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SANITATION (IRC)

WORKSHOP ON MANAGEMENT OF AND COMMUNITY INVOLVEMENT IN RURAL WATER SUPPLY AND SANITATION PROJECTS

JOINT WORKSHOP FOR KENYA/FINLAND RURAL WATER DEVELOPMENT PROJECT, KWALE WATER AND SANITATION PROJECT AND THE RURAL DOMESTIC WATER SUPPLY AND SANITATION PROGRAMME OF LBDA.

LION HILL, NAKURU, MAY 23-26, 1988.

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SUMMARY

Staff from Kwale Water and Sanitation Project, Kenya/Finland Rural Water Development Project and the Rural Domestic Water Supply and Sanitation Programme of LBDA met in this workshop to exchange ideas and experiences from the implementation of the projects.

The three projects carry out similar activities; construction of shallow wells and boreholes equipped with handpumps, protection of springs, construction of rainwater catchments, construction of dams, rehabilitation of piped schemes and construction of demonstration V.I.P. latrines. A major component in all three projects is the involvement of the beneficiaries. The facilities are handed over to the communities for operation and maintenance and the users collect money and pay for spare parts and repairs.

The approaches to community involvement and maintenance management of facilities differs slightly between the projects and this was thoroughly discussed during the workshop.

Plan International, an international NGO, was invited to participate in the workshop. The organization was represented by staff from its projects in Embu and Meru districts where, among other activities, improvement of water supply and sanitation is carried out. These projects have a somewhat different approach to the projects mentioned above. They follow plans based on events instead of time (to give the communities enough time to mobilize themselves) and they emphasize cost sharing of facilities with the communities.

Ministry of Water Development, Ministry of Health and Ministry of Culture and Social Services, are all three involved in the projects and participated in the workshop. Each Ministry and it's activities was presented and the officials were useful resource persons throughout the workshop.

Other organizations and projects represented were; UNICEF, SIDA, Taita-Taveta Development Programme and UNDP/WB Regional Water and Sanitation Group.

Each project gave presentations on their activities. Firstly a general overview was given, secondly the community participation component was explained and finally the present and future maintenance system was presented. In smaller groups, the participants discussed questions concerning community participation, womens involvement, health, sanitation and implementation of projects in general. Each project's maintenance system was also analyzed through group work. The results from the group sessions were then presented to the full group and the participants agreed on the following proposals:

Community involvement

* The District Development Committee (DDC) is the link between communities and government/donor agencies. District development plans

are the result from discussions between district personnel and communities via divisional, locational and sublocational development committees. When funds for projects have been allocated the DDC should be informed and arrange public meetings so as to create awareness in the communities in the district.

* The communities preferences and priorities should be identified before the design of a project. Activities carried out by self help groups in the area are good indicators of what the community wants and needs.

* It should be clear to the community right from the start that they are the owners of the project and will be responsible for management of the facilities.

Womens Involvement

* To make it easier to involve women, people with experience of activities which have involved women should participate in the design and planning stages of the project.

* To make it easier for women to participate in a water and sanitation project the following measures could be undertaken:

- Create awareness through training,
- Introduce of labour-saving facilities,
- Choose suitable times and venues for activities and meetings,
- Relate the water and sanitation activity to income generation,
- Train extension workers (also men) to become effective in reaching women.

Health and Sanitation

* Demonstration latrines constructed at institutions demonstrate a principle and not so much the technology, since it is necessary in these institutions to have proper and good sanitary facilities, serving many people.

* For the individual approach, inexpensive latrines built of locally available material could be demonstrated at appropriate places (possibly chief's camps). Extension workers and technicians should be trained in this low cost, appropriate technology and health education must play a big role to motivate individuals to want and appreciate good sanitation.

* Indicators for measuring the impact of improved water and sanitation could be:

  - The reduction of water and faecal related diseases over time,
  - Level of infant and child mortality related to project activities over time,
  - Time saved as an improvement of quality of life,
  - Increased income levels,
  - Number and quality of facilities that are replicated,
  - Levels of maintenance, use and functionality of the facilities.

Project implementation

* The implemetation of the technical aspect can be increased by:

  - Contracting as much as possible to the private sector.
  - Adhering strictly to planned schedules agreed between project and communities,
  - Decentralizing of decision making, purchasing, etc.

* The community must be mobilized before implementation begins thus the social aspect must start before the technical, to avoid holding up investments and implementation activities.

* Training of communities in operation and maintenance should start early to relieve the project of the burden of maintenance at the earliest possible stage.

* Communities that show willingness to participate in the project should be assisted first so as to act as an incentive for others.

* Operation and maintenance of most rural water supplies should be managed by the community itself. If the technology is too complicated, the community could pay skilled people to repair the facility.

* Projects should concentrate on small areas at a time to increase efficiency and reduce costs, transport costs in particular. With a higher density of facilities in a smaller area it would be easier to interest the private sector in maintenance and the stocking of spare parts.

* It is important to involve the private sector in both production and operation and maintenance of facilities. The local private sector should be encouraged to improve quality and production should be promoted: Presently, duty free imported handpumps hamper local production since duty has to be paid on imported raw materials.

* Standardization of equipment (e.g. handpumps) both imported and locally produced would facilitate the spare part supply and maintenance.

Roles of authorities

* District Development Committee.
  - Planning.
  - Coordination.
  - Assist in integration between projects.
  - Monitoring and evaluation.
* Ministries.
  - Technical inputs.
  - Implementation.
  - Assist in standardization.
  - Assist in economic issues (import tariffs, etc.).
* Regional authorities.
  - Plan on regional basis.
  - Integrate plans according to districts and segregate according to sector.
  - Assist implementation.
  - Look for funding.

INTRODUCTION

This report describes the Workshop on management of and community involvement in rural water supply and sanitation projects, a joint workshop for Kenya/Finland Rural Water Development Project, Kwale Water and Sanitation Project and the Rural Domestic Water Supply and Sanitation Project of LBDA.

The workshop was organized by the three above mentioned projects with assistance from the UNDP/WB Regional Water and Sanitation Group. Each project/organization supported its own staff while the five participants from Ministry of Water Development, Ministry of Health and Ministry of Culture & Social Services were funded jointly by the Kwale Project, the Kenya/Finland Project and the UNDP/WB Project.

WORKSHOP BACKGROUND

The possibility of a workshop like this has long been discussed by the staff in the three projects mentioned above. During the implementation of the projects, many lessons have been learned about rural water supply and sanitation, in particular in the field of community participation, and it was felt that it would be good to meet with staff from other projects with similar experiences to discuss and learn from each other. It was also proposed to invite resource persons from the Ministries involved and staff from other projects/organizations that could benefit from the experiences.

WORKSHOP OBJECTIVES

The objectives of the workshop were:

- For staff in rural water supply and sanitation projects to meet and exchange experiences.
- For the participants to get to know each other in order to facilitate further cooperation.
- To discuss community participation in particular so as to promote, where beneficial, similar approaches in similar projects.
- To discuss operation and maintenance of installed facilities.
- To discuss how the implementation of projects can be improved.

WORKSHOP PROCEEDINGS

The workshop was opened by Mr. John Skoda, Regional Project Officer for the UNDP/WB Community Water Supply Project. Mr. Skoda welcomed the participants on behalf of Kwale Water and Sanitation Project, Kenya/Finland Rural Water Development Project in Western Province and the Rural Domestic Water Supply and Sanitation Programme of LBDA.

Mr.Skoda emphasized the objective of the workshop: to meet and discuss experiences from similar project dealing with water supply and sanitation in the rural areas of Kenya. Mr. Skoda said that the projects have much in common but also different approaches and experiences and since a lot of background now exists in the field of community involvement it might be possible to have a more standardized approache. To avoid confusion for the communities, similar approaches should be used for similar projects. Mr. Skoda also addressed a second issue: Can we accelerate implementation rate in water supply and sanitation projects? The goals for the Water and Sanitation Decade will not have been met by 1990 and it is now being discussed to extend the decade efforts up until the year 2000. The goals will not have been met even by the year of 2000 with the present implementation rate which means that ways have to be found to accelerate implementation rates without driving up costs or compromising on quality.

Mr. Walter Syeunda, Principal Community Development Officer from Ministry of Culture and Social Services was nominated the Chairman for the workshop. Three rapporteurs was selected; Mr. Munguti (Kwale), Mr. Okinda (LBDA) and Mr. Koech (Kenya/Finland).

Each project's participants were then introduced. Annex 1 shows a list of Participants. Annex 2 shows the Agenda for the workshop.

Kwale Water and Sanitation Project

Mr. L.K Biwott, the Project Manager for Kwale Water and Sanitation Project gave a general presentation on the project. A progress report on the project can be found in Annex 3.

Mr. Biwott explained that the Kwale Water and Sanitation Project started in 1985 and is implemented by Ministry of Water Development, assisted by SIDA (Swedish International Development Authority) and with support from Ministry of Health and Ministry of Culture & Social Services. KWAHO (Kenya Water for Health Organization), a Kenyan NGO, is assisting with community mobilization, training and evaluation. The project area (Kwale District) is about 8,250 sq.km. and the present population estimated to 380,000 people.

The Kwale Water and Sanitation project is a continuation of the South Coast Handpumps Project carried out 1983-1985 in a smaller area near the coast. The main objective with that project was to test

different types of handpumps. The project has since then been extended and is now covering the whole of Kwale district. The different technologies used by the project are; boreholes with handpumps, spring protection, rainwater catchment and construction of dams. The project is also constructing demonstration latrines at institutions.

