator of the DSU. This agreement is based upon the Five Year Programme Implementation Plan for each district, worked out by the District-PSU in consultation with the Districts.

Annual: Annual implementation agreement between the DED and District-PSU officer, based upon the Annual District Implementation Plan.

The latter agreement specifies which District staff is made full time available (e.g. seconded) to the Programme, which resources is provided by the DSU, and what the joint targets are.

15.4 TASKS OF THE DISTRICT ADMINISTRATION

The District Government is fully responsible for planning, budgeting and implementation. It may work fully in accordance with the present set up laid down in the System Design of 1987. The implementation can be done with district staff or be contracted out to third parties. These can be professional institutes for training, consultants for survey or design work and fundi's or contractors for implementation. All activities are carried out in accordance to the agreed annual implementation plans.

15.5 PLANNING AND BUDGETING

The present system of District planning is 'input' oriented (the district plans compiled in Part III show that the emphasis is on providing detailed budgets). The planning as practised by the Programme in the previous phase (1988-1992) was 'output' oriented. Targets were formulated for the number and timing of field visits, the number of villages to be included etc. In the new phase a system of Objective Oriented Planning (OOP) is to be developed, in which performance targets are formulated in accordance with the overall framework of Programme objectives.

15.6 MONITORING

Flexibility with respect to budgets and activity plans can only be justified, when performance can accurately be monitored in terms of goal achievement. The present monitoring system can be used for this purpose, subject to the observation made in chapter 12. A precondition for continued Programme Support by the donor shall be that reliable monitoring data are made available. It might be concluded that continuation of the present monitoring system is too expensive and labour intensive, and hence needs to be substituted with a different system (more simple monitoring or annual surveys). In that case it is essential that timing and quality of the alternative monitoring system still meet the requirements of proper progress control and impact monitoring. The least requirement is that performance indicators as listed in the Programme Design Framework (Appendix III) are being produced on an annual basis. The permanent monitoring body for the Programme is the Regional Water and Sanitation Steering Committee (RWSSC). This body will be supported in its function by annual joint review missions, that will make recommendations on programme targets and budgets per district for the next year.

16. PROGRAMME REQUIREMENTS AND BUDGET

16.1 HUMAN RESOURCES

In view of the acceleration of output, considerably more staff will be required for Programme implementation at reference level. Table 10 below summarizes the actual fieldwork involved in execution of all tasks required.

Table 10: Human resources required for fieldwork (workyears/year)

	M-rural	Kilosa	Ulanga	Kilombero	Total
Comm. dev. worker	3	2	1	0	6
Hygiene education	3	2	1	0	6
Construction S.wells	6	4	1	3	15
Construction Piped s	3	4	2	2	11
Construction total	9	8	3	5	26
Total (workyears/year)	15	12	4	6	38

For a number of reasons, the actual human resources requirement is higher;

- Survey teams and construction teams have to be formed, incorporating people with the skills required.
- People need to spend a certain time in their office or place of residence.
- Productivity tends to drop when there is no strong achievement motivation.

In view of these factors, the actual number of staff required is higher. In the table below the efficiency assumed in the Programme is indicated.

Table 11: Ratio of fielddays to total human resources

	M-rural	Kilosa	Ulanga	Kilombero	Total
Comm. dev. worker	67%	67%	67%	67%	67%
Hygiene education	67%	67%	67%	67%	67%
Construction S.wells	51%	36%	22%	47%	41%
Construction Piped s	44%	60%	28%	28%	40%

In the average twice as much staff is needed as the amount of field work indicates.

Most crucial for the implementation of the community based approach is the allocation of additional Community Development Assistants (CDAs) to those districts with a shortage. PMO should be requested to support applications from the districts in this respect. During the inception period this issue is to be sorted out for each of the districts.

16.2 CONTRACTING OUT

The volume of work required for achieving the development objectives (and related reference targets) goes much beyond the existing Government implementation capacity. It is therefore necessary to involve the private sector in the execution of the implementation activities through training fundi's and small contractors for this purpose.

The major advantage of involving local fundi's is that it allows for a change from a mobile intervention system to a stationary intervention system. When the Government executes, all staff involved and all materials have to be transported by the Programme to the site. This results in excessive expenses for transport cost, allowances, and investment in transport equipment. When local people are responsible for well construction, local means are used to the maximum extent to transport people and materials. This has proven in similar programmes in the region to significantly reduce the total transport requirements. Other advantages of contracting out are:

- Private entrepreneurs are well motivated to perform well; they are paid on performance basis.
- The training of local fundi's contributes to the sustainability and replicability of rural water supply
- The cost of Programme implementation is lower than with full Government implementation due to the reduction of transport
- It assists in the Transition process of the Tanzanian economy towards greater private initiative.

It should be investigated to what extent these fundi's need to be supported in the purchase of equipment. It is quite likely that the Programme will have to work out a system of Hire Purchase or Lease Hire. For this purpose the revolving fund, included in the budget could be applied. A short term consultancy should be executed to determine the best mode of financing equipment for this group of programme implementors.

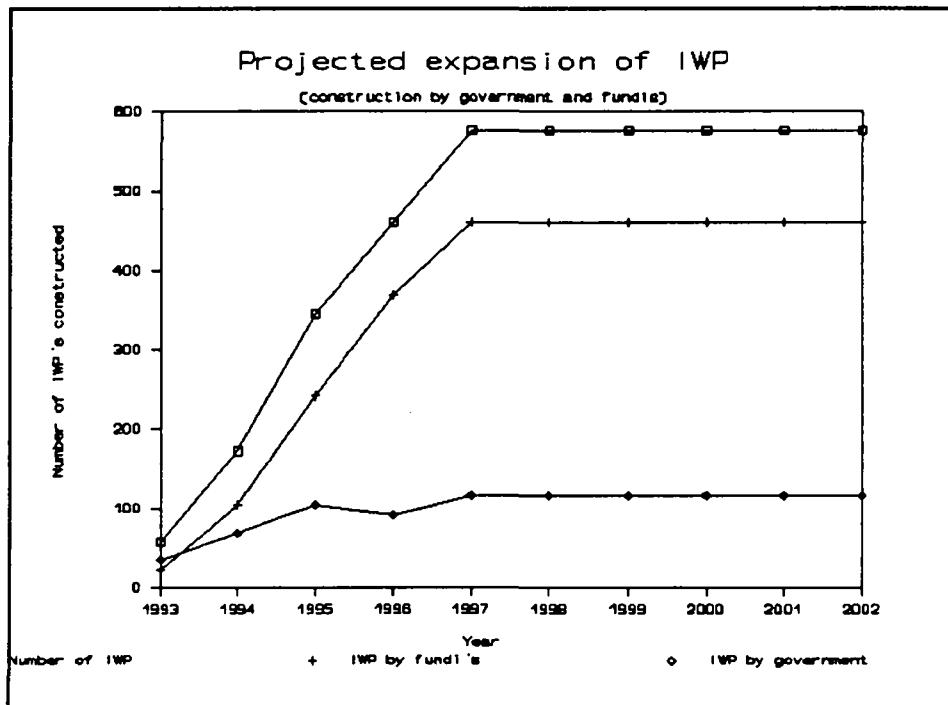
The projections indicate the equipment requirements, assuming that the Government would be fully responsible for implementation. To the extent that work can be contracted out, less government staff and also less equipment is needed. It is assumed that in the five year period the level of contracting out can gradually be increased, by training of craftsmen and small contractors in the villages. This is shown in table 12 and in figure 2.

Table 12: Rate of Programme expansion and degree of contracting out

Year	1993	1994	1995	1996	1997	Total
Activity level	10%	30%	60%	80%	100%	21%
Activity as % of total	4%	11%	21%	29%	36%	100%
Number of IWP installed	58	173	346	451	577	1614
Percentage contracted out	40%	60%	70%	80%	80%	
Number of IWP contracted	23	104	242	369	461	1199
Nr. of IWP by Gov't	35	69	104	92	115	415

It is envisaged that fundi's shall mainly be involved in shallow well construction. Successful contractors may also carry out (components of) piped supply schemes. Until now hardly any fundi's are used for well construction. It has been assumed that the private sector involvement in implementation will gradually increase from 40% in 1993 to 80% in 1997. Hence training must be undertaken for these fundi's and methods must be worked out to facilitate their investments in the equipment and working capital required to carry out the work.

Figure 2: Graphic presentation of the assumptions with respect to rate of expansion of construction of IWP, in order to achieve reference targets for the year 2002.



It is proposed that through a short consultancy during or shortly after inception, the approach for mobilization of private initiative shall be worked out. It should be noted that in the calculation of human resources requirements the actual number of staff required is more than two times the amount of real fieldwork due to the above described 'efficiency' factor. This is mainly caused by transport of people from District capital to the sites, and because of the need to compose teams for survey and construction. For this reason, in the process of contracting out it is not necessary to substitute one government worker by one fundi. Probably less fundi will be needed because they stay in the village (no or little transport) and they have their own methods of engaging more workers, when the job so requires.

16.3 EQUIPMENT

The need for contracting out is underscored, when the equipment requirements are considered that would be required for implementation exclusively by the Government. The major difference with contracting is the need to transport every piece of equipment, material and personnel to the site, which results in excessive requirements for vehicles and other means of transport. In the table below, all requirements are indicated, assuming 100% Government implementation.

Table 13: Equipment numbers required for 100% Government implementation

	M-rural	Kilosa	Ulanga	Kilombero	Total
Motorbikes	11	7	4	3	26
Small cars	4	4	4	8	20
Lorries	1	1	1	1	5
Survey augers	4	3	1	2	9
Hand drilling set	6	5	1	3	15
Moulds and hoist	1	1	0	0	2
Camping	7	7	4	5	23
Wat. qual. testing	4	3	1	2	9
Test pumps	4	3	1	2	9

To what extent contracting out leads to savings on equipment, depends on the local situation in each district. For budgeting purposes it has been assumed that contracting out leads to proportional reduction in equipment (hence approximately half the number mentioned in table 16.4 above). When fundi's or small contractors are unable to procure the required equipment themselves, it is assumed that from the revolving fund credit (or leasing) facilities can be provided to ensure proper level of equipment.

Equipment procured under the Programme and funded by the donor will remain under control of the Programme Support Unit.

16.4 PREMISES

During the inception phase, the issue of office space needs to be discussed with the local authorities. On the regional level no problems are foreseen; the newly built offices for the Programme will be used. For the district support units office space needs to be identified. If no accommodation can be found or easily constructed, temporary solutions might be considered (e.g. converted container). In the budget a provision of TAS 3.5 million per district has been made for this purpose.