During the discussion after the presentation it was explained that KWAHO's role in the project was complementary to the role of Ministry of Culture & Social Services. The ministry does not have enough people in the field to carry out all the work needed for the project and KWAHO is therefore assisting in training, evaluation and community mobilization.

It was explained that the staff comes from different ministries and agencies and that a steering committee chaired by the District Commissioner is meeting every second month. The objectives of the project was agreed between the Government of Kenya and SIDA at the start of the project and the District Development Committee is kept informed and advises the project as it moves ahead.

Kenya/Finland Rural Water Development Project

Mr. A. Souminen, Assistant Project Manager in the Kenya/Finland Rural Water Development Project presented an overview of this project (Annex 4). The project is based on an agreement on technical cooperation between the Governments of Kenya and Finland. The authorities in the implementation of the project are the Ministry of Finance of Kenya and the Ministry of Foreign affairs in Finland. For the implementation of the project activities the Ministry of Foreign Affairs of Finland has concluded a contract with the mutually selected consultant KEFINCO. KEFINCO works under the supervision of the Ministry of Water Development. Mr. Suominen said that the project area covers about 39 % of Western Province and about 4 % of Nyanza province, totalling 3654 sq.km. The present population is estimated to be around 1 million people.

The main outputs of the project are construction of; protected springs, shallow wells, borehole wells, gravity schemes and construction or rehabilitation of piped schemes and water treatment plants. It was explained that the health and sanitation aspects in the area are being addressed by another project working together with the water project.

Mr. Suominen explained that the project is now in its second implementation phase, 1986-1988, and is soon going to be decentralized to each district. The project will then have personnel stationed at offices in each district.

The Rural Domestic Water Supply and Sanitation Programme of LBDA

The last presentation was started by Mr. D. Arunga, Project Manager in the Rural Water Supply and Sanitation Programme of LBDA who handed over to the Programme's Training Officer, Ms. M. Ombai for the general presentation of the programme (Annex 5).

It was explained that the Lake Basin Development Authority is a statutory organization created by an act of parliament in 1979. One of the LBDA's projects is the Rural Domestic Water Supply and Sanitation Programme. The Programme is funded by the Netherlands Government and executed by the LBDA on behalf of the Kenya government through a steering committee. The programme concentrates on Nyanza Province which is approximately 12,000 sq.km and has a population of around 2.7 million people.

The construction activities in the programme are; drilling of wells, digging of wells, protection of springs, construction of dams and rainwater catchments and construction of demonstration latrines at institutions. The construction work of the programme is carried out by contractors (some of the local contractors have been trained by the project). The programme has also undertaken a geophysical survey and an inventory of water resources in the project area.

Tuesday may 24

The first session of the day was a presentation on community participation in water supply and sanitation by Mr. A.M. Makokha, Head Operation and Maintenance in Ministry of Water Development. Mr. Makokha stressed the importance of community participation in all kinds of rural water supply projects and said that it should play an important role in the efforts of the government to supply water to rural communities. It was pointed out that the role of communities in water supply planning, implementation, operation and maintenance has been demonstrated in all sizes of water supplies in all areas of the country and that it is important not to underestimate the capability of rural communities to manage their own water supply. Mr. Makokha's presentation is reproduced in full in Annex 6.

In the next sessions the Community Participation component in the projects were presented by Mrs. J. Kunguru, Kenya/Finland Project, Mr. A. Okinda, RDWSSP (LBDA) and Mr. K.K. Munguti, Kwale Project.(Annexes 7,8 and 9).

Mr. S. Muthua, Water Engineer at Plan International Embu, gave a presentation of the organization and the activities in Kenya, in particular in Embu and Meru. Mr. Muthua explained that Plan International is an international NGO working with children and their needy families to improve their education, health, water resources and skills. In Kenya, Plan is active in Embu, Meru, Taita-Taveta and Kiambu districts. Mr. Muthua's presentation can be found in annex 10.

There were many questions raised after Mr. Muthuas presentation and he clarified the following:

The fund for projects carried out by Plan International, comes from individual foster parents in Western countries. The policy of the organization has changed from aid directed towards a particular child to general improvement of life in the community the children live in.

The participants remarked that Plan International in Kenya has a fairly broad base of technologies and activities. It has gone a long way in encouraging cost-sharing with communities and is using the (not very common) approach of planning in terms of events instead of time as to give the communities the time they need to mobilize themselves.

After the lunch break the participants joined four different groups for discussions from which the conclusions were presented to the all the participants later in the afternoon.

Group 1 consisted of Mr. L.K. Biwott, Chairperson, Mr. C. Kinyanjui, Secretary, Mr. W. Syeunda, Mr. A. Okinda and Ms. M. Ombai. Below are the topics discussed and the conclusions from the group.

1. When and how should the community be involved in the first place?

The group felt that since the government has Development Plans for each and every district in the country which are used to solicit aid from donor countries/agencies, community participation is readily in place since these development plans are as a result of discussions and decisions made at the District Development Committees (DDC) and originates from the grassroots at village level.

Once the potential donor has been identified the DDC is informed of the intended programme. The implementing agency, together with the DDC moves to the project area and hold public meetings with the help of the local administration. The aim is to create awareness within the community.

In creating awareness the following areas are thoroughly discussed:

- the roles and responsibilities of the implementing agency and the community in the various activities of the programme,
- the community participation in terms of materials and labour so that the element of cost-sharing is effective,
- the community should be made aware that they are the owners of the project and that they therefore have a big role to play to sustain the project by proper maintenance and management,

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- the community should be made aware that they are the owners of the project and that they therefore have a big role to play to sustain the project by proper maintenance and management,

- the community is made aware about the capacity of the project, the implementation rate and the coverage within the area-during this stage, the community is not only told that it has a major role to play but the roles are identified so that they can start preparing for them.

The community then assist the project implementation team in carrying out reconnaissance surveys in regards to the sources to be developed and gives its input as far as choice of technology and preferences is concerned. The implementing agency has the responsibility to inform the communities on the limitations and alternatives available.

2. How can it be assured that the community wants the project and is willing to participate?

One way of ensuring that the community wants the project is to identify their preferences and priorities and take them into consideration in the initial stages. If these have any limitations the alternatives should be discussed extensively to ensure acceptance.

The community's willingness to participate in the project can be indicated by finding out who are the members of organized self help groups in aspects related to the project objectives. Their readiness can be gauged by the number of successful projects implemented in the area in the past and in the rate with which they adhere to some of the project conditions (e.g. committee formation).

In order to get proper feedback from the communities. the people should be adequately advised on the project objectives, priorities and targets as well as the benefits of the programme.

In areas where there is weak community organization due to environmental or other factors such as false promises, the communities need to be motivated perhaps, by setting up some projects on demonstration basis.

3. In what ways can the community be involved in planning, construction, operation and maintenance?

Planning stage

- The community is informed of the requirements and what is expected from them at the construction stage.

- The community is involved in decision making regarding the choice of technology.

- The cost of the works, scope and phasing of the project and duration is clearly explained to the community.

- The community is involvement in site selection.

- The community is advised on who to approach on any difficulties encountered in the project implementation (e.g. Regional authorities, Line Ministries, etc.).

Construction stage

- The local administration, who form part of the community, is be made aware of the project implementation because their assistance will be required from time to time.

- The proper schedules of the various stages of implementation are prepared and communities informed of their implementation roles.

- The identification of local institutions-like Youth Polytechnics-which could be contracted to carry out some of the works is done. In this way the community is involved (through creation of employment for their members).

- The identification of local personnel selected by the community and trained by the implementing agency for future operation and maintenance.

Operation and Maintenance

- The community is organized into groups (where groups do not exist) for the purpose of contributing funds for future operation, maintenance and project management.

- Local manufacture of spare parts for handpumps and a functioning spare parts distribution network is established. Institutes of technology and local private firms can assist in this.

- Major breakdowns are reported to relevant the agency e.g. Ministry of Water Development or the implementing agency; however, the aim should be to make communities responsible for total maintenance works including major breakdowns.

4. How can the local people be supported by a project to start income generating activities?

- Identify which type of income generating activities are understood and valued by the community e.g. irrigation, posho mills, chicken rearing etc.

- Assess the marketability and profitability of the venture and advise accordingly on its viability.

- Assist the community with technical advice or material support where necessary.

- Where community has a weak financial base, the setting up of a revolving fund or small scale donation could be thought of and when installed it must be closely monitored to achieve results.

Group 2 consisted of Mrs. J. Kunguru, Chairperson, Mr. K.K. Munguti, Secretary, Mr. R. Andersson, Mr. A. M. Makokha and Mr. H. Pelkonen. The group came up with the following conclusions:

1. How can women be involved in planning, implementation, operation and maintenance?

Planning:

There is need to incorporate the participation of other disciplines that have expertise on women (e.g. sociological, legal, economical, health, etc.) in the design and planning stages of projects. As for involvement at the local level the social development personnel in projects should relay the correct information and involve women in siting of water points.

Implementation:

The existing socio-cultural patterns needs to be respected, and some implementation of projects may bring more burden to women. In fact, women are very active in the implementation of self-help water projects and there is a need to bring more participation by men in these difficult tasks.

Operation and Maintenance:

(i) Shallow wells

- Since women can operate these supplies they should be trained in order to be able to carry out basic repairs and other corrective measures.

- Women should promote the cleanliness of the surrounds.

- Encourage the local manufacture of at most 3 types of handpumps and train the local community (women included) to purchase spares and replace them as necessary.

- It was recommended that since ordinary retail shops may not find any economic benefits by stocking these spares, such should be kept in stores of the District Water Offices (for ease of explanation also).