16.5 BUDGET

Based on the financial projection of Programme operations (Appendix III refers) the following budget has been worked out. No distinction has been made as yet between the GoT and GoN contribution. GoT salaries of staff assigned to the Programme are not included.

As mentioned before, this budget is indicative and does not serve as a five year forward budget for planning of cash outlays. Annual cash budgets will have to be prepared by the Programme. Amendments to this budget will be made during the inception phase, when more realistic assumptions can be worked out on the human resources availability and annual activities to be undertaken per district.

Depending upon the mode of contracting, significant movements could occur still between category 420 equipment and 570 for contracting. When the fundi's and contractors find it difficult to purchase equipment for well construction, it is proposed that this equipment shall be bought by the programme, and subsequently be leased to the fundi's or contractors. In this case the budget for category 420 would go up in the first two or three years, and the budget line 570 would be reduced in all years. This substitution should be 'budget-neutral' since the assumed contract price for one well included depreciation and financing cost for equipment.

TOTAL BUDGET (TAS MILLION)

Year	1993	1994	1995	1996	1997	Total
110 Support in inception	8	0	0	0	0	8
120 Review missions	3	3	3	3	0	13
130 Evaluation mission	0	0	0	0	12	12
210 Experts (2 full time)	52	52	52	52	52	260
230 Local staff	18	18	18	18	18	90
260 Local consultancy	4	6	3	0	0	13
270 Foreign consultancy	7	7	4	3	0	20
280 Auditing	8	8	8	8	8	39
410 Investment buildings	22	0	0	0	0	22
420 Equipment	12	7	6	3	2	31
430 Transport equipment	44	17	16	9	7	92
520 Allowances	1	2	3	2	3	10
530 Transport costs	9	10	12	11	12	55
540 Administr. expenses	5	5	5	5	5	25
550 Materials	22	44	66	59	73	264
570 Contracting	12	52	121	184	231	600
600 Training	75	75	73	71	69	363
700 Revolving fund	0	130	0	0	0	130
Sub-total	300	435	390	428	492	2045
Contingencies 5%	15	22	19	21	25	102
Budget total	315	457	409	449	517	2147

For ease of processing of this proposal by the Netherlands Government, the same budget is also provided in Netherlands Guilders in Appendix III.

It should be noted that this budget includes all expenses, except the salaries of the Government officers involved. The sources of funding are:

- a. contribution by the Central Government;
- b. contribution by the Regional Government
- c. contribution by the District Government;
- d. contribution by the villages;
- e. donor contribution.

These contributions need to be determined in consultation between GoT and the donor. In Appendix III (paragraph L) a distinction is made between local currency and foreign currency expenses.

17. EXTERNAL SUPPORT

17.1 GENERAL OBSERVATIONS

For the past 15 years the Programme (as far as the donor contribution is concerned) has been contracted to a Dutch consultant, DHV. The contracting formula was clearly an appropriate decision in the period that the consultant was responsible for implementation, governed by well defined performance targets. From the early eighties, the donor wanted to gain more control over the Programme and appointed a water sector coordinator to develop the system design and to work out the Plan of Operations for a new phase. In the tendering procedure that followed, the conceptual input of the consultant got virtually eliminated, and the responsibility of the consultant got blurred as a consequence. The contribution of the consultant was virtually restricted to recruitment of experts and procurement. DGIS treated the programme in the same manner as any other programme contracted to a consultant. The consultant was tied to the budget, and requests for budget adjustments by the consultant were often rejected. The consultant, on the other hand, only felt obliged to render the services expected within this set up. As a consequence there have been no real benefits from contracting a consultant (little sharing of experience with programmes elsewhere, hardly any up-dating of technical knowledge, and no clearly defined 'performance' guarantee), while the formula had marked disadvantages. The donor did not have a 'confidential advisor' that it fully relied upon. As a consequence, changes and adjustments in the set up and the budget of the programme that where necessary, have not been made, and the Programme continued for too long in a relatively unproductive manner. Moreover the consultant was in a difficult position. It could not question the Plan of Operations (and the institutional structure laid down), since this had been the basis for participation in the tender. It was neither recognised as an effective advisor by the Tanzanian Government, nor by the GoN.

17.2 PROPOSED MODE OF OPERATION

For the new Programme the modality of implementation will again have to be determined. Several options can be distinguished:

- a. contracting out of all technical assistance to a consulting firm;
- b. direct execution by DGIS ("eigen beheer");
- c. a combination of the two.

Although contracting out has become the generally preferred mode of implementation for Dutch aid, the direct execution mode could have certain advantages:

- a. The community based approach, together with the marked improvement in cost effectiveness and efficiency, requires a decisive and flexible management of resources, with a high degree of delegated authority to the Dutch Regional Programme Coordinator and the Heads of the District Support Units. Budget flexibility, and related decision making authority for the donor, is unlikely to be granted to a consultant.

- b. The donor, DGIS, can apply a direct disbursement procedure, just as is presently done with the District Development Programmes.
- c. In the institutional framework proposed, the Regional Support Coordinator and the District Support Coordinator are annually negotiating the implementation agreements. In this role they are expected also to make sure that donor requirements are met with respect to the application of funds, donor policy criteria and the cost effectiveness of solutions supported.
- d. No tender procedure is required, which usually (including preparation and bid selection) takes a long time. The recruitment procedure for the Dutch experts can start as soon as the proposal for the new Programme is approved. Quick recruitment would be the major benefit as to allow for a two month overlap with the present consultant's team.

17.3 SEPARATION OF THE SHINYANGA AND MOROGORO PROGRAMMES

Until 1985 the Programme activities for Shinyanga and Morogoro have been carried out separately. The combination was considered to have several benefits:

- a. One consultant doing both would safeguard sharing of experience and safe cost (joint activities for training, development monitoring system, exchange of expertise etc.).
- b. One coordinator at the national level could maintain relations with the Ministries concerned, could coordinate the two teams, maintain contacts with the RNE and organize procurement, clearing of imports and transport to the two regions.
- c. Cost saving could be achieved from combined imports for the two regions.

The evaluation mission of 1990 observed that the advantages of integration have been declined. Procurement and transport for the two regions was separated, because the combination in one container resulted in goods going to the wrong district or goods getting lost. It was also observed that integration also has disadvantages. The Programme Coordinator at the national level means an extra decision making level, which reduces the decisiveness of action in the region and the districts.

Also a combination of the two modalities could be considered, e.g. two advisors under district contract of DGIS and the district support programmes contracted out.

It is recommended that the two regional programmes shall be separated, for the following reasons;

- a. In a district operated programme, using a community based approach, there is no need for a control function on national level. The donor support structure is moving down one level; the coordinator is operating on regional level, while the actual implementation is planned and organized on the district level.
- b. From the perspective of the regional and district authorities, there is no need for a special link between the two regions, apart from the regular administrative links through the national government.
- c. The possibility of cooperation (joint consultancies, exchange of experience etc.) exists anyway. The two Dutch Programme Support Coordinators in the two regions can no doubt harmonize their efforts and keep in touch.
- d. Procurement can be contracted out to a specialized firm, that also takes care for clearing and forwarding.

17.4 TECHNICAL ASSISTANCE STAFF

As in the present programme, two expatriate advisors will be required for the regional Support Coordination unit; one expert on the technical aspects of rural water supply and one for the community development, training and gender issues involved. One of these two could act as Programme Support Coordinator. The regional office will also require an accountant and a secretary. It is recommended that these two staff shall be attracted through a reputable accounts firm in Tanzania, that can also be charged with the responsibility of auditing.

For each District Support Unit an administrator is to be attracted by the donor, who is responsible for all means (finance, equipment, materials etc.) that are to be provided in support of the Programme execution. It is recommended that the recruitment be done through a specialized organization in Tanzania. This has the advantage that GoN can discontinue a contract with any particular candidate on short notice in case of poor performance. Also the salary paid to the administrator is not the donor's concern, as long as the fee of the organization for its services is acceptable.

A job description for each of these functions is attached (Appendix V).

17.5 SHORT TERM CONSULTANCIES

Although the identification of the need for short term experts is entirely up to the Regional Programme Support coordinator to decide, it is expected that several short term consultancies shall be required. These include:

- establishment of a training programme in collaboration with a local training institute (to be identified);

- inventory on existing materials for hygiene education, development of an extension programme;
- guidance on training of local fundi's;
- issues related to distribution of spare parts, rehabilitation of pumps, production and/or distribution of pumps;
- development of a credit scheme for IWP financing and financing of fundi's (equipment);
- for developing together with district authorities a structure for sustainable services for domestic water supply.

17.6 PROCUREMENT OF MATERIALS

It is recommended that equipment and materials are bought as much as possible through established local suppliers. This has major advantages for back up service and future replacement of parts. Imports can be arranged through a local procurement firm (or agent of foreign firm), with the advantage that clearing through customs and forwarding is also taken care of. Contracts with these firms are to be made by the regional Programme Support Coordinator.

17.7 TRAINING

As described in chapter 13, training should to the maximum extent be done through one or more local training institutes, possibly assisted by an external consultant.

17.8 FINANCIAL MATTERS

All payments for the Programme shall be made in accordance to the standard procedures for the mode of direct execution by DGIS (modality 5). On a quarterly basis disbursements shall be made by the embassy to special accounts opened by the District Support Units, possibly through an external account maintained by the regional Programme Support Unit. The maintenance of accounts and financial reporting shall be done in accordance to instruction provided by the RNE.

17.8.1 Concept of budget flexibility

Within the rules and regulation of the DGIS with respect to budgeting and financial accounting, a high degree of budget flexibility should be realised through various means. Agreement must be made between the DGIS (desk, financial department) and the embassy with respect to the 'tolerance' that can be provided for the annual budgets. One method is to work with rather general budget lines; implying that within those cost categories, the Coordinator of the DSU is free to decide on allocation of the funds for the Programme. Also the Coordinator should be given a 'margin' of e.g. 10%, with which movement between budget lines (main cost categories) can be made, as long as it does not affect the budget total. Alternatively the embassy should be given authority to approve budget alterations up to a certain limit.

Through proper means of communication (fax) the DSU Coordinator should be able to get quick approval (within one week) for any budget alteration proposals made. The DSU Coordinator should be given the mandate to approve budget alterations for any district, as long as it does not exceed overall budget restrictions.

The condition is that all money must be spent in support of the planned activities, and the Programme should be able to account properly for the use of all means made available to it by the donor. For this purpose an annual audit needs to be carried out according to a pre-set auditing framework.