(ii) Diesel pumps

- Women, like any other community member, should be trained how to check on oil levels and dirt, and change oil, and clean as necessary.

- Otherwise, major repairs should be referred to MOWD.

(iii) Dams

- The role of women in this supply can only be meaningfully brought in conservation measures, hygiene education and practices, and also keeping off the shores of the dam (by both human and livestock).

Constraints for women participation:

(a) Socio-cultural values and patterns,

(b) Lack of time - women have a whole range of family constraints,

(c) Low literacy level,

(d) Lack of awareness,

(e) Low income level,

(f) That the water and sanitation projects are not oriented to economic activity and yet they are time consuming.

Possible solutions:

(a) Create awareness through training,

(b) Introduce and encourage labour-saving techniques to save time (e.g collecting firewood, grinding etc.),

(c) Discover and popularize suitable times and venues for meetings,

(d) Relate the water/sanitation activity to income generation,

(e) Train extension workers (also men) to become good and effective communicators to reach women.

2. How can women be involved as teachers and trainers in both water and sanitation activities?

(a) Encourage training of women who already have a high standard/regard amongst the community, so that they can teach others and so that they can be emulated.

(b) Women are good in health education and this should be strengthened and encouraged.

(c) **Traditional birth attendants and other field personnel should be trained in water-related approaches to help women in the rural areas.**

Group 3 consisted of Mr. M. Mutinda, Chairperson, Ms. S. Murray-Bradley, Secretary, Mr. J. Tsuma, Mr. D. Osiemo, Mr. K.A. Ajode and Mr. H. Kimani. Below is the group's conclusions.

1. How can and should water, health and sanitation be integrated in a water and sanitation project and which approaches should be used for community participation in sanitation and latrine construction?

We take as the main premise for improvement of water and sanitation facilities from both government, NGOs and donors point of view that the aim is Better Health.

From this premise, water, sanitation and the resulting appropriate technology are and must be integrated towards the achievement of this aim.

Water is a basic need without which humans die and without which health is impossible. Pollution of water is the problem that relates sanitation with water as the first instance. In the second instance sanitation is related to water and health in that without proper sanitation and hygienic facilities the health benefits that water may bring can be destroyed.

Technology is the interface between improved water and sanitation facilities and the community. Technology must be appropriate from both the cultural and economic aspects for improvements in water and sanitation to be accepted by the community.

Strategies

Water is not only the basic need for health, it is also the major felt need by most communities. Not only is the community aware of the need for water but the provision or improvement of sources is usually a matter for the community as a whole. It is therefore not too difficult for a community in general to mobilize their efforts for a jointly felt need.

Sanitation in general is a different problem. The provision of most sanitary units are an individual household matter. Therefore efforts and strategies for mobilization towards community participation will be different in sanitation than in water provision.

Since mobilization for water is looked at in another question we concentrated on sanitation.

Community mobilization and participation for sanitation falls into two groups of strategies; public and private.

Public Approaches

The public approach fall also into two parts; demonstration and legislation.

A. Demonstration.

These programmes use demonstration of facilities in public places as a mobilizing factor. Facilities in institutions such as schools and health facilities demonstrate not so much an appropriate technology as a principle, since it is necessary in such public institutions to have proper and good sanitary facilities. It was agreed that in such places the demonstration of locally affordable technology from the households point of view was neither usually acceptable nor necessary since it is a principle that is being demonstrated.

B. Legislation.

There are other public places such as hotels, bars and restaurants where good sanitation is particularly essential to good public health and where, as well as the principle of sanitation being demonstrated, public health legislation requires that sanitation should be of an adequate standard for the premises. The provision of such facilities in these places is the responsibility of the owner of the premises and it is the responsibility of the public health staff in the community to ensure that facilities are kept to a proper standard in order to demonstrate that government is serious in its aim of good sanitation provision.

Individual Approaches

From the project point of view the strategies used are three;

(a) Training of extension services and fundis.

(b) Training and organization of materials for health education.

(c) Demonstration at appropriate places (possibly chiefs camps) of appropriate and affordable technologies for individual sanitation facilities.

The objectives of these strategies from the individual point of view is to increase the motivation of individuals to want and appreciate good sanitation. This is a much more difficult task than with water, as good sanitation is not usually felt as a high priority need.

Motivation at the individual level does not necessarily, particularly in the short term, occur from public demonstration and legislation.

So what are the different ways in which motivation can be raised?

Cultural motivation strategies

There is a need to understand the cultural issues which contributes to constraints and encouragements for sanitation facilities or improvements.

These issues fall into three group;

(a) Those that are against good sanitation and health practices. For example the widely held belief of many women that baby's faeces are harmless (innocent). Such beliefs must be dealt with through sustained educational strategies.

(b) Those that encourage good sanitation and health practices. For instance sharing taboos which may be a nuisance from the project staffs point of view but must be seen as a positive sanitation attitude. It is, after all, reinforced in most public places where men and women are provided with separate facilities. Such customs should probably be dealt with best by good technical solutions.

(c) Those that are neither for nor against sanitation as such but can possibly be used to promote sanitation. For instance the belief that accumulation of dirt (faeces) attract unclean spirits in a pit. Such beliefs can also often be dealt with by good technological solutions, for instance that a vent pipe can be an escape route for spirits into the air when people use the latrine.

Technological motivating strategies.

Technological options need to encompass cultural necessities and attitudes of specific communities as mentioned above. Moreover many people have been put off the sanitary practices of using latrines because of the flies and smells. It is therefore necessary to persuade communities that latrines can be pleasant, private and comfortable places in which to relieve themselves. These strategies such as upgrading with various combinations of training and cost-sharing which provides individual households with safe ventilated hygienic latrines are to be encouraged.

Planning strategies

Health is a collective responsibility. No single ministry or organization can deal with the many aspects that contribute towards health in a water and sanitation project. In such case it is necessary that the planning and implementation of projects should be

interministerial and intersectoral in approach and that financial, accounting, monitoring and evaluation procedures should take account of this.

There must be political and community commitment to implement this and to make the District focus work effectively.

2. How can the impact of improved water and sanitation be measured?

Indicators

Health:

1. Look at the reduction of water and faecal related diseases over time. Relate this to the project activities over time.

Problems;

(a) Other intervening variables occur such as in the coast tourism and rise in socio-economic status.

(b) Other projects overlapping the area of activity whose impact may also contribute.

(c) Reporting of morbidity.

2. Look at levels of infant and child mortality related to project activities over time. Better reporting and therefore a more valid measure.

Problem;

Although this is generally a good measure in some areas other diseases (such as respiratory diseases) have an even higher incidence than water related diseases.

Social:

3. Time saved as a measure of the improvement in quality of life. Time can be quantified.

Problem;

Not a direct measure only approximate. Studies done on the use of time saved indicate that it is not usually spent in direct development activities; however, it is spent in visiting and chatting and even this can contributes to the quality of life and health in terms of social and mental health of the women in communities.

Economic:

4. Income levels measured against base line data as a proxy measure of improved health via improved productivity.

Problem:

Intervening variables, other projects , tourism, better harvest etc.

Response:

5. Count the number and quality of facilities that are replicated as a measure of the effectiveness of education and motivational activities of the project.

Sustainability:

6. Monitoring of the level of use, maintenance and functionality of the facilities must be built into the project as a measure of sustainability of the impact of the project over time.

Need:

7. Use the response of the project participants as a measure of community satisfaction and as an indicator of progress towards fulfilling a felt need both in terms of content (improved water and sanitation) and in the technology used (physically and culturally appropriate).

Methodology:

Qualitative;

Regular project meetings with the community and with project the project staff.

Quantitative:

Regular reporting and simple standardized reporting instruments used so that data can be coordinated over the project area and can also be compared with other projects of a similar nature.

Regular monitoring and evaluation systems built into the project plan so that constant and reliable monitoring can be carried out and regular evaluations can asses progress and process towards project goals and objectives.

3. What are the different approaches for community participation in areas with plenty but polluted water and areas with water scarcity?

The first and similar approach to Community Participation for both these situations is the community survey. It is essential whether

the water is scarce or plentiful to know not only the background data of the area such as the morbidity, mortality, demographic factors, geographical factors and the socio-economic status and social hierarchy of the community. It is also absolutely essential to know the present water and sanitation activities, illness behavior and beliefs, cultural constraints and social relationships involved in both water and sanitation activities in the community.

The design of the approach will not only relate to the provision of water but also to these social and cultural factors.

Having said that, there are abstract elements of community participation constant to all situations which will differ with these two situations and in brief it will be the weighing of those elements in the equation that will differ in planning the different approaches to community participation in different situations.

Major elements,although not exhaustive are:

Health education,

Labour contribution and its organization,

Construction,

Planning and Management.

In the situation with plenty but polluted water resources the educational component will be much heavier since you will have to convince people that what they have is not good enough for them and will damage their health. The Technology and choices of technology must also be attractive in order to motivate people to participate in the improvement of a service which they already possess.

In the situation with water scarcity the elements of effective management, planning and organization will be weighted to ensure efficiency and a reliable service. Motivation will generally be high; because water is scarce and is a felt need.

Then there are the pastoralists who are a sub-section of the people with scarce water resources.

Here again the approach will be different and will depend on the socio/cultural profile of the people and the existing pattern of coping with lack of water.

Group 4 consisted of Mr. W. Matagaro, Chairperson, Mr. S. Muthua, Secretary, Mr. E. Koech, Mr. D. Arunga, Mr. P. Van Meel, Ms. R. Simiyu, Ms. M. Wind, Mr. A. Suominen, Mr. H. Lodder, Mr. B. Bergman and Mr. J. Skoda. The group presented the following conclusions.

1. How can implementation be made more efficient in terms of time, human resources and expenditure? (i.e. Can we accelerate implementation without affecting quality?)

In general, there is a need to strike a balance between the social aspects (software) and the technical aspects (hardware).

The efficiency of the technical aspect can be increased by:

- Contracting as much as possible to the private sector.
- Strict adherence to planned schedules agreed between project and community.
- Decentralization of purchasing, decision making, etc.

The social aspect needs to start before the technical aspect, to avoid holding up of capital and plans, awaiting community readiness. Training of communities in operation and maintenance should start early enough to relieve the project of the burden of maintenance at the earliest possible stage.

Priorities need to be tied to willingness to participate rather than only to need. Where individuals are willing and capable of going along they should be given maximum encouragement. Concentration on areas of manageable size can also increase efficiency of both the community mobilization and the implementation and follow-up activities.

2. What are the demands on the formal structure (government, organizations, projects and private sector) during implementation phase and after, to ensure sustainability?

The demands on the government are:

(a) Provision of finance. i.e. sufficient funds to ensure good progress,

(b) Planning, monitoring and evaluation to ensure that the defined goals are met,

(c) Standardization of equipment, designs, etc.

Demands on organizations:

(a) Managing to cope with bureaucracy,

(b) Understanding community structure, attitudes and cultural norms.

Demands on projects:

(a) Institutional development and infrastructure necessary to ensure continued operation and maintenance,

(b) Development of concept and scope sufficient to attract private sector investment.

Demands on private sector:

(a) Investment in order to ensure continued provision of inputs and services.

3. What should be the role of DDC, the ministries and the regional authorities in projects like these discussed?

Role of DDCs (N.B. The DDC should not implement projects):

(a) Coordinate activities to avoid overlap/duplication,

(b) Assist in integration with other development projects,

(c) Monitor and evaluate progress.

Role of Ministries:

(a) Technical vetting and technical assistance to the projects,

(b) Implement projects,

(c) Ensure reasonable degree of standardization,

(d) Assist in economic and legal issues (import tariffs, etc.).

Role of Regional authorities:

(a) Plan on regional basis,

(b) Integrate plans according to districts and assign sectorial responsibilities,

(c) Look for funding,

(d) Implement projects that are beyond the scope of the DDCs.

Wednesday May 25.

When group 4 had presented their findings from the previous day Mr. K.A. Ajode, Senior Public Health Officer from Ministry of Health gave a presentation on the Health and Sanitation Programme carried out by the Ministry. The presentation can be found in Annex 11.

Each project then presented their maintenance systems. The presentations can be found in Annexes 12, 13 and 14.

The participants split into three groups to analyze each project's maintenance system during the afternoon and the presentations were given the following morning.

Thursday May 26.

Mr. W. Syeunda, Principal Community Development Officer gave a presentation on the Ministry of Culture & Social Services and the different activities in the Ministry (see Annex 15).

The groups presented their findings from the discussions the previous day. The first group, consisting of Mr. A. Souminen, Mr. K.K. Munguti, Mr. J. Tsuma, Mr. P. Van Meel, Ms. R. Simiyu, Mr. C. Kinyanjui and Mr. H.P. Kimani, discussed the maintenance system in the Rural Domestic Water Supply and Sanitation Programme of LBDA. The group's findings are as follows:

1. Responsibility allocation

(a) Community:

- The community is responsible for making the facility's compound clean,
- The community is also expected to maintain the surroundings of the facility clean at all times,
- Before a facility is handed over, the community is responsible for reporting on any breakdown to the maintenance man.
- After the facility has been handed over, the community reports any breakdown of the facility to the maintenance man who then goes to assess the extent and nature of the breakdown, prepares a list of spare parts if any would be required for the repairs, the community arrange to buy the spare parts, the maintenance man repairs the facility and then invoices the community for the repairs carried out.

(b) Government/project:

- The project is responsible for the first six months or before the facility is handed over to the community,
- Water quality monitoring,
- Making sure that spare parts are readily available at all times,
- Training the maintenance men,

- Development of pumps,

- Make sure the community and the private sector are performing their roles properly,

- In the case of silted or dry well, to find a solution.

(c) Private Sector:

- supply of pumps and spare parts,

- operation and maintenance/repairs.

2. Payment and costs

Cost of the spare parts are indicated on the maintenance guide card which is given to the water committees. Cost ranges in between KSh.100/- to 670/- for repairs as per last years annual report. After the facility has been handed over the community pays for transport, labour and spare parts.

3. Downtime

The time between breakdown and repair depends on the following:

- Time taken by the community to report the breakdown,

- How the community values the facility (they may have an alternative hence no need to report early),

- Nature of the breakdown - major or minor,

- Availability of spare parts for repairs.

4. Other issues

The community uses all means available to them (public or private means) to contact the repair maintenance men. The repair men are based at Migori, Mbita, Homa Bay and Kendu Bay in South Nyanza and in Rabour for the area around Kisumu. Spare parts can be purchased in Homa Bay, Siyaya, Rabour and Migori. There should be an attempt to interest both the private sector and organized work groups.

Group 2 consisted of Ms. J. Kunguru, Mr. H. Pelkonen, Mr. B. Bergman, Mr. K.A. Ajode, Mr. M. Mutinda, Mr. W. Matagaro and Ms. M. Ombai. The group analyzed the maintenance system of Kenya/Finland Rural Water Development Project. The group's findings are as follows.

1. Responsibility allocation

(a) The community is in charge of the Operation & Maintenance of the water source and, among others, has the following duties:

- Collection of funds and recording,
- Ensuring that there are trained operators and training new operators in their own village and in nearby villages,
- Organizing the purchase of spares,
- Paying the operator when and if necessary,
- Keeping up-dated maintenance records,
- Keeping the site clean,
- Developing the site, e.g. fencing, irrigation and security against vandalism,
- Running the scheme with minimal input from the outside.

N.B. The community may wish to give these responsibilities to their School committee or other Institutional Committee.

(b) The responsibility of the Government is restricted to recording, water quality control (surveillance) as an overall role and not intervening in the actual daily maintenance. Schemes considered too big to be handed over to communities are operated and maintained by MoWD. In some cases (institutional schemes) this role can be taken over by MoH.

(c) The private sector manufactures hardware and should also distribute stocks of spare parts so these are easily available to the communities. In other words the manufacturer can work with shopkeepers, local repairmen and bicycle repairmen to establish a network of spare parts suppliers.

2. Payment and cost

The community pays from collected funds. Prices will depend on the supplier, transport costs and on the market demand.

3. Downtime

The time the pump is out of order is minimal, if possible it will be repaired the same day.

Group 3 consisted of Mr. E. Koech, Mr. L.K. Biwott, Mr. D. Arunga, Mr. A. Okinda, Mr. W. Syeunda, Ms. M. Wind, Ms. S. Bradley-Murray and Mr. S. Muthua. Their findings were as follows.

1. Responsibility allocation

(a) The community who have been assisted with water and sanitation facilities will be responsible for routine operation and maintenance after the handing over has been effected. They may assign some of these responsibilities to committees or to skilled artisans. Thus the community through their committees and particularly pump attendants are expected to carry out maintenance and other repairs. It has been observed that some communities can even repair broken pump rods.

(b) The Government will be responsible for monitoring, evaluation and necessary follow-up. There will be need for the government also to carry out necessary baseline surveys on intersectoral basis. The government will also provide technical advice where necessary through the use of extension worker in the field. The government will also carry out major repairs and may take on operation and maintenance of some large schemes.

(c) It is expected that the private sector will provide and distribute equipment and necessary spares. It is also expected that this sector will construct additional water facilities, carry out training for replication purposes and undertake major repair work.

2. Payment and costs

The group noted that annual scheduled maintenance will cost approximately KSh.200 while the community may spend up to KSh.300 on other water source related activities. It is expected that all costs for spares will be met by the respective committees through their contribution. The group agreed that there is need to educate the communities on the approximate costs of all the problems expected to arise. It is the event that the costs for such repairs will be far beyond the community's capability, assistance should be sought from the relevant government ministry or agency.

3. Downtime

The time during which the pump is not operating will depend on distance to the distribution center, the urgency with which the community responds and on the availability of spares. It was agreed that the project implementors can assist by setting out adequate procedures on how the community can contact the relevant people in case of failure of their pumps, springs, dams, etc. The group also recommended that the relevant agency should visit such installation so that problems can be identified early. The team felt that if spare distribution centers are placed strategically, repairs could be carried out within five to seven days.

4. Other issues

The siltation problem in boreholes was discussed by the group at great length. It was agreed that plastic casings and screens offer longer life for the boreholes. It was therefore necessary to ensure that manufacturers adhere to strict quality control. Local manufacture of these such casing and screens should be encouraged.

It was noted that communities can easily contact handpump trainees within their area or where necessary contact the relevant government agency through field extension staff or report to the relevant district heads.

The group recommended the use of existing district water offices for stocking of spare parts and possibly decentralization to divisions and chiefs camps.

After the last presentation from the groups a small discussion followed. The importance of involving the private sector in production, operation and maintenance was stressed. The issue of what level of technology the community can operate and maintain was discussed and if was proposed that if the technology is too difficult for the community to handle themselves they can employ people to do if for them. In that way they will manage the system even though not doing any actual work.

The differences in prices and quality of imported and locally produced equipment were brought up. The local private sector should be encouraged to improve quality. Maybe we can accept less good quality if we can have it locally produced?