17.9 COOPERATION AGREEMENT

17.9.1 Preparatory activities

Before a final cooperation agreement can be entered into, the following issues still have to be settled between the GoN and GoT:

- The formulation report must be endorsed, if needed with amendments agreed by both parties.
- The contribution of both governments towards the budget is to be agreed upon.
- The safeguards for timely payment of the GoT contribution. It is recommended that a counter value fund from Dutch Balance of Payments support shall be created for this purpose; to be remitted to the districts in accordance to annual cash budgets.

17.9.2 The agreement

When agreements has been reached on the above issues, the cooperation agreement could be prepared. It should contain:

- Reference to the endorsement by the parties of the formulation report and any amendment thereto, added by means of an addendum to the report.
- The conditions for cooperation, other than those mentioned in the formulation report.
- The procedures with respect to appointment of Programme Managers in the District by GoT and the recruitment of staff by the donor for the District Support Units and the two expatriates for the regional Programme Support Unit.
- The activities to be undertaken during the inception phase, in particular the drafting of a Plan of Operations.
- The timing and the procedures for the annual review missions and Programme evaluation.

- The parties signing the agreement. The parties involved in the Programme on the GoT side are:
 - a. on Regional level, the Regional Development Director, the Head of the Regional Planning Unit, Heads of the three implementing Departments; Maji, Maendeleo and Afya;
 - b. on District level, the District Executive Director (DED), the Head of the District Planning Unit, and the Heads of the three implementing Departments; Maji, Maendeleo and Afya.

Furthermore on the national level representatives might be involved of the three participating Ministries and PMO.

Which party is representing the others needs to be determined by GoT. It is noted however that issues of substance need to be discussed at least with the authorities on the regional level. For endorsement of the formulation report, the regional Steering Committee for the RWSP would be the most appropriate forum.

17.10 INCEPTION OF THE NEW PHASE AND HANDING OVER BY THE PRESENT CONSULTANT

It is proposed that an inception period shall be established during the last two or three months of the current programme. During this period, the expatriate advisors are overlapping with the team of the consultant. This would allow for proper handing over by the present consultant to the new team. Moreover it would allow for proper and timely planning of the activities for the new year and submission of the annual budget for 1993 (and preparation of 1993/94 budget on the GoT side). The following activities need to be undertaken during the inception phase:

- Drafting a Plan of Operations on the basis of the formulation report, including an activity plan and budget for 1993.
- Identification of organizations that can be contracted for recruitment (DSU administrators, accountant, and accounts clerks), for auditing, for procurement and for training support.
- Consultation with all districts on the appointment of Programme Managers and the assignment of staff from the three participating Departments.
- Preparation of procurement plans for equipment and material.
- Preparation/installation of offices for the DSU administrators and RWSP Managers in the districts.

17.10.1 Preparation to handing over by the present consultant

DHV has acquired a wealth of experience during almost twenty years of involvement in the water programmes of Shinyanga and Morogoro. It should be allowed to invest some time into the preparation for proper handing over. This should include drafting of a formal handing over report, including:

- Up to date and detailed 'state of the art' description for the current intervention area.
- Internal assessment of strength and weaknesses observed in programme execution (recommendations and advice for future advisors and implementors).

- Ideas about the future set-up and use of the monitoring system.
- A list of all publications by DHV on the water programme; proper photocopying of all publications for the Programme libraries in Morogoro.
- A list of all equipment (and stocks of materials) provided by the GoN for use by the programme and which is not yet fully written off (or consumed).
- A list of staff used in the programme with a performance assessment (to be made preferably in cooperation with senior Tanzanian programme staff or supervisors).
- A list of organization cooperated with, with contact persons, fields of collaboration and assessment of capabilities.

Furthermore the team members should be free to contribute whatever they think could benefit future programme organization and execution. The report should ultimately be ready by 1st October 1992.

The Plan of Operations should provide details of:

- The five year budget and the operating cash budget for the first year per district.
- Endorsement of the formulation report, or justification of any alteration proposed.
- The procedures for consultation between the District Programme Manager of RWSP and the Administrator of the District Support Unit.
- The provision of office space to the DPM and DSU by the District.
- The auditing procedure and organization.

In order to keep the administrative burden for all parties involved to the minimum, it is recommended to keep the Planops and progress report as brief as possible.

17.10.2 Provisional time schedule

May - July 92	Approval of the formulation report by all parties concerned.
August 92	Finalization of the Identification Memorandum by RNE.
August 92	Drafting appraisal memorandum by the desk and approval by DGIS.
September 92	Formal commitment to GoT. Start of recruitment procedure.
October 92	Start inception period; the Coordinator of the DSU (but preferably also the second expert) is fielded. If no formal approval of GoT is obtained as yet, the candidate Coordinator could be fielded on the basis of a short mission.
October - December 92	Execution of all activities planned for inception period.

18. REVIEW AND EVALUATION

18.1 THE NEED FOR INTENSIVE MONITORING

A Programme with a relatively large degree of flexibility can only be justified when the monitoring of achievements is well organized, and frequent enough to provide feedback for programme implementation. For this reason it is recommended that annual Programme reviews shall be done and an evaluation well in advance of Programme termination.

18.2 ANNUAL PROGRAMME REVIEWS

It is recommended that annual joint Programme reviews are carried out, to assess achievements and to review the mode of operation. It is recommended that GoT shall assign a neutral Tanzanian expert/researcher (from outside the government departments involved), and that GoN shall also assign one person or organization to deal with this task throughout the Programme period. Programme review are to be prepared by the Programme Management with a detailed progress report, in which indicators for performance are provided as laid down in the Programme Design Framework (Appendix III refers). The parties responsible for review may well propose to have a field survey carried out prior to the review, depending upon the quality of the materials provided by the Programme.

18.3 EVALUATION

A joint evaluation mission is to be fielded in the fourth year of operation, or earlier if the parties so wish. The evaluation should be based on a field study with primary data collection on impact and sustainability of water supplies realised. In principle the Programme Design Framework provides the basis for evaluation, together with possible modifications agreed in the Plan of Operations and subsequent annual implementation agreements.

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Terms of Reference

Formulation Water Programmes Shinyanga and Morogoro Regions

Dar es Salam, 24 January 1992

1. Historical background

In the early 70's the Government of Tanzania declared a policy to provide all its citizens with improved water supply by 1991. The Netherlands assistance to the water sector in Tanzania dates back to 1971. The programme has gone through two major phases. The first phase, from 1971 up to 1981, concentrated on construction and rehabilitation of water supply facilities. In the second phase, from 1982 - 1991 the focus shifted to sustainability of Operation and Maintenance (O&M) of the systems, through greater involvement and organization of the village communities.

The following programmes were carried out:

1971-1973	Shinyanga Water Resources Survey; resulting in a Water Master Plan for the region
1974-1978	Shinyanga shallow wells project
1980-1982	Shinyanga Rehabilitation Project
1977-1979	Morogoro Region Domestic Water Supply Plan
1978-1984	Morogoro Wells Construction Project
1982-1985	Morogoro Piped Water Supplies Project
1985-1987	Morogoro/Shinyanga Rural Water Supply Programme (including establishment of a pump manufacturing unit).
1988-1991	Rural Water and Sanitation Programmes in Shinyanga and Morogoro

In the first phase of cooperation the project objectives were clearly defined physical outputs such as:

- construction of shallow wells;
- rehabilitation of piped water supply schemes;
- setting up of a handpump production unit.

In 1982 an evaluation mission recommended that the responsibilities for the schemes should be delegated to the district and the village level so that the users in the villages would become more involved in the projects. The District Authorities Act did indeed in 1982 delegate almost all the relevant functions of the central government to the local authorities at the village and district level. This included the operation and maintenance of drinking water schemes.

In the same year it was decided to add a new objective to the programme namely to develop a maintenance system for rural water supply based on the capacities of the villages, districts and regions. A guiding principle should be the self-reliance of the villages. The supporting role of the districts and the regions should be clearly defined.

This new approach of the programme was first evaluated in 1987. It was concluded that as the system for operation and maintenance was still in the process of being developed, there was a need for further support. Emphasis was given to the availability of spare parts in such a way that they are easily accessible to the villagers. The mission recommended the project be continued with more emphasis on the district as focal point. Furthermore it was advised to separate the manufacturing of pumps and spare parts from the project.

The Plan of Operations for the next phase was prepared in 1987/88 by the Dutch water specialist attached to the Netherlands Embassy. The Planops refined the 'System Design' of the Programme, which included a step-by-step approach on how to go about the rehabilitation or construction activities in the villages. The approach aimed to secure full participation of the village communities in all stages of programme implementation, so as to enhance sustainability of O&M. The implementation of this new approach has marked the major shift in Programme strategy, from a construction oriented approach towards priority for community based O&M. In August 1988 the draft Planops was first discussed with Maji, Maendeleo and Afya. As a consequence of discussions on various issues, the Planops was signed only late November 1988. The Programme was due to be completed by July 1991.

2. Conclusions and recommendations of the evaluation in 1990

2.1 Findings

The evaluation mission of December 1990 concluded that the new strategy had been successfully implemented. The step-by-step approach as contained in the System Design has proven to be a sound basis to secure community based O & M. All parties involved appear to be convinced of its merit. Hence the mission recommended that it be maintained as the basis for future Programme activities. The mission observed that the official objective of 'water for all by the year 2001' is still far off. Since the proportion of villages receiving safe water supply in both regions is below the national average of 52 %, with Shinyanga not even reaching half of this figure, there is ample justification for continued donor support to a programme that also includes new construction of water supply systems. A significant contribution towards the water policy targets, can only be made when the Programmes moves to a higher gear. The most modest objective of 'keeping pace with population growth' in the two regions would require the construction of over 300 wells or water points annually.

Some of the recommendations of the mission where;

- Strengthening of community involvement, especially through further training of VWSC members and health assistants. In these activities efforts should be made to strengthen the position of women, since at present their role and influence is often marginal.
- More attention should be given to hygiene education, in order to establish motivation for the use of latrines. Village health workers should be equipped with appropriate visual aids.

- Programme Managers should be established on District and Regional level. The District Programme Managers should in principle be responsible for programme planning and implementation, with supporting services rendered by the region.
- The future role of the consultant should be better defined in terms of specific outputs and responsibilities.
- The use of counter-value funds should be considered, as a means to safeguard timely disbursement of local contributions.

3. Approach towards formulation

3.1 General approach

As recommended in the evaluation study, a consultative approach should be adopted for formulation, in which all districts and the parties concerned on regional and national level, will have a chance to express their ideas and preferences.

Moreover, in line with the evaluation, there should be scope for differentiation of the programme formula between the two regions and even between districts. The establishment of two separate regional programmes is to be considered as an option.