The problem duty-free imported pumps and duty on imported material for pump production was also discussed. The participants were informed that the Ministry of Water Development approached Ministry of Commerce in 1985 about the issue of duty on materials. The problem is that much of the material used for pumps is steel and it cannot be ensured that it will only be used for pumps. If, on the other hand duty was to be paid on the imported pumps the losers would be the local communities as handpump production is still too small in Kenya. Ministry of Commerce has said that a joint approach from communities, projects and manufactures to Ministry of Commerce to discuss the problem could be done.

The ministry was asked to look into the issue of standardization of handpumps, both imported and locally produced.

Following the discussion the chairman thanked all the participants for their contribution and said that it had been suggested to make a workshop like this to an annual event. This was agreed by all

LIST OF PARTICIPANTS

Kenya/Finland Rural Water Supply Development Project in Western Province.
Mr. A. Souminen, Assistant Project Manager
Ms. J. Kunguru, Training and Community Development Officer
Mr. E. Koech, Spring Protection Officer
Mr. H. Pelkonen, Handpump Development Officer
Mr. W. Matagaro, Provincial Water Engineer, Western (MOWD)

Kwale Water and Sanitation Project
Mr. L.K. Biwott, Project Manager
Mr. B. Bergman, Project Adviser
Mr. K.K. Munguti, Senior Project Officer (KWAHO)
Mr. J. Tsuma, Public Health Officer

Rural Domestic Water Supply and Sanitation Programme of LBDA
Mr. D. Arunga, Project Manager
Mr. P. Van Meel, Chief Technical Adviser
Ms. M. Ombai, Training Officer
Mr. A. Okinda, Rural Sociologist
Mr. H. Lodder, Project Director, (DHV)

Ministry of Water Development
Mr. A.M. Makokha, Head Operation and Maintenance

Ministry of Health
Mr. K.A. Ajode, Senior Public Health Officer

Ministry of Culture and Social Services
Mr. W. Syeunda, Principal Community Development Officer
Ms. R. Simiyu, Social Development Officer

Taita-Taveta District Development Programme
Mr. D. Osiemo, Programme Officer

Plan International Embu
Mr. S. Muthua, Water Engineer

Plan International Meru
Mr. C. Kinyanjui, Water Engineer
Mr. M. Mutinda, Research/Evaluator

SIDA
Mr. R. Andersson, Programme Coordinator (MOWD)

UNICEF
Ms. M. Wind, Assistant Programme Officer
Mr. H.P. Kimani, Water Engineer

UNDP/World Bank: Regional Water and Sanitation Group
Mr. J. Skoda, Regional Project Officer, Community Water Supply
Ms. A. Malm, Water Engineer, Community Water Supply
Ms. S. Murray-Bradley, Sanitation Advisor (MOH)

Agenda

Monday May 23.

16.00 Opening of Workshop.

16.30 General presentations of Kwale Water and Sanitation Project, Kenya/Finland Rural Water Supply in Western Province and the Rural Domestic Water Supply and Sanitation Programme of LBDA.

18.30 Cocktail party.

Tuesday May 24.

8.00 Presentation by Mr. Makokha, Ministry of Water Development.

8.30 Presentation of the Community Participation component in Kenya/Finland Rural Water Supply in Western Province.

9.30 Presentation of the Community Participation component in the Rural Domestic Water Supply and Sanitation Programme of LBDA.

10.30 Coffee/Tea

11.00 Presentation of the Community Participation component in Kwale Water and Sanitation Project.

12.00 Presentation by Plan International Embu/Meru

13.00 Lunch

14.00 Group discussions

15.30 Coffee/Tea

16.00 Presentations from group discussions.

Wednesday May 25.

10.00 Presentation by Mr. Ajode, Ministry of Health.

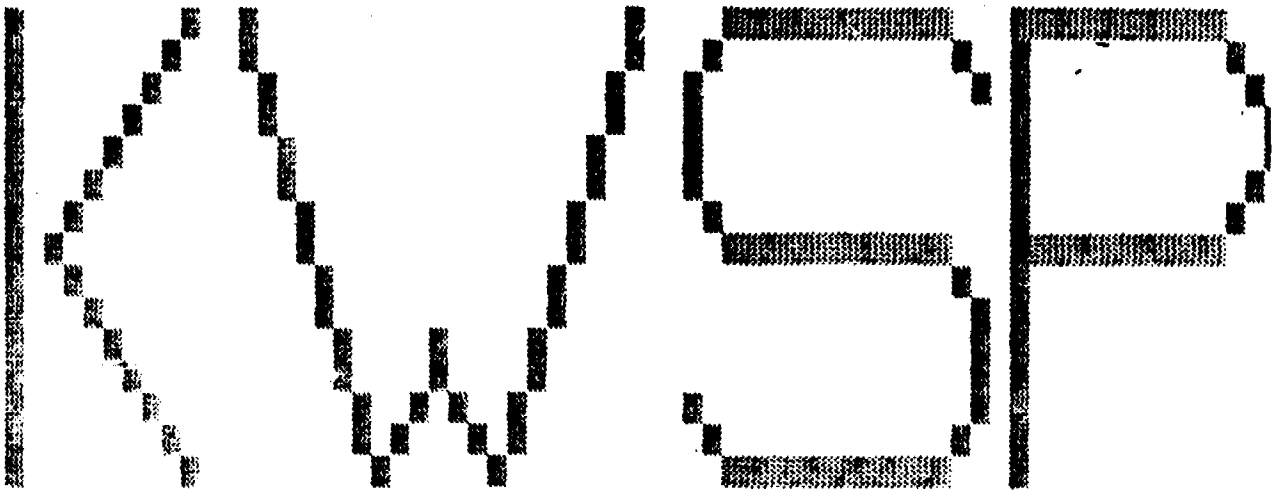
10.30 Presentation of the Rural Water Supply and Sanitation Programme of LBDA's present and future maintenance management.

11.30 Presentation of Kwale Water and Sanitation Project's present and future maintenance management.

12.30 Presentation of Kenya/Finland Rural Water Supply Project's present and future maintenance management.

13.30 Lunch

KWALE WATER AND
SANITATION PROJECT
P.O.Box 128, Kwale
Tel. 0127-4171



PROGRESS REPORT

FOR THE PERIOD

1st JULY 1987 -- 31st MARCH 1988

(FIRST 9 MONTHS OF FY 1987/88)

MINISTRY OF WATER DEVELOPMENT
In cooperation with
MINISTRY OF HEALTH
MINISTRY OF CULTURE AND SOCIAL SERVICES
KENYA WATER FOR HEALTH ORGANISATION (KWAHO)
Sponsored by
SWEDISH INTERNATIONAL DEVELOPMENT AUTHORITY

KWALE April 1988

CONTENTS

1. GENERAL

1.1 Introduction

This report covers the first nine months of the financial year 1987/1988, from July 87 to March 88 and will form the base for the annual Progress Report

Implementation is being carried out according to the Plan of Operation dated June, 1985, with revisions dated July, 1987 and signed Agreed Minutes of the Joint Review Team of the Kenya-Sweden Rural Water Supply Programme of December 1987.

During this period the last of the planned activities was started up namely construction/rehabilitation of dams with the Bomani dam project. The construction commenced in October 1987.

The necessity for community involvement and participation from siting to completion of a water supply has also been stressed upon. A few of the point water sources were constructed by the project without proper involvement and participation of the users. As a result, community committment was lacking and communities were not participating in the implementation or maintaining of the schemes as required. This forced the project team to reconsider the approach to the communities. As a consequence of this a general reorganisation of staffing was carried out and the problems have now been overcome. This was also a good experience for the entire project team as concerns cooperation and planning of activities between social, health and technical staff.

Handing over of the first water points to community took place in October 1987. The ceremony was presided over by the Minister for Water Development, Hon. Kyale Mwendwa. At this ceremony 26 handpumps were handed over to the community.

2. PROJECT ORGANISATION

2.1 Staffing. Changes and transfer

The Project Civil Engineer was transferred from this project to the post of District Water Engineer in Kwale District. He still holds the post of Resident Engineer for the project camp construction. Mr. F. Mwakamba was in January posted as Project Civil Engineer and Assistant RE.

File:PROJTEAM

IMPLEMENTATION TEAM ORGANISATION

	SECTION	TITLE	NAME
1	Administration	Project Manager	BIWOTT L.K.
2	Administration	Project Adviser	BERGMAN B.
3	Administration	Deputy Project Manager	WAYAMBA L. (MO
4	Administration	Sen.Programme Officer	MUNGUTI K.-K.
5	Administration	Administration Officer	KITHOME A.M.
6	Administration	Accounts Assistant	VACANT
7	Administration	Stores Assistant	VACANT
8	Administration	Storeman I	KAWINZI P.
10	Techn. Services Civil	Civil Engineer	MWAKAMBA F.D.
11	Techn. Services Civil	Resident Engineer	MIMANO C.M. (
12	Techn. Services Civil	Water Supply Inspector	MBUI M.K.
13	Techn. Services Civil	Water Supply Inspector	MWAMBURI J.M.
14	Techn. Services Civil	Water Supply Inspector	MCMEEN C. (US-
20	Tech.Services Groundw.	Hydrogeologist in C	MATHENGE S.G.
21	Tech.Services Groundw.	Hydrogeologist Siting	LIDONDE L.L.
22	Tech.Services Groundw.	Drilling Adviser	FREDRIKSSON K
23	Tech.Services Groundw.	Drilling Inspector	AMBOGA T.
24	Tech.Services Groundw.	Drilling Inspector	KATIKU A.
25	Tech.Services Groundw.	Drilling Inspector	KASHONGA M.
26	Tech.Services Groundw.	Drilling Inspector	KOIKAI
27	Tech.Services Groundw.	Head Drillers	FOUR (4)
30	Tech.Services Mechanical	Mechanical Engineer	KIMARO E.N.
31	Tech.Services Mechanical	Workshop Manager	VACANT
32	Tech.Services Mechanical	Handpump Inst Superv.	SAKA J.
40	Health Ed.& Sanitation	P H O in Charge	WAYAMBA L. (DEP
41	Health Ed.& Sanitation	Public Health Officer	OMBOTO T.O. (
42	Health Ed.& Sanitation	Public Health Officer	TSUMA J.M. (M
43	Health Ed.& Sanitation	Public Health Techn.	BOGA I. (MOH)
44	Health Ed.& Sanitation	Public Health Techn.	DOSHO R. (MOH
50	Community Sevices,KWAHO	Train. & Liaison Off.	MULAMA R. (KW
51	Community Sevices,KWAHO	Evaluation Officer	MWENDAR S. (KWAH
52	Community Sevices,KWAHO	Train. & Liaison Asst.	MAZURI G.Y. (
53	Community Sevices,KWAHO	Field Assistant	KASSENA C. (
54	Community Sevices,KWAHO	Field Assistant	MKUZI M. (KW
55	Community Sevices,KWAHO	Field Assistant	MWADIGA M.A. (
56	Community Sevices,KWAHO	Extension Workers	EIGHT (8) (
58	Community Development	Soc.Developm. Officer	CHILLUMOH (MOCS
59	Community Development	Soc.Developm. Assistat	FUMBWE A. (MO
66	*	Posted during FY 87/88	
67	**	Transferred to WB, Nbi	
68		MOWD unless stated	

2.3 Project Camp construction.

This work is very much behind the schedule as the contractor has delayed the completion of minor works for unknown reasons. The programme has had to be rescheduled several times to allow him (The contractor) to wind up. There are signs that he is making efforts to complete.

All the houses, D, E and F were completed by the end of 1987. All the fittings, windows, doors, shelves etc. have already been fixed. The houses are now being furnished.

Electricity is not yet connected into the houses. The administration blocks are already connected. It will not be long before all the premises are connected since the main transformer has been fixed and wiring in some houses has been done. The posts for street-lighting have been erected but are still to be connected.

Water has been connected to all the buildings. All the plumbing work (pipes and fittings) have been done.

The fence has been fully erected as designed. The main gate and gate-house are already fixed.

All the street roads and pavements have been fully laid with ballast.

The workshop/garage is almost completed.

ALE WATER AND SANITATION PROJECT

File: VEH1

oject vehicles with data.
pe: C=Commercial, P= Private, MC=Motorcycle

REG.NO.	TYPE	MAKE	CHASSIS NO.	ENGINE NO.	LOGBOOK NO.	EXP. INSURANCE	EXP. ROAD/L	REMARKS
JUN463K	P	SUZUKI 4 WD						Kwaho
JUN45K	MC	YAMAHA 125 CC				22-09-1988		
K 43 I		BEDFORD LORRY						
K 60 I		CHEVLUV P/UP 2 WD						
K 134 N		LANDROVER 4 WD						
KB 475		TRACTOR W TRAILER						
KB 859		BEDFORD LORRY						
KK 842		BEDFORD LORRY						
TW 835	C	TOYOTA LANDCRUISER				11-05-1989	30-04-1989	
TY 842	C	BEDFORD LORRY	607660	6504276	C 151408	11-05-1988	30-06-1988	
WW 754	MC	YAMAHA 125 CC				22-09-1988	30-06-1988	
WW 755	MC	YAMAHA 125 CC				22-09-1988	30-06-1988	
WW 756	MC	YAMAHA 125 CC				22-09-1988	30-06-1988	
WW 757	MC	YAMAHA 125 CC				22-09-1988	30-06-1988	
WW 758	MC	YAMAHA 125 CC				22-09-1988	30-06-1988	
WW 759	MC	YAMAHA 125 CC				22-09-1988	30-06-1988	
WX 296	C	BEDFORD LORRY	605091	6540007	C 173679	11-05-1988	31-05-1988	
XIA 921	C	NISSAN P/UP 2 WD	AG720761718	SD23169806	C 175083	11-05-1988	31-08-1988	
XIA 922	C	NISSAN P/UP 4 WD	JGY720760296	SD25069658	C 175084	11-05-1988	31-08-1988	
XIA 923	C	NISSAN P/UP 2 WD	AG720761690	SD23168580	C 175085	11-05-1988	31-08-1988	
XIA 924	C	NISSAN P/UP 2 WD	AG720761684	SD23167841	C 175086	11-05-1988	31-08-1988	
XIA 925	C	NISSAN P/UP 2 WD	AG720761711	SD23169907	C 175987	11-05-1988	31-08-1988	
XIA 926	C	NISSAN P/UP 4 WD	JGY720760290	SD25069653	C 175179	11-05-1988	31-08-1988	
XID 647	MC	VESPA 50 CC				22-09-1988	31-08-1988	
XID 648	MC	VESPA 50 CC				22-09-1988	31-08-1988	
XID 649	MC	VESPA 50 CC				22-09-1988	31-05-1988	
XIM 942	MC	YAMAHA 100 CC				22-09-1988	28-02-1988	
XIM 943	MC	YAMAHA 100 CC				22-09-1988	28-02-1988	
XIM 944	MC	YAMAHA 100 CC				22-09-1988	28-02-1988	
XIM 945	MC	YAMAHA 100 CC				22-09-1988	28-02-1988	
XIM 946	MC	YAMAHA 100 CC				22-09-1988	28-02-1988	
XIU 198	C	NISSAN P/UP 4 WD	401768	098989	C 183238	11-05-1988	31-08-1988	
XIU 613	P	NISSAN PATROL	780815	166490	425203	04-05-1988	31-08-1988	
XIZ 459	P	SUZUKI 4 WD						Kwaho
XYH 062	P	TOYOTA LANDCRUISER	HJ60-006706	2H-1036165	432504		30-04-1988	
XYX 711	MC	YAMAHA 125 CC	186-105475			22-09-1988	31-03-1989	
XYX 712	MC	YAMAHA 125 CC	186-105470			22-09-1988	31-03-1989	
XYX 713	MC	YAMAHA 125 CC	186-105469			22-09-1988	31-03-1989	
XYX 714	MC	YAMAHA 125 CC	186-105468			22-09-1988	31-03-1989	
XYX 715	MC	YAMAHA 125 CC	186-105472			22-09-1988	31-03-1989	
ZB 363	C	CARAVAN			C 180310	11-05-1988	31-03-1988	
ZB 909	C	WATER TRAILER	29151		C 187128	11-05-1988	31-03-1988	
ZB 910	C	WATER TRAILER	29152		C 187129	11-05-1988	31-03-1988	
ZB 911	C	WATER TRAILER	29153		C 187130	11-05-1988	31-03-1988	
ZB 912	C	WATER TRAILER	29150		C 187130	11-05-1988	31-03-1988	

4. CONSTRUCTION OF WATER SUPPLIES

4.1 Drilled wells

Between July 1987 and March 1988 five drilling rigs were engaged in the drilling activities within the project area.

The rigs are:

PRS I - Ross Surveyor 500
PRS II- Ross Surveyor 500
PR 1 - Ruston Bucyrus 22 RW
PR 8 - Ruston Bucyrus 22 RW
PR 9 - Hydromaster 500

The PR 9 rig was deployed in the month of March 1988.

A total of 29 boreholes were drilled in this period with combined depths of 1456,7 m. PRS II was briefly engaged for the exhibition at Nairobi Showground during September and October 1987. A 14 m deep borehole was drilled for demonstration purposes.

PR 1, which had broken down in April 1987, was back in operation in August 1987, but this was shortlived as it broke down again in February, 1988. To date the rig is still undergoing repairs.

Of the 29 boreholes drilled, one was abandoned after 11 m drilling due to wrong siting. Three had earlier been abandoned by the Ross Surveyor due to difficulties encountered during drilling. These were successfully completed by PR 1.

PR 9, which was engaged in March 1988, has almost completed it's maiden borehole in Thiakas Nguluku.

The performance of the four drilling rigs between July 1987 to March 1988 is as follows:

	PRS I	PRS II	PR 1	PR 8
No of boreholes	7	5	6	10
Meterage	217,7	233	240	738

Please find below table charts for drilling progress.