3.2 Strategy for continuation of the Programme

The strategy for the next five years will be to combine the new participatory O&M approach (in accordance to the System Design) with new construction, so as to effectively contribute towards the Water Policy objectives. The overall development objective for the programme will be derived from the water policy, while the approach is characterised by the System Design. The approach implies that the community organisation component determines the pace with which technical interventions can take place.

3.3 Environmental aspects

Water supply is known to create an environmental risk, especially when new well are constructed. If this leads to growth of livestock numbers, it could result in overgrazing in areas where the limits of carrying capacity have been reached (or exceeded already). In the present programme livestock is kept outside the well-site. Moreover wells are mostly located in villages or cultivated area's, with a caretaker on the spot. Provided that the normal precautions are maintained, the environmental risks seem to be fairly limited. It is known however that cattle farmers approach the Programme for assistance in well construction specifically for animal husbandry. In these cases, an appropriate environmental impact assessment should be made. The approach to be followed for this assessment will be worked out in detail in the formulation report.

3.4 Preparatory activities by the three Ministries concerned

The three Ministries involved in the Programme will be invited to participate in the preparation of the formulation. It is suggested that each Ministry produces an outline of their plans and programmes in connection with water supply in the Morogoro and Shinyanga regions.

3.5 Support by the consultant

The consultants' team will be invited by the RNE to support the formulation mission wherever possible with information and quantitative data. Moreover the team will be requested to provide the formulation team with transport, or assist with hiring of transport.

3.6 Identification of local pump production/assembly capacity

Programme extension would hardly be justified, if no local solution can be found for the supply of pumps and parts. The evaluation mission recommended that prior to formulation (or in close conjunction) a mission be fielded to identify local producers and to carry out test production. The mission should also recommend on the type of pump to be advocated for future use. A Terms of Reference for this mission has been discussed in January 1992 with all parties concerned, as part of the consultations on the formulation mission. The draft text was supported by all parties, and its execution prior to (or in conjunction with) the formulation mission was deemed necessary. The ToR for this mission is appended.

3.7 Include all technology options for water supply

Until now the Programme has worked only with standard type shallow wells (with SWN 80 pump) and piped water supply schemes. The extension does not need to be confined to these two technological options. The formulation mission should be free to suggest others, when these are considered more appropriate.

4. Tasks of the formulation mission and Terms of Reference

Task description

The formulation mission should undertake the following tasks;

- Formulate a logical framework of Programme objectives, outputs and inputs; including well defined targets, 'end-of-project status' and measurable indicators of achievement.
- Reassess the system design, especially with respect to its institutional components.
- Determine construction and rehabilitation targets per district, and related investment schedules (provisional forward development budget items).
- Determine implementation capacity per district and indicate additional manpower and training needs (outline training requirements).

- Review the institutional framework on district and regional level, in the light of the observations/recommendations by the evaluation mission. Determine a proper management structure and the action plan to get it established (Programme Managers at District and Regional level).
- Define the financial arrangements, i.e. flow of funds, accounting procedures and auditing.
- Determine the method and tasks of programme monitoring; annual review missions to reassess the effectiveness of the new set-up.
- Differentiate between the autonomous activities at district level (shallow wells, simple piped water supply schemes) and responsibilities of the regional organizations.
- Recommend on the organization at the Ministerial level (National level and below).
- Reassess the technical assistance component and its organization: in particular advice should be given on the desirability to continue the two regional programmes as one scheme under a national coordinator.
- Draw up detailed tasks description for the consultant(s) to be engaged. Define consultant's responsibility and criteria for performance assessment.
- Indicate how the choice of pumps and related spare part supplies is to be dealt with (depending upon recommendation pump-mission).

4.2 Three step approach

It is proposed that the formulation be carried out in three steps;

1. Establishing the work-programme for formulation, with all parties concerned. Discussion with PMO, Maji, Maendeleo and Afya to determine final ToR, contributions by each of them, specific ToR for field surveys.
2. Field survey; Visit of a small team to all districts in the two regions to assess the needs and potential for various water supply systems.
3. Formulation of the new Programme for Shinyanga and Morogoro regions with the full team.

4.3 Consistency with existing plans

The three participating Ministries have their own process of planning, for activities in Morogoro and Shinyanga regions. It is important that the Water Programme is consistent with these plans, and for this reason the Ministries concerned will be invited by the RNE in Dar es Salam to reveal their plans for the regions concerned. The Ministries concerned should determine internally which levels of plans (district, region, national) are going to be included. In order to be able to provide this information to the formulation mission, the plans should be submitted to the RNE before 5th March 1992.

4.4 Proposed timing

Step 1: 21 - 26 January 1992

Step 2: 10 February - 7 March 1992

Step 3: 8 - 27 March 1992

5. Division of tasks and team composition

5.1 Preparation/consultation (Step 1)

Purpose: To clear the ToR and approach for the formulation with the three ministries concerned and with PMO, to divide the tasks of preparatory activities and to work out the work-programme. In this phase the strategy for formulation is to be agreed upon by all parties, and a basic understanding should be reached with respect to the institutional framework. Also the local experts participating in the formulation mission (step 3) should be identified. With the Ministries and the DHV team arrangements are to be made for efficient organization of step 2.

Participants:

- Representatives from PMO, Maji, Maendeleo and Afya
- J. de la Rive Box and P. van Dongen
- DHV Team (incl. at least one team-member from Morogoro and Shinyanga).
- Representatives Netherlands Embassy (J.W.A. van Hengel, Mrs. M. te Riele)

The final Terms of Reference (present text) is based upon the outcome of the consultations of step 1, held from 22nd - 24th January 1992.

5.2 Field research (Step 2)

Purpose: To establish for each district in the two regions the data-base required for proper assessment of water demand, priority areas, water supply options, gender issues and degree of community organization. As far as possible data should be specified upto the ward level. Specific tasks include;

- Prepare for each district an inventory of all available water-related data sources.
- Establish (in general terms) the availability of surface and groundwater resources on the basis of available data (records, reports etc.) for each district.
- The distribution of existing water supply facilities, and the present level of supply within all districts.
- Determine indicative levels of present and projected water demand in every district.
- Assist with the assessment of the present implementation capacity within each district.
- Establish the level of community organization.
- Collect data relevant for gender issues (eg. women participation in Village Water Committees).
- Determine the level and success of participation in villages covered by the Programme.
- Describe/classify economic status, sources of income.
- Indicate major health and sanitation issues.
- Describe social infrastructure (schools, health centres etc.).

These data should be compiled for each district into 'District Water Profiles'. Hence for Morogoro four Profiles will be made and for Shinyanga five Profiles.

Team composition

In view of the nature of the fieldwork, it is proposed that it shall be conducted by two teams, who work simultaneously in the two regions. Each team, consisting of two local experts from the region and two foreign experts. They will divide the work internally between water-related data (water supply potential, sanitation, technical options, implementation capacity, feasible targets), and community related data (community organisation, participation, gender issues, health education; implementation capacity in these fields).

Due to the simultaneous execution of the field research in the two regions, a total of four local and four foreign experts will be required for a period of one month (three weeks field work and one week report writing). The foreign experts will require the following qualification;

- Water-data: Expertise in hydro-geology, water supply options, water related planning
- Community-data: Community organisation, gender issues and health education.

The following candidates are proposed:

- Water-data: Mr. J.N. Karanja (GWS, Kenya) for Shinyanga
Mr. D. van Enk (GWS, Kenya) for Morogoro
- Community data: Mrs. M. Kroon, for Morogoro
Mrs. Chr. van Wijck (IRC, Holland) for Shinyanga

The local experts will be recruited from within the regional staff of the Programme.

5.3 Formulation (Step 3)

Purpose: To formulate a five year programme for the extension of the Rural Water and Sanitation Programmes in Shinyanga and Morogoro, based upon the recommendations of the evaluation report of April 1991, reports completed subsequently [¹] and the observations made by the Ministries concerned. During this stage other major donors will be consulted on the approach followed in their water programmes (NORAD, DANIDA, FINNIDA, UNICEF, SIDA/HISAWA, GTZ, UNDP, EEC). The final report of the formulation mission will have to cover all items mentioned in the Terms of Reference.

Mission composition:

The following fields of expertise should be incorporated in the mission:

- a. Tanzania Government experts:
 - Institutional framework and finance arrangements: PMO
 - Environmental health/sanitation expert: Afya (Mr. Kahesa)
 - Expert community development/WID: Maendeleo (Mrs. Ally)
 - Water engineer: Maji (Mr. Rukiko)

¹ Specifically the study on women's involvement and the training needs assessment.

b. **International Consultants:**

- Institutional development (J. de la Rive Box; team leader, Matrix, Utrecht, The Netherlands)
- Rural water supply expert (P. van Dongen; GWS, Nairobi)
- Gender issues, community development, health education (Mrs. Chr. van Wijck; The Netherlands)
- Environmental issues (Mrs. C. Mulders/P. van Dongen)

It is desirable that one of the advisors of each region is made available as a resource person for the duration of the fieldwork (step 3) in their region. Consultations will be held with the District authorities, the Regional Authorities and the Participating Ministries on the National level.

Not all consultants need to be present during the full length of the formulation mission (i.e. week 11, 12, 13).

- Institutional framework; this will be concentrated in week 13 of the mission; therefore the representative of PMO needs to be participate only in this week.
- Health education; Based upon the data of step 2 from the two regions, the health education component will be worked out in Dar es Salam in week 11. Hence the health education experts will finalise the report by the end of week 11 and a debriefing to the rest of the team will take place on 14th or 15th March.
- Environmental issues will be dealt with by P. van Dongen (field work) who will be backed up on Environmental Impact Assessment by Mrs. C. Mulders (methodology, screening techniques). It is not considered necessary for her to participate directly in fieldwork.

5.4 Reporting

Reporting duties shall be divided as follows:

- District Water Profiles, ready in draft before 9th March 1992.
- Summary notes on the approach followed by other donors; P. van Dongen; before 9th March 1992.
- Rural Water Supply component and technical sanitation component of the final report made in collaboration by Mr. M.D. Rukiko (Maji) and P. van Dongen (GWS), ready end of March.
- Sanitation/health education component; Mr. Kahesa (Afya) and Mrs. Christine van Wijck; ready by 13th March.
- Community organization/gender component; Mrs. Ally, Mrs. Kroon, and Mrs Christine van Wijck; ready by end of March.
- Environmental Impact Assessment component; GWS, ready by 27th March.
- Institutional framework; by PMO expert and J. de la Rive Box; ready by 27th March.

The finalization and editing of the technical part of the report (i.e. water supply data, supply targets, technical options, construction programme and related budgets) will be done by GWS, Kenya (Mr. P. van Dongen). The completion and editing of the other parts and the final editing/printing of the whole report will be done by Matrix, The Netherlands (J. de la Rive Box) and shall be ready before the end of April 1992.

TEAM MEMBERS FORMULATION MISSION

APPENDIX II

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Joost DE LA RIVE BOX	Matrix Consultants Korte Janstraat 7 3512 GM Utrecht, The Netherlands tel.030-310784, fax 030-322568.
Eng Mfungo M D RUKIKO	Zonal Construction Engineer Ministry of Water Energy and Minerals P O Box 9153, Dar es Salaam Tel. 31433/5, 20641
Leoni G MSIMBE	Assistant Commissioner for Community Development (Technical) Ministry of Community Development, Women Affairs and Children, P O Box 3448, Dar es Salaam tel. 32647/33647 office, 63094 hse.
Charles A L SWAI	In charge: Environmental Sanitation Ministry of Health P O Box 9083 Dar es Salaam tel. 23676
A R TARIMO	Project Management Officer Prime Minister's Office P O Box 1501, Dodoma tel. 22601
Mrs Mary BOESVELD	International Reference Centre (IRC) for Water and Sanitation P O Box 93190, 2509 AD The Hague The Netherlands tel. 070-3314133, fax 070-3814034
Miss Clarissa MULDER	Groundwater Survey (Kenya) Ltd P O Box 25025, Nairobi, Kenya tel. 02-580806, fax 02-569754.
Pieter G VAN DONGEN	Groundwater Survey (Kenya) Ltd P O Box 25025, Nairobi, Kenya tel.02-580806 (off), fax 02-569754. 02-580098 (hse)

PROJECTION OF ACTIVITIES TO BE CARRIED OUT FROM 1993-1997

MOROGORO REGION

Scenario 4:

100 % coverage in 2002;
 Implementation partly contracted out 74%
 Exchange rate: Dfl 1.- = TAS 130
 Exchange rate: US\$ 1.- = TAS 230

	M-rural	Kilosa	Ulanga	Kilombero	Total
A. BASIC DATA					
Total villages	215	132	61	46	454
Programme villages	28	27	20	21	96
Non-programme villages	187	105	41	25	358
Population 92 ('000)	478	407	151	227	1263
Populat. 2002 ('000)	619	526	186	370	1701
Existing IWP	689	635	237	350	1911
Operational IWP	408	337	145	296	1186
IWP non-operational	281	298	92	54	725
Coverage installed	0.43	0.47	0.47	0.46	0.45
Coverage operational	0.26	0.25	0.29	0.39	0.28
Implementation targets					
Target IWP 2002	2063	1753	620	1233	5670
Operational 1992	408	337	145	296	1186
To be installed	1655	1416	475	937	4484
Cover target 2002	100%	100%	100%	100%	100%
To be rehabilitated	281	298	92	54	725
To be constructed	1374	1118	383	883	3759
% to be done during the first five years, upto '97	36%	36%	36%	36%	36%
Target constr. 1997	596	510	171	337	1614
% of villages incl.	50%	50%	50%	50%	50%
Target No Villages	94	53	21	13	179
Types of water points (nr. of IWP's to be made until 1997)					
Shallow wells (mainly tube wells)	456	320	81	247	1104
Gravity schemes	100	100	50	50	300
Pumped schemes	10	50	20	20	100
Spring protection	10	20	20	20	70
River wells	20	20	0	0	40
	596	510	171	337	1614

The calculations in Part B - G are district based and made on the assumption that implementation is fully done by the Government. The annual projection of Programme activity in Part H - J includes the gradually increasing contracting out.

B. HUMAN RESOURCES REQUIREMENTS

	M-rural	Kilosa	Ulanga	Kilombero	Total

Human resources standards (mandays)					
Animator/village	30	30	30	30	30
Hygiene education/village	30	30	30	30	30
Construction/shallow well	12	12	12	12	12
Constr./IWP piped s.	25	25	25	25	25
Target No Villages	94	53	21	13	179
Field-days/5 yrs	900	900	900	900	900
Human resources required for fieldwork (workyears/year)					
Comm. dev. worker	3	2	1	0	6
Hygiene education	3	2	1	0	6
Construction S.wells	6	4	1	3	15
Construction Piped s	3	4	2	2	11
Construction total	9	8	3	5	26
Total (workyears/year)	15	12	4	6	38
Survey teams SW etc	3	3	1	2	9
Survey team piped s.	1	1	1	1	4
Construct. teams SW	2	2	1	1	6
Constr.team piped s.	1	1	1	1	4
Staffing					
Comm. dev. worker	5	3	1	1	9
Hygiene education	5	3	1	1	9
Supervision	2	2	2	2	8
Construction:					
Survey teams SW etc	6	6	2	4	18
Survey team piped s.	2	2	2	2	8
Construct. teams SW	6	6	3	3	18
Constr.team piped s.	5	5	5	5	20
Total staff	30	26	16	17	90

C. CALCULATION OF TRANSPORT REQUIRMENTS

	M-rural	Kilosa	Ulanga	Kilombero	Total

Visits per village (excl. piped schemes)					
Visits motorbike	39	39	39	39	39
Visits pick up/well	2	2	2	2	2
Visits lorry/well	2	2	2	2	
Visits (excl. piped schemes)					
Visits motorbike/V	3647	2048	800	488	6981
Visits pick up/well	972	720	202	535	2428
Visits lorry/well	972	720	202	535	0
Assumed No of visits per piped scheme					
Visits motorbike/s	0	0	0	0	0
Visits pick up/scheme	12	12	12	12	12
Visits lorry/scheme	10	10	10	10	10
Visits for construction of piped water schemes					
Visits motorbike	0	0	0	0	0
Visits pick up	132	180	84	84	480
Visits lorry	110	150	70	70	400
Total number of visits					
Visits motorbike	3647	2048	800	488	6981
Visits pick up	1104	900	286	619	2908
Visits lorry	1082	870	272	605	400

D. COST OF MATERIALS

	M-rural	Kilosa	Ulanga	Kilombero	Total
Unit cost standard per type IWP (TAS'000)					
Tube wells & pump	250	250	250	250	250
Ring wells & pump	300	300	300	300	300
Gravity schemes	2000	2000	2000	2000	2000
Rehab Pump schemes	1000	1000	1000	1000	1000
Spring protection	500	500	500	500	500
River wells	400	400	400	400	400
Total material costs (TAS millions)					
Tube wells	114	80	20	62	276
Ring wells	0	0	0	0	0
Gravity schemes	200	200	100	100	600
Rehab Pump schemes	10	50	20	20	100
Spring protection	5	10	10	10	35
River wells	8	8	0	0	16
Materials cost	337	348	150	192	1027

E. TRAVEL COST AND ALLOWANCES

	M-rural	Kilosa	Ulanga	Kilombero	Total
Average daily allowance	1200	1200	1200	1200	1200
Allowances (TAS millions, for 5 years period)					
Comm. dev. worker	3	2	1	0	6
Hygiene education	3	2	1	0	6
Construction	10	9	3	6	28
Total allowances	17	13	5	7	41
Travel cost (TAS/trip)					
Motor bikes	3000	3000	3000	3000	3000
Small cars	15000	15000	15000	15000	15000
Lorries	30000	30000	30000	30000	30000
Total number of trips					
Motor bikes	3647	2048	800	488	6981
Small cars	1104	900	286	619	2908
Lorries	1082	870	272	605	400
Total transport cost (TAS millions, for five years period)					
Motor bikes	11	6	2	1	21
Small cars	17	13	4	9	44
Lorries	32	26	8	18	12
Total transport	60	46	15	29	77

F. EQUIPMENT AND VEHICLES

	M-rural	Kilosa	Ulanga	Kilombero	Total
Equipment numbers required					
Motorbikes	11	7	4	3	26
Smallcars	4	4	4	8	20
Lorries	1	1	1	1	5
Survey augers	4	3	1	2	9
Hand drilling set	6	5	1	3	15
Moulds and hoist	1	1	0	0	2
Camping	7	7	4	5	23
Wat.qual.testing	4	3	1	2	9
Test pumps	4	3	1	2	9
Unit prices (TAS'000)					
Motorbikes	500	500	500	500	500
Pickup 4WD	5000	5000	5000	5000	5000
Lorries	12000	12000	12000	12000	12000
Survey augers	1500	1500	1500	1500	1500
Hand drilling set	2500	2500	2500	2500	2500
Mould and hoist	2200	2200	2200	2200	2200

Unit prices continued (TAS'000)

Camping	200	200	200	200	200
Wat.qual.testing	500	500	500	500	500
Test pumps	300	300	300	300	300
Miscel. constr.	2000	2000	2000	2000	2000
Office equipment	1500	1500	1500	1500	1500

Value of equipment to be used (TAS millions)

Motorbikes	6	4	2	2	13
Pickup 4WD	18	20	20	40	98
Lorries	17	17	10	12	55
	-----	-----	-----	-----	-----
Total transport equipment	40	40	32	54	166
Survey augers	6	4	1	3	14
Hand drilling set	16	11	3	8	38
Moulds and hoists	2	2	0	0	4
Camping	1	1	1	1	5
Wat.qual.testing	2	1	0	1	5
Test pumps	1	1	0	1	3
Miscel. constr.	2	2	2	2	8
	-----	-----	-----	-----	-----
	30	23	7	16	76
Office equipment	2	2	2	2	6
Office construction	2	2	2	2	8
Staff housing	2	2	2	2	8
	-----	-----	-----	-----	-----
Premises	6	6	6	6	22
	=====	=====	=====	=====	=====
Total equipment & buildings	76	69	44	75	264
Total cost of implementation by the government (TAS millions)					
Materials cost	337	348	150	192	1027
Total allowances	17	13	5	7	41
Total transport	60	46	15	29	77
Total equipment	76	69	44	75	264
	-----	-----	-----	-----	-----
Total implementation cost	489	476	214	302	1408

G. KEY CHARACTERISTICS OF PROGRAMME PERFORMANCE

	M-rural	Kilosa	Ulanga	Kilombero	Total
Cost composition					
Materials cost	68.88%	73.15%	70.22%	63.48%	72.93%
Total allowances	3.39%	2.71%	2.22%	2.17%	2.90%
Total transport	12.25%	9.61%	6.94%	9.56%	5.44%
Total equipment	15.47%	14.53%	20.62%	24.79%	18.74%
	100.00%	100.00%	100.00%	100.00%	100.00%
Cost per additional IWP (TAS '000)					
Materials cost	565	682	879	569	636
Total allowances	28	25	28	19	25
Total transport	101	90	87	86	47
Total equipment	127	136	258	222	163
	821	933	1251	896	872
Efficiency					
Ratio of fielddays to total human resources					
Comm. dev. worker	67%	67%	67%	67%	67%
Hygiene education	67%	67%	67%	67%	67%
Construction S.wells	51%	36%	22%	47%	41%
Construction Piped s	44%	60%	28%	28%	40%
Total (workyears/year)	51%	45%	27%	35%	42%