FILE:

:WALE WATER AND SANITATION PROJECT

OREHOLE REGISTER

B/H No	LOCALITY	B/H DEPTH M	B/H COMPL. DATE	WATER STRUCK LEVEL	WATER REST LEVEL	PSL / PWL M	YIELD L/H	CONDUC-TIVITY	CASEING DIAM. MM	HAND-PUMP INST.	INTAKE LEVEL M	DRILL RIG USED	REMARKS
: 7282	KILULU 1	68.0	870716	53.0	21.2	47/47	3960	800	100			PR 8	
: 7283	MICHUNGWANI AIC HIV	56.0	870728	37.0	12.4	42.5/42	1500	270	100			PR 8	
: 7352	NGULUKU MUKELEKELENI	66.0	870817	32.0	14.9	48/32.1	4398		152			PR 8	
: 6731	MASAMBANI III	30.0	870824	24.0	10.9	24/15.5	2598	330	100			PR 1	
: 7353	MDEGWA P.SCH(NGULUKU	70.0	870825	34.0	18.4	48/15.4	1200		100			PR 8	
: 7356	MAMBA PR. SCHOOL	40.0	870911	38.0	6.0	36/35.4	1098	1500	100			PR 1	STARTED BY [illegible]
: 6732	KIKONDE PR.SCH MRIMA	24.0	870917	21.0	4.4	22/20.2	480	5000	100			PRS I	
: 7602	BUDA FOREST	38.0	871000						101			PRS II	
: 7355	MWACHANONGO- DZUNI	40.0	871014	36.0	18.5	36/36	696	1700	100			PR 1	STARTED BY [illegible]
: 7358	JORORE, S/HILLS	100.0	871015	61.0	7.4	84/32	4400	2400	203			PR 8	YOUTH WITH A
: 7586	KIDOMAYA PR. SCHOOL	26.0	871100									PRS I	
: 7359	KICHAKA SIMBA MISS.	81.0	871100									PR 8	SHIMBA HIL[illegible]
: 7602	BUDA FOREST	44.0	871100						152			PRS II	
: 7357	PERANI PR. SCHOOL	40.0	871102	28.0	10.0	36/36	600	4000	100			PR 1	STARTED BY [illegible]
: 7364	LIRA (KASHYA)	40.0	871200									PR 1	
: 7587	BUMBUNA - MBUYUNI	36.0	880100									PRS I	
: 7360	VUMILIA NGULUKU	72.0	880100									PR 8	
: 7365	LIRA (MSIKITINI)	40.0	880100									PR 1	
: 7603	BUMBUNA WERUNI	35.0	880100									PRS II	
: 7588	BONDENI - MKWAYUNI	22.0	880200									PRS I	
: 7589	BONDENI - MUGOMBANI	18.0	880200									PRS I	
: 7361	MAPETA NGULUKU	48.0	880200									PR 8	
: 7362	MUKALA/SALIM NGULUKU	72.0	880200									PR 8	
: 7604	MATORONI MKUYUNI	33.0	880200									PRS II	
: 7605	MATORONI MKOMANI	29.0	880200									PRS II	
: 7590	BONDENI - MIEMBENI	27.0	880300									PRS I	
: 7606	MATORONI - MKWAYUNI	28.0	880300	2121.0								PRS I	
: 7363	SALIM/HASSAN NGULUKU	54.0	880300									PR 8	

FILE: BOREHOLE

KWALE WATER AND SANITATION PROJECT

BOREHOLE REGISTER

B/H No	LOCALITY	B/H DEPTH M	B/H COMPL. DATE	WATER STRUCK LEVEL	WATER REST LEVEL	PSL / PWL M	YIELD L/H	CONDUC-TIVITY	CASEING DIAM. MM	HAND-PUMP INST.	INTAKE LEVEL M	DRILL RIG USED	REMARKS
6732	KIKONDE PR.SCH MRIMA	24.0	870917	21.0	4.4	22/20.2	480	5000	100			PRS I	-
C 7586	KIDOMAYA PR. SCHOOL	26.0	871100									PRS I	
7587	BUMBUNA - MBUYUNI	36.0	880100									PRS I	
7588	BONDENI - MKWAYUNI	22.0	880200									PRS I	
C 7589	BONDENI - MUGOMBANI	18.0	880200									PRS I	
7590	BONDENI - MIEMBENI	27.0	880300									PRS I	
C 7606	MATORONI - MKWAYUNI	28.0	880300	21.0								PRS I	

FILE: BE

KWALE WATER AND SANITATION PROJECT

BOREHOLE REGISTER

B/H No	LOCALITY	B/H DEPTH M	B/H COMPL. DATE	WATER STRUCK LEVEL	WATER REST LEVEL	PSL / PWL M	YIELD L/H	CONDUC-TIVITY	CASEING DIAM. MM	HAND-PUMP INST.	INTAKE LEVEL M	DRILL RIG USED	REMARKS
C 7602	BUDA FOREST	38.0	871000						101			PRS II	
C 7602	BUDA FOREST	44.0	871100						152			PRS 11	
C 7603	BUMBUNA WERUNI	35.0	880100									PRS II	
C 7604	MATORONI MKUYUNI	33.0	880200									PRS II	
C 7605	MATORONI MKOMANI	29.0	880200									PRS II	

[redacted]WALE WATER AND SANITATION PROJECT

[redacted]REHOLE REGISTER

B/H No	LOCALITY	B/H DEPTH M	B/H COMPL. DATE	WATER STRUCK LEVEL	WATER REST LEVEL	PSL / PWL M	YIELD L/H	CONDUC-TIVITY	CASEING DIAM. MM	HAND-PUMP INST.	INTAKE LEVEL M	DRILL RIG USED	REMARKS
[redacted]6731	MASAMBANI III	30.0	870824	24.0	10.9	24/15.5	2598	330	100			PR 1	
C 7356	MAMBA PR. SCHOOL	40.0	870911	38.0	6.0	36/35.4	1098	1500	100			PR 1	STARTED BY PRS I
[redacted]7355	MWACHANONGO- DZUNI	40.0	871014	36.0	18.5	36/36	696	1700	100			PR 1	STARTED BY PRS I
[redacted]7357	PERANI PR. SCHOOL	40.0	871102	28.0	10.0	36/36	600	4000	100			PR 1	STARTED BY PRS I
C 7364	LIRA (KASHYA)	40.0	871200									PR 1	
[redacted]7365	LIRA (MSIKITINI)	40.0	880100									PR 1	

FILE: [redacted]

WALE WATER AND SANITATION PROJECT

BOREHOLE REGISTER

[redacted]

B/H No	LOCALITY	B/H DEPTH M	B/H COMPL. DATE	WATER STRUCK LEVEL	WATER REST LEVEL	PSL / PWL M	YIELD L/H	CONDUC-TIVITY	CASEING DIAM. MM	HAND-PUMP INST.	INTAKE LEVEL M	DRILL RIG USED	REMARKS
: 7282	KILULU I	68.0	870716	53.0	21.2	47/47	3960	800	100			PR 8	-
: 7283	MICHUNGWANI AIC NIV	56.0	870728	37.0	12.4	42.5/42	1500	270	100			PR 8	
: 7352	NGULUKU MUKELEKELENI	66.0	870817	32.0	14.9	48/32.1	4398		152			PR 8	
: 7353	NDEGWA P.SCH(NGULUKU	70.0	870825	34.0	18.4	48/15.4	1200		100			PR 8	
: 7358	JORORE, S/HILLS	100.0	871015	61.0	7.4	84/32	4400	2400	203			PR 8	YOUTH WITH A
: 7359	KICHAKA SIMBA MISS.	81.0	871100									PR 8	SIMBA HIL
: 7360	VUMILIA NGULUKU	72.0	880100									PR 8	
: 7361	MAPETA NGULUKU	48.0	880200									PR 8	
: 7362	MUKALA/SALIM NGULUKU	72.0	880200									PR 8	
: 7363	SALIM/HASSAN NGULUKU	54.0	880300									PR 8	

4.2 Spring protection

Protection of springs has been going on with three construction teams. During the first nine month 10 new springs were completed. The target for the same period was to protect 18 springs.

One of the teams has been engaged in rehabilitation/completion of springs in Kikoneni area. These springs should have been completed by the communty but due to poor information and mobilization by the project team members the communities involved were not sufficiently motivated for these activities. The situation has now improved and no spring will, in the future, be protected without community involvement and recommendation.

A second team has constructed a reservoir at the Madabara II pumping station (Kwale W/S rehabilitation). The tank is now completed and the team has moved to a new spring site.

KWALE WATER AND SANITATION PROJECT
SPRING PROTECTION

No.	NAME OF SPRING	LOCATION	DATE COMPL	REMARK
16	MUTUKU VOI	SHIMBA HILLS	8707	
17	MUTUA	MAFISINI	8708	
18	MANYATTA I	MAFISINI	8708	
19	MWENENGO II	MAFISINI	8709	
20	MWAKILEO	MWAPALA	8709	
21	NDETO (MIVUMONI)	MAFISINI	8711	
22	NGEWA	MAFISINI	8711	
23	MASOKA	MAFISINI	8801	
24	SHIMA HILLS T/S	SHIMBA HILLS	8803	
25	MWALUVANGA PR.SCH.	SHIMBA HILLS	8803	

Rainwater catchment

In the nine month period from July 1987 through March 1988, eight (8) ferro-cement water tanks were constructed. All but one of these were rain catchment schemes, the exception being an energency storage tank for Kwale high school, which has access to piped supply.

Recent tanks at Mgombezi Primary School an Ndavaya Secondary School were constructed with an increased capacity to 60,000 litres. Previous tanks were all 40,000 litres. The change was implemented to take advantage of larger roof catchment areas and provide additional water supply capacities in areas where alternative supplies are limited.

Ferro-cement technology and the effectiveness of rain-catchment schemes have become known to the people of the Kinango Division, as evidenced by the fact that project trained local artisans have constructed several private tanks for individual owners.

Due to the scope and nature of the project, available transport is necessarily stretched among several groups. This sometimes creates problems in terms of material transfers and supervisory dutiesh However, this is to be expected where resources have to be balanced with many demands. An additionol problem, most prevalent in the last months (January and February) of the dry season, is the lack of water for construction. Being part of the community contribution, the water must be found locally, and with the scarcity which existed just prior to the rains, the people are naturally reluctant to give up what they have. To assist in community oriented problems such as this, a member of the Kwaho staff has been assigned to the rain-catchment program.