H. PROJECTION OF ANNUAL PROGRAMME ACTIVITY

Year	1993	1994	1995	1996	1997	Total
Assumptions on rate of Programme expansion						
Activity level	10%	30%	60%	80%	100%	280%
Activity as % of total	4%	11%	21%	29%	36%	100%
Investment level	15%	38%	65%	85%	100%	303%
Annual investment factor	15%	23%	28%	20%	15%	100%
Number of IWP installed	58	173	346	461	577	1614
Percentage contracted out	40%	60%	70%	80%	80%	
Number of IWP contracted	23	104	242	369	461	1199
Nr. of IWP by Gov't	35	69	104	92	115	415
Cost per IWP contracted out (TAS'000)			500			
Percentage contracted out			74%			

I. LOCAL EXPENSES (TAS millions)

Year	1993	1994	1995	1996	1997	Total
Materials cost						
Materials cost	22	44	66	59	73	264
Total allowances	1	2	3	2	3	10
Total transport	2	3	5	4	5	20
Total equipment	22	24	22	11	8	86
Total contracting	12	52	121	184	231	600
Total implementation exp.	58	125	216	260	320	980
Local training						
Local training	75	75	73	71	69	363
Local consultancy	4	6	3	0	0	13
RSU-administrative cost	2	2	2	2	2	10
RSU staffcost	6	6	6	6	6	30
DSU administrative cost	3	3	3	3	3	15
DSU-stafcost	12	12	12	12	12	60
RSU/DSU construction	8	0	0	0	0	8
RSU/DSU equipment	6	0	0	0	0	6
RSU/DSU vehicles	30	2	2	2	2	38
Transport expenses	7	7	7	7	7	35
Non-implementation exp.	153	113	108	103	101	578
Total local expenditure	211	237	325	363	421	1557
Exchange rate TAS/DFL	130	130	130	130	130	130

J. TOTAL BUDGET (TAS MILLION)

Year	1993	1994	1995	1996	1997	Total
110 Support in inception	8	0	0	0	0	8
120 Review missions	3	3	3	3	0	13
130 Evaluation mission	0	0	0	0	12	12
210 Experts (2 full time)	52	52	52	52	52	260
230 Local staff	18	18	18	18	18	90
260 Local consultancy	4	6	3	0	0	13
270 Foreign consultancy	7	7	4	3	0	20
280 Auditing	8	8	8	8	8	39
410 Investment buildings	22	0	0	0	0	22
420 Equipment	12	7	6	3	2	31
430 Transport equipment	44	17	16	9	7	92
520 Allowances	1	2	3	2	3	10
530 Transport costs	9	10	12	11	12	55
540 Administr.expenses	5	5	5	5	5	25
550 Materials	22	44	66	59	73	264
570 Contracting	12	52	121	184	231	600
600 Training	75	75	73	71	69	363
700 Revolving fund	0	130	0	0	0	130
Sub-total	300	435	390	428	492	2045
Contingencies 5%	15	22	19	21	25	102
Budget total	315	457	409	449	517	2147

K. TOTAL BUDGET (DFL '000)

Year	1993	1994	1995	1996	1997	Total
110 Support in inception	60	0	0	0	0	60
120 Review missions	25	25	25	25	0	100
130 Evaluation mission	0	0	0	0	90	90
210 Experts (2 full time)	400	400	400	400	400	2000
230 Local staff	138	138	138	138	138	692
260 Local consultancy	31	46	23	0	0	100
270 Foreign consultancy	50	50	30	20	0	150
280 Auditing	60	60	60	60	60	300
410 Investment buildings	169	0	0	0	0	169
420 Equipment	94	53	48	23	18	237
430 Transport equipment	336	130	121	66	54	706
520 Allowances	7	13	20	18	22	81
530 Transport costs	66	79	92	88	96	421
540 Administr.expenses	38	38	38	38	38	192
550 Materials	169	339	508	451	564	2032
570 Contracting	89	399	931	1419	1774	4612
600 Training	576	575	564	543	532	2790
700 Revolving fund	0	1000	0	0	0	1000
Sub-total	2309	3346	2999	3291	3787	15732
Contingencies 5%	115	167	150	165	189	787
Budget total	2425	3513	3149	3455	3976	16518

L. TENTATIVE DISTINCTION BETWEEN LOCAL CURRENCY AND FOREIGN CURRENCY EXPENSES

	Local currency (TAS mln)	Foreign currency (DFL'000)
110 Support in inception	0	60
120 Review missions	1	90
130 Evaluation mission	1	81
210 Experts (2 full time)	0	2000
230 Local staff	90	0
260 Local consultancy	13	0
270 Foreign consultancy	0	150
280 Auditing	0	300
410 Investment buildings	22	0
420 Equipment	0	237
430 Transport equipment	0	706
520 Allowances	10	0
530 Transport costs	55	0
540 Administr.expenses	25	0
550 Materials	132	1016
570 Contracting	600	0
600 Training	290	558
700 Revolving fund	130	0
Sub-total	1369	5198
Contingencies 5%	68	260
Budget total	1438	5458

APPENDIX IV

**Programme design summary
Morogoro Rural Water and Sanitation Programme**

Logical framework of development objectives, programme objectives, activities under taken and programme manpower and indicators for programme evaluation and review

	Measurable indicators	Reference Targets
1. Development objectives		
a. To provide safe and reliable supply of water to the rural population of Morogoro region by the year 2002, with an accessible distance from the homestead.	<ul style="list-style-type: none"> - The percentage of coverage (ratio of total population to water supply equivalent of IWPs (300 people per IWP) - The percentage of rural population with access to water within 400 m. of the homestead - The difference in coverage percentage in the dry and the wet season - a quality index for the IWP's - percentage of population still using traditional sources for human consumption 	<p>100% by 2002 over 54% by 1997</p> <p style="text-align: center;">-</p> <p>Yet to be established</p> <p style="text-align: right;">Monitoring</p>
b) Reduction of water related diseases:	<ul style="list-style-type: none"> - Reduction of morbidity and mortality related to water quality or insufficient water quantities available. - Ratio of water use from IWP's, to utilization of traditional water sources. - Increasing ratio of improved wells with handpump to the total number of improved wells. - Frequency of well contamination and percentage of wells affected. - Frequency of preventive inspection /disinfection of existing open wells. 	<p style="text-align: right;">monitoring</p> <p style="text-align: right;">monitoring</p> <p style="text-align: right;">monitoring</p> <p style="text-align: right;">monitoring</p>

2. Programme objectives	Measurable indicators	Reference Targets
a. To substantially increase safe and reliable sources of water in Morogoro region through a community based approach.	<ul style="list-style-type: none"> - Number of IWP's constructed and rehabilitated. - Percentage of villages with at least one IWP. - Effective and regular use of IWP - Number of traditional water points (TWP) improved. - Degree of cost recovery for construction and rehabilitation. 	<p>1614</p> <p>Yet to be determined</p> <p>250 - 300 people/IWP</p> <p>monitoring</p> <p>monitoring</p> <p>Yet to be determined</p>
b. To ensure sustainable operation and maintenance of IWP's at village level.	<ul style="list-style-type: none"> - Percentage of IWP out of operation. - Percentage of wells running dry. - Average period required for repair. - Number of functioning VWSCs and user committees 	<p>monitoring</p> <p>monitoring</p> <p>monitoring</p> <p>monitoring</p>
c. To minimize the health risk related to water.	<ul style="list-style-type: none"> - Refer to indicators under 1b, but for the intervention area's only. - Number of latrines built - General cleanliness in villages 	<p>monitoring</p> <p>monitoring</p> <p>monitoring</p>
d. To develop village based implementation capacity	<ul style="list-style-type: none"> - Number of artisans and small contractors trained - Number of artisans and small contractors used 	<p>50 fundi's</p> <p>25 fundi's</p>
e. To strengthen institutional development on District level for crucial functions to support village based sustainable O&M and construction	<ul style="list-style-type: none"> - Crucial support functions of District department demarcated - ID development activities planned and implemented 	<p>monitoring</p> <p>monitoring</p>
f. To ensure environmentally sound implementation	<ul style="list-style-type: none"> - focus on domestic water supply - Environmental Impact Analysis undertaken for high risk locations (IWP used for livestock) 	<p>monitoring</p> <p>monitoring</p>

	Measurable indicators	Targets
3. Programme activities and outputs		
a. Community mobilization and strengthening of village level capability for operation and maintenance of IWP's.	- Nr. of villages with functioning VWC, VM, HA and caretakers in PIA. - Nr. of villages with water accounts and average balance/turnover. - Nr. of IWP with user committees - Nr. of villages handed over.	179 179 179 135
b. Active involvement of women	- Specific training offered - Number of women in VWSCs - Number of women in user committees	> monitoring More than half of members in committees
c. Training of VWC members, VM, and caretakers (SA).	- Done in * villages.	monitoring
d. Hygiene education campaign and training VHA.	- Done in * villages. - Remuneration for VHW by community	monitoring monitoring
e. Construction and rehabilitation of IWP's.	* shallow wells * piped water supplies, IWP's connected * improvement of traditional wells. * surface water IWP's.	1100 wells 40 400 IWP's Yet to be determined Over 100 IWP's
f. Developing village based implementation capacity for IWP's.	* number of fundi's trained * fundi's provided with minimum equipment.	50 fundi's 25 fundi's
g. Development of health education materials (visual aids etc.).	- Materials approved and used	-
g. Cooperation with a training institute for health education and community development.	- Cooperation agreements	-
h. Cooperation with an NGO for community education (recruitment of field staff)	- Cooperation agreement	-
i. Development of a credit scheme for IWP financing.	- Proposal made	-

APPENDIX V

**PROPOSED JOB DESCRIPTION FOR THE SENIOR PROGRAMME
ADVISOR FOR RURAL WATER DEVELOPMENT**

The advisor shall together with the advisor on community development and training be responsible for the regional Programme Support Unit. One of them will be appointed as Chief Technical Advisor, who will be team-leader, and hence responsible for the operations of the PSU. The PSU supervises and controls the District Support Units, that will be established to provide the Programme Managers at District level with all donor-funded inputs required for Programme execution.

Position

The PSU will be located in Shinyanga/Morogoro town, at the premises reserved for the Programme. The PSU is attached to the Regional Planning Unit.

Inception phase

- Drafting a Plan of Operations on the basis of the formulation report, including an activity plan and budget for 1993.
- Identification of organizations that can be contracted for recruitment (DSU administrators, accountant, and accountants clerks), for auditing, for procurement and for training support.
- Consultation with all districts on the appointment of the programme Managers and the assignment of staff from the three participating Departments.
- Preparation of procurement plans for equipment and material.
- Preparation/installation of offices for the DSU administrators and RWSP Managers in the Districts.

Programme operation

- Advising the regional and district authorities in planning and implementation of the Programme, and rendering technical advice whenever needed.
- Assisting the districts and supporting the District Support Unit offices in their work under the programme.
- Assisting in training activities, workshops and seminars conducted in support of the programme, especially in the areas of operation and maintenance, and community development.
- Supporting the preparations for and conduct of the meetings of the Regional Programme Steering Committee.
- Coordination (in consultation with the Programme Coordinator) with the Programme implementors (i.e. districts) all Netherlands financed technical and financial assistance to the programme.

The Senior Programme Advisor reports to the regional Development Director and to the District Execution Directors for their specific parts of the reporting.

QUALIFICATIONS

B.Sc. degree in Civil Engineering (or Equivalent) from recognised Institution.

Must be fluent in English and with an adequate command of Kiswahili.

EXPERIENCE

Minimum of 6 years experience with rural water supply programmes. Experience in project management highly desirable.

DUTY STATION

Shinyanga/Morogoro town.

PROPOSED JOB DESCRIPTION FOR A COMMUNITY PARTICIPATION AND TRAINING EXPERT

The expert shall together with the Senior Programme Advisor for Rural Water development be responsible for the regional Programme Support Unit. One of them will be appointed as Chief Technical Advisor, who will be team leader, and hence responsible for the operations of the PSU. The PSU supervises and controls the District Support Units, that will be established to provide the Programme Managers at District level with all donor-funded inputs required for Programme execution.

Position

The PSU will be located in Shinyanga/Morogoro town, at the premises reserved for the Programme. The PSU is attached to the Regional Planning Unit.

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- Consultation with all districts on the appointment of the programme Managers and the assignment of staff from the three participating Departments.
- Preparation of procurement plans for equipment and material.
- Preparation/installation of offices for the DSU administrators and RWSP Managers in the Districts.

Programme operation

- To assist the Programme organization in the preparation of workplans for the Programme, particularly concerning community-based activities and training activities.
- To set up a comprehensive framework (Step-by-Step scheme) for community-based Programme activities, including a clear outline of content and meaning of each step and an overview of participatory methods and techniques for working with the communities.
- To set up a community-based monitoring system, and a framework for community-based evaluations at the end of each monitoring period, with relevant criteria and indicators; to provide for the implementing agency and proper analysis of findings from monitoring and evaluation data.
- To backstop and support supervisory and field staff in the Districts (particularly from Community Development and Health Departments) in their work for the Programme.

- To identify an appropriate Tanzanian training institute, or institutions, where the different training courses and workshops for the programme can be held.
- With the cooperation of a Tanzanian training expert: to set up a comprehensive training programme, based on the proposals of the Programme.
- With the cooperation of the Tanzanian training expert: to identify and engage experts, trainers and conveners from Tanzania and elsewhere, for the different courses and workshops.
- To identify the need for information and training materials; to organize the availability of these materials.
- To monitor the complete training programme on effectivity and impact.
- To monitor the complete training programme on effectivity and impact.

The Community Participation and Training Expert reports to the Senior Programme Adviser (expatriate) and the District Executive Directors of the Departments of Community Development and Health.

QUALIFICATIONS

Holder of an MA degree in social sciences (anthropology, extension, sociology and gender). Fluent in English and basic command of Kiswahili. Female experts will have preference for the post.

SUGGESTIONS FOR A COMMUNITY BASED STEP-BY-STEP APPROACH

A proposal for a revised Step-by-Step Approach is given here in a summarized form. Personnel involved is indicated, and a rough estimate of time input is given for each step. Further development of the revised Approach will be taken up in the detailed preparation for the new Programme.

Step 1

- * Getting to know the community; informing the community of the Programme; making an appointment to meet different groups and individuals, including women groups, individual women, and less well-off people for a needs assessment.
(CDA, HA - 1 day)

Step 2

- * Support of the community in assessing its needs and priorities concerning water supply, sanitation and hygiene education, taking gender differences into account.
- * Simultaneous introduction of the hygiene education programme.
(CDA, HA - 3 days)

N.B. It is important to discuss different technology options with the community, taking also the possibility of improving traditional sources into consideration. If the community does not count any improved water supply among its first priorities, the Programme will move to another village. However, it may be decided to carry out the hygiene education programme in communities where water-related diseases are prevalent.

Step 3

- * Support in setting up a community (users) organization e.g. a Water or Well Committee (or Tap Committee) for future operation and management of the improved facilities. Special attention should be given to the participation of women and less well-off people.
Start with hygiene education programme.
(CDA, HA - 1 day)

Step 4

- * Technical survey for an improved water supply.
- * Support of the community, in particular women, in planning for siting and design of the improved facilities.
- * Continued hygiene education programme.
(CDA, HA - 1 day)
(Maji survey team - 2 days/1 week)

Step 5

- * Support of the community in choosing the most suitable options.
- * Support of the community in planning for a sound financial base for sharing the costs of construction and taking up full responsibility for maintenance costs.
Ensure participation of less well-off members of the community.
Include women in all discussions and decision-making.
- * Continued hygiene education programme.
(CDA, HA, Maji - 2/3 days)

Step 6

- * Signing of a contract between community and agency.
- * Arranging for communities' contribution in construction.
- * Continued hygiene education programme.
(CDA, HA, Maji - 1 day)

Step 7

- * Construction.
- * Continued hygiene education programme.
(CDA, HA - 2/3 days)
(Maji construction team - 10/20 days/2 months)

Step 8

- * Training members of the Water or Well (Tap) Committee and caretakers in caretaking, bookkeeping, small repairs, and other tasks related to the operation and management of the water supply.
- * Training village health workers, schoolteachers, midwives, traditional healers, and other influential persons in disseminating information on hygiene and sanitation matters.
(CDA, HA - 5 days)
- * A special training in leadership for women can be given if this is felt to be appropriate.
(CDA, HA - 3 days)

N.B. It is presumed that village technicians (fundis) will be trained in a separate training programme, before the actual work in the villages starts.

Step 9

- * Introduction of improved sanitation, including demonstration of construction of a ferro-cement squatting slab (san plat).
(CDA technician, HA - 2 days)

N.B. An appropriate, affordable pit latrine can be built in the village for demonstration purposes, if the community agrees to contribute labour and materials. A washing slab and bathing facility can be built near the water points, under the same condition. The Programme can give technical assistance in design and construction of the facilities.

Step 10

- * Introduction of a "beautiful (clean) village" campaign.
(CDA, HA - 1 day)

Step 11

- * Monitoring, starting immediately after construction.
Monitoring data should take gender differences, and when relevant also socio-economic differences, into account.
- * Continued hygiene education programme.
(CDA, HA - once a month, during 1 year, total 12 days)

Step 12

- * 9 month after previous course : refresher course for Water/Well/Tap Committee,
- * Refresher course for village health workers, schoolteachers, etc.
(CDA, HA - 2 days)

Step 13

- * 1 year after construction : evaluation.
Evaluation data should take gender differences, and when relevant also socio-economic differences, into account.
(CDA, HA, Maji - 2 days)

APPENDIX VII

IDEAS TO ESTABLISH A DOCUMENTATION UNIT

To establish and manage a documentation unit in each District the following is required:

- * **staff:** a clerically trained office assistant, who can be given a basic training in documentation work (Training probably available in Tanzania, or to be arranged through AMREF).
The person may spend 25-50% of his/her working time on the documentation. Supervision is by the Head of the Department or office where the documentation unit will be based.
- * **a basic collection of relevant books and documents:** IRC provides a "List of Basic Publications" for water and sanitation programmes and projects, to be complemented by documents from other sources, and from the Programme itself.
- * **a room, or a space in an office with some lockable storage for books and documents, and a large table with chairs for readers:** in order to make sure that the collection is kept complete, proper storage, and supervision of the documentation unit and the reading space should be ensured at all times.
- * **finance (estimates for one documentation unit):**
 - initial investment
 - staff training (4 weeks) Dfl. 3.000
 - collection of basic publications Dfl. 5.500
(± 120 books and documents)
 - furniture for storage and reading Dfl. 2.500

 - recurrent cost, on an annual basis
 - new purchases Dfl. 800
 - subscriptions to professional journals Dfl. 400
 - stationary Dfl. 300
 - mailing Dfl. 300
 - maintenance of documents Dfl. 300

 - salary of a documentalist (full time) estimated TSh 6000.-/month

SUGGESTIONS FOR SUPPORTIVE INFORMATION MATERIAL

Any written materials, or other communication materials, produced for the Programme have to meet a number of criteria:

- * They should always be directly related to specific activities, and used in those activities. Examples are: a booklet with instructions on how to build an appropriate low-cost latrine, to be used in a campaign for the improvement of sanitary facilities; a poster to be used in a clean-village campaign.
- * Objectives, target audiences, an overview of contents, and use in the Programme should be clearly specified.
- * All materials should be culturally appropriate for Tanzania (if necessary, for a specific region within Tanzania), and socially appropriate for the specific target audience.
- * Therefore, all materials should preferably be written and designed by Tanzanians, and produced and printed in Tanzania.
- * All materials should be thoroughly pre-tested with the target audience, before being printed and distributed, or disseminated, on a large scale.

A draft for a manual on hygiene education and a booklet on sanitation have been produced by the RWSP Consultant's office in Shinyanga in co-operation with Regional Health Officers. So far, they have not yet been pre-tested.

The Health Education Unit of the Ministry of Health has in-house capability for illustrating, producing and printing of written materials. The HEU can also make texts, but these are usually written in consultation with staff of the programme or project concerned.

It may also be possible to recruit local artists and writers in the Programme regions and districts. Local ngoma and drama groups should also be encouraged to participate. They can be invited to support the hygiene education programme with relevant performances in the villages.

A very nice idea for a quarterly local Programme Newsletter was brought forward by several District officials in Shinyanga. This could be written and produced by people working for the Programme, to be distributed in the villages and among all people involved and interested in Programme activities.

The distribution of information materials is an important issue, which is often neglected. Generally useful materials, produced by certain projects, are mostly distributed only within that project. They never reach a wider public. Therefore it is recommended that materials produced in the Programme should be distributed through a general channel, e.g. the Water and Sanitation Department of the African Medical and Research Foundation (AMREF) in Tanzania.

GENERAL OUTLINE OF AN INFORMATION AND TRAINING PROGRAMME AND GENERAL BREAKDOWN

A. Information of Regional and District Officials

A.1. Workshop

Subject: orientation on participatory methodology and techniques for a community-based approach in improving water supply and sanitation.

Participants: Regional and District Officials from Departments of Community Development, Health and Water.

Duration: 2-3 days.

Timing: before the start of Programme activities.

A.2 Workshop

Subject: orientation on cost-sharing, cost-recovery and community-based financial management of water supply.

Participants: Regional and District Officials from Departments of Community Development, Health and Water.

Duration: 2 days.

Timing: before the start of Programme activities.

A.3 Workshop

Subject: orientation on evaluation (basic concepts and techniques).

Participants: supervisory staff involved in the Programme.

Duration: 5 days.

Timing: before the first community evaluation starts (see step-by-step approach, step 11).

A.4 Follow-up: National Seminar

Subject: review of Programme activities, particularly in terms of cost recovery and community-based financial management and participatory approach.

Participants: National Government Officials, Regional and District Officials (Programme implementation); some staff of other Water Supply and Sanitation Programmes in Tanzania; consultants and advisers with relevant experience.

Durations: 4 days.

Timing: mid-way the Programme period (approx. 2,5 years after the start of the Programme).

The orientation workshops are in the first place provided only for Programme staff, their Heads of Departments, and District and Regional Directors in the Programme area.

- B. Training of field staff
- B.1 Training course
 Subjects: participatory methodology for a community based approach (including promotion of women's involvement in improved water supply and sanitation); cost recovery, cost sharing and community based financial management of water supply.
 Participants: Programme field staff (CDA, HA, Maji)
 Duration: 2/3 weeks
 Timing: before the start of Programme activities.
- B.2 Training course:
 Subject: hygiene education and activities to improve sanitary facilities and practices.
 Participants: Programme field staff (CDA, HA, Maji).
 Duration: 1 week.
 Timing: before the start of hygiene education and sanitation programmes.
- B.3 Workshop
 Subject; participatory monitoring and evaluation.
 Participants: Programme field staff (CDA, HA, Maji).
 Duration: 3 days.
 Timing: several times (at least once a year) during the whole Programme period.
- B.4 Follow-up: refresher workshops.
 Subjects: participatory methodology; hygiene education and sanitary improvements.
 Participants: Programme field staff.
 Duration: 4 days.
 Timing: several times (at least once a year) during the whole Programme period.

These Programme training courses and workshops are in the first place provided only for Programme field staff. To promote as much as possible the integration of different activities (water supply, hygiene education and sanitation), all courses will be designed for CDA, HA and Maji field staff together.

As the maximum number of participants for this type of training should not be above 30 to ensure best results, all courses will probably have to be given more than once to accomodate all Programme field staff.

C. Information and training of community members

- C.1 Workshop
 Subject: general orientation of village leaders (village government) on the Programme:
- hygiene and sanitation;
 - technology options for water supply;

- cost recovery, cost sharing and community based financial management.
Participants: village leaders of a group of villages, Programme field staff (CDA, HA, Maji).
Duration: 1 day.
Timing: at the start of Programme activities in a group of villages.

- C.2 Training course
Subject: tasks and functioning of the Water (Well, Tap) Committee, including tasks of the treasurer (financial manager) and the caretaker.
Participants: members of Water Committees, Programme field staff (CDA, HA, Maji).
Duration: 4/5 days.
Timing: before or during construction of improved water supply.

- C.3 Workshop
Subject: leadership skills for women, with a special view on the management of an improved water supply in the community.
Participants: women's groups and individual women in the communities; field staff (CDA, HA).
Duration: 3 days.
Timing: in relation to support of the community in setting up a Water Committee.

- C.4 Training course
Subject: hygiene education and improvements in sanitary facilities and behaviour.
Participants: village health workers, school teachers, special village leaders, women's groups, field staff (CDA, HA).
Duration: 4, 5 days.
Timing: at the start of hygiene education activities.

- C.5 Training course
Subject: participatory evaluation.
Participants: members of Water Committees, village health workers, other relevant community members who have been involved in Programme activities, field staff (CDA, HA, Maji).
Duration: 3/4 days.
Timing: before the first community evaluation starts (see step-by-step approach, step 13).

- C.6 Follow-up: refresher workshops
Subjects: tasks and functioning of Water Committees; hygiene education and sanitation; any other subjects which are found to be relevant.
Participants: all community members involved; field staff (CDA, HA, Maji).
Duration: 2/3 days.
Timing: at least once before handing over; preferably once every 9 months.

For best results, the number of participants in these courses and workshops should never exceed 30.

D. Special courses and workshops

Programme work may require some special knowledge and skills of its implementors, for which workshops and training courses can be held.

Subjects of these special courses may include:

- (see 9.4 and 13.3) The production of information and training materials for the Programme, and the pre-testing of these materials. Participants: supervisory and field staff involved in the Programme. Duration; 8 days or more, depending on the type and number of materials to be produced. Timing: when relevant for the Programme.
- (see 13.3) Basic training in setting up and managing small district based documentation units for information and training materials needed in the Programme; techniques for information exchange and services to users. Participants: staff from the district offices which will house the documentation units. Duration: 10 days. Timing: when convenient, within the second Programme year.
- Updating of management skills, for Programme managers and other supervisory staff.
- Orientation workshops on environmental issues related to water resources management and water use for Regional and District officials.

Breakdown of training costs for communities (villages)

Breakdown is based on the following assumptions:

-	number of participants per course, per village:	
	C.1 village leaders	5
	C.2 Water/Well Committee:	
	5 members plus 1 caretaker	
	for each well; average 5 wells	
	in each village; total	30
	C.3 leadership skills for women	10
	C.4 hygiene education	15
	C.5 part. evaluation	25
	C.6 refresher courses:	
	* village leaders	5
	* Water Committees	30
	* leadership for women	10
	* hygiene education	15

- total number of persons/course days per village:

C.1 1 day, 5 participants; total	5
C.2 4 days, 30 participants; total	120
C.3 3 days, 10 participants; total	30
C.4 4 days, 15 participants; total	60
C.5 3 days, 25 participants; total	75
C.6 refresher courses:	
* 1 day, 5 participants; total	5
* 3 days, 30 participants; total	90
* 3 days, 10 participants; total	30
* 3 days, 15 participants; total	<u>45</u>
total participants/course days	460

- course cost of all courses per village:

total number of participants/course days, per village = 460
 multiplied with total cost per participant/course day = US\$ 15
 gives a total cost for all courses per village US\$ 7000.

Breakdown of costs of courses for supervisory staff and field staff

Breakdown is based on the following assumptions:

- Supervisory staff, in each Region 4 course participants (RDD, plus 1 from each of the three departments involved).
- Supervisory staff, in each District 9 participants (DED, plus 2 from each of the three departments involved, plus 1 from education, and one from women's affairs).
- field staff, per District at least 3 field teams of 3 extensions workers, total at least 15 participants per District.
- Supervisory staff: training cost per participant/course day estimated at US\$30.
- Field staff: training cost per participant/course day estimated at US\$ 25.
- National seminars (A.1 and A.5): costs per participant/course day estimated at US\$ 40.

Special courses

For special courses (cat D.) costs per participant/day have been estimated based upon the above mentioned figures for supervisory and field staff.

Not included are the costs for any foreign experts to be brought in for these courses.

However, the costs for Tanzanian counterpart experts and facilitators have been included, because also in these course they have an important role.

APPENDIX X

SUGGESTIONS FOR THE PREPARATORY SEMINAR TO INTRODUCE THE NEW RURAL WATER SUPPLY AND SANITATION PROGRAMMES FOR SHINYANGA AND MOROGORO REGIONS

1. INTRODUCTION

Despite Government efforts to supply people with improved water supply (1971 - 1991), on average less than 40% of Tanzania's population enjoy this service. A number of reasons could be given to explain this undesirable situation, including lack of involvement of beneficiary communities in the programme planning and implementation, unclear general and sectoral policies, the economic situation, etc.

The Royal Netherlands Government has been assisting the Tanzanian Government in this endeavour in Shinyanga region since 1972 and in Morogoro region since 1977. In spite of the innovative approach of introducing comparatively low-cost shallow wells in the programme areas, coverage of the two regions remains disappointingly low at averages of 26% and 10.5% respectively of Morogoro and Shinyanga regions population.

2. APPROACH TO THE PROGRAMME

For the new programme, which will start in 1993, a new approach has been formulated. Firstly, there is more emphasis on hygiene education and improvements in sanitary behaviour and facilities, together with the improvement of domestic water supply. Secondly, community financing, through more user contributions to construction, and full financial management responsibility of communities for recurrent cost of operation and maintenance, will be promoted. Thirdly, a comprehensive training and information programme will be organized in support of programme activities.

The newly formulated programme(s) has extremely ambitious targets. In order to realize those targets a substantial commitment from the part of those who will be responsible for the implementation is necessary. This 2-days introductory seminar is being proposed to inform the authorities concerned and to prepare the implementors for a new challenge. The seminar is also intended to establish levels of accountability for the programme(s), which are coordinated in the PMO.

3. PARTICIPANTS TO THE WORKSHOP

PMO	1
Planning Commission (PC)	2
Ministry of Water, Energy and Minerals	2
Ministry of Community Development Women Affairs and Children	2
Ministry of Health	1
RDDs from Morogoro and Shinyanga	2
DEDs from Morogoro and Shinyanga	9
RWEs, RCDD, RHOs, RPLOs	8
District teams	27
Donor - Royal Netherlands Government representative	1
Resource people: Core formulation team	<u>5</u>
 Total number of participants	 60

4. BUDGET

- DSA participants
 - honorarium guest of honour
 - local travel cost
 - venue
 - organisational cost
- estimated total US\$ 10,000

LIST OF TRAINING INSTITUTIONS

* Folk Development Colleges (FDC)

SHINYANGA

- * Buhangija FDC - Shinyanga Town
- * Mwanra - Kahama Town
- * Banadi FDC - 8 km from Town
- * Malampaka FDC - Maswa District

* MOROGORO

- * Kilosa FDC
- * Ulanga Sofi FDC
- * Kilombero FDC
- * Morogoro Bigwa FDC

* Training Rural Development Centre (TRDC)

- * Iringa
- * Arusha
- * Tanga
- * Songea
- * Mbeya

* Community Development Training Institute (CDII)

- * Tengeru
- * Iringa
- * Mara
- * Muranza