File: RAINWAT

KWALE WATER AND SANITATION PROJECT
RAINWATER ROOF CATCHMENT SCHEMES

No.	NAME OF SCHEME	LOCATION	DATE COMPL
11	GANDINI PR. SCHOOL		87 07
12	MWALUKOMBE PR. SCHOOL		87 08
13	MALEDI	PR. SCHOOL	87 08
14	KWALE HIGH SCHOOL		87 09
15	VINYUNDUNI PR. SCHOOL		87 09
16	NGOMBEZI PR. SCHOOL		87 11
17	KINANGO SEC. SCHOOL		87 12

4.4 Dam construction.

Bomani dam

Major works were completed by the end of 1987. The work that is remaining mainly involves protecting the whole dam works from animal menace and protecting the soils from erosion. The dam and all the structures going with it will be fenced. Fencing materials have been purchased, 8 foot pine treated poles to be placed at intervals of 3.5 m and to be joined by 8 strands of barbed wire. Already about half of the poles have been erected on concrete footing. There are about 300 such poles altogeher. These items have been purchased through a community contribution of Ksh 40,000/=

The spillway crest and parts of embankment have been covered with 0.3m x 1m x 2m stone filled gabbions placed on geotextile. This work has been finished.

The community are supposed to plant grass on bare soils, but they have not yet done so.

Generally the community turn out for work has been poor and this has gratly slowed down the progress.

Goda dam.

Final design of this dam is in progress. The community has started clearing the site for setting up the camp. Survey works were done in December 1987. Contour maps have been prepared from the data obtained.

Soil Conservation

Due to the need to ensure long life for the dams being constructed, the Project Steering Committee recommended the incorporation of soil conservation measures within the project. As a result, the project has been cooperating with the District Soil Conservation Officer to ensure that soil conservation measures are effected. Towards meeting this objective, a field study on the survey and mapping of the drainage areas of the proposed three dams (Bomani, Goda and Wa Sindi) were carried out and a comprehensive manual as a guide when planning for soil and water conservation measures was made. We are presently engaged in finding ways and means of implementing this programme.

4.5 Rehabilitation of piped water schemes

The project assisted in rehabilitation of piped water schemes, operated and maintained under the District Water Office, Kwale as follows:

Kwale Water Supply

a) The rising main 6" diam GI and 4 km long was renewed during the period under review and most of the work completed by December 1987. The remaining fittings needed to be fitted prior to commissionig the line have been ordered.

   The total cost for the rehabilitation work was Ksh 1,4 million.

b) Two new pumping sets (electrical driven) were installed at the two booster stations along the rising main at a cost of Ksh 65,000 per set.

c) Kwale water supply also benefitted from a 5,000 gallon masonary balancing tank at Madabara II at a total cost of KSH 50,000. The tank was completed in April 1988.

Msambweni Water Supply

Initial plans were to convert this water supply from diesel to an electrical driven pumping system. Because of the frequent water proplems in the town and the delay of getting power to the town it was decided to purchase a diesel driven pumping set. The pumping set will cost Ksh 100,000 compared to the Ksh 60,000 allocated for this water supply in the project plan.

4.6 Support to Self Help Water Projects.

There have been several plans and discussions to undertake various such projects but none so far has been implemented.

In Mavirivirini, Mariakani some preliminary survey have been carried out on a proposed project to connect the villagers to Mzima pipeline. A cost estimate has been prepared and a meeting with the committe is to be organised to highlight them on how the work shall be undertaken. Design for Gandini water Supply is almost complete.

In Pongwe, Tiwi a similar project has been proposed to connect the community to Tiwi main line.

5. SANITATION AND HEALTH EDUCATION

5.1 Introduction:

In a bid to reach the Ministry's of Health goal to provide, promote and assist communities to achive adequate sanitation for all by the year 2,000 as outlined in the recently released sanitation manual for Kenya, the Kwale Water and Sanitation Project with assistance from SIDA embarked on the construction of Demonstration Ventilated Pit Latrines at schools, churches, mosques and market centres. This was done with full community participation. The demonstration VIPs were put up at these centres as entry points to community.

The project does also assist individual in having their own VIP latrines by supplying them with slabs (which they cast on their own with technical advice from the project staff) and vent pipes.

Health education activities are also carried out aiming at educating the communities on the importance of having, using and proper maintenance of latrines as a means of disease prevention.

We do hope that by the end of the project implementation period we shall have rised the pit latrine coverage in Kwale District to about 75% which is less by 5% of MoH latrine coverage target by the year 2000.

5.2 Ventilated Improved Demonstration Pit Latrines.

During the period under review these V.I.D.P. latrines continued to be constructed (with the community participation) at primary schools, churches and mosques.

5.3 Design.

The design pattern has not changed.

5.4 Pit sizes

We do encourage the beneficiaries to dig pits which have a minimum depth of about 5 metres.

Single pits have always been advocated since they are much stronger to adequately support the weight of the slabs and superstructure. Recommended sizes should therefore be 1m x 1,3m.

5.5 Slabs

These are either casted at the project camp or cast in-situ at construction site. Those that are casted at the project camp are always in three pieces (i.e. for ease of transportation). One of these three pieces are casted to have a drop apperture and hole for the ventpipe. Recommended sizes is 1,2m x 1,3m for the set of three pices. The thickness is 50 mm. Weldmesh of gauge 8 is used for reinforcement purposes.

Those that are cast in situ at the pit site measure 1,2m x 1,2m, in one whole piece reinforced with weldmesh gauge 8. This also has a drop apperture and a hole for mounting of a ventpipe.

5.6 Superstructure

The use of locally available materials has been recommended especially for the individual latrines. However for stability and long life, the project has for the period under review constructed demonstration ventilated pit latrines using ferro-cement blocks (size 9" x 6" x 4"). The recommended size for the superstructure is 1,2 x 1,5 m. For good workmanship these latrines have been built by artisans who were trained by the project and with close supervision from the project sanitation staff. Roofing of these VIPs have been done by galvanized iron sheets. Height of this VIP is 6 ft on the lower side and 7 ft on the higher side. Wooden doors have been used. Total darkness is a feature which is well taken care of during construction so as to discourage flies from entering the VIP.

5.7 Lining of pits

For unstable soils, lining with coral rocks, blocks and chicken wire has been done. Lining with coconut shells has been recommended as an alternative to coral stones and blocks especially for the individual latrines. Lining is done from bottom to top of the pit in very unstable soils but where the soils can adequately support the slab and superstructure lining is always done immediately after the vegetable (top) soil.

5.8 Vent pipes

Plastic vent pipes have mainly been used. These are 4" in diametre and 3 m in height. Bamboo canes have been tried and have proved to be very effective especially at Diani. These have an advantage in that they are locally available and cheap.
We have also developed another vent pipe using hollow concrete blocks (like a kitchen chimney) at Mvindeni Pr. School. This has proved to be equally efficient.
Screens used included nylon mesh (mosquito prove gause) and a new invention from coconut fibres, this has also proved to be equally efficient but might be slightly darker.

5.9 Implementation

During the period under review we successfully completed 45 Demonstration Ventilated Improved Pit Latrines, these have mainly been put up at schools, mosques and churches. 77 % of these have been twin pits. To-date 103 VIP latrines have been constructed compared with our accumulative target of 119 VIP's.

With coastal area having almost finished their share (i.e. 10 VIP's per location) our efforts will now be concentrated towards Kubo and Kinango divisions which have had very few. For the coastal areas our concentration will be on construction and improvement of individual latrines.

5.10 Individual Ventilated Improved Pit Latrine (VIP)

All along the period under review, individuals have been encouraged to have their own VIP latrine. The project assists these individuals with slabs and ventpipes. Centres have been established at chiefs offices and schools, where the community can go and cast their own slabs with technical assistance from the project sanitation staff and the local Public Health Technicians.

For the period under review 40 (fourty) latrines were completed and are now in use.

5.11 Training and community development

For the period under review no seminars were held but the project has now planned a series of seminars for Public Health Technicians and artisans from the community. The participants will be aquinted with the design, construction, workiong principles and health benefits gained from proper usage of latrines and drinking clean and safe water.

5.12 Health Education

Provision of sanitary and water facilities alone is not sufficient for the control of feacal and water born diseases. Other complimentary inputs like sustained educational programmes on personal hygiene, determination of user practices and their active involvement are essential for the improvement of Health.

During the period under review health education activities were focussed at schools, water points and health institutions. At schools pupils were taught to observe basic hygiene practices when at school and at home. They were informed of the reasons for building up VIP latrines. The mode through which feacal and water borne diseases may be contacted was explained to the pupils. Control measures by using proper sanitation and safe, clean water was also covered. At village level, communities formed health and water committees and it was through these that Health Education messages were desseminated.

With the aquisation of a slide projector, slide shows will now be conducted at schools (mainly secondary schools) and at other community centres.

Other health education activities carried out during the period under review include designing and production of warning information posters for VIP latrines and handpumps. This was due to realization of some misuse of these facilities by the community. These posters were fixed at conspicious places at the handpumps and the VIP latrines. It is highly hoped that misuse will now cease.

Production pamphlets and booklets on the prevalent and communicable diseases in the district to be used to strengthen health activities on the following diseases:

- Malaria
- Schistosomasis
- Worm interstation

Warning posters will be extended to cover dams, roofcatchment and spring protection schemes to encourage proper use of these facilities and to depict the health hazards.

5.13 School competition

Questionnaires on sanitation were circulated to primary school to assess the pupils understanding on sanitation. This was done on zonal basis (as recommended by AMREF). A few of the questionnaires have been received and the project Health Education and Sanitation staff are working on them. A comprehensive report will be produced on the pupils who submitted the best answers.

5.14 Problems

Problems which have been encountered during the implementation of sanitation and health education activities include the following:

- Lack of appropriate matereials for health education activities, eg Flannelgraph.
- Ground being too hard (rocky areas) to dig more especially in the Hinterland. Thus making it necessary to have drilling facilities.
- Ground being too loose in some areas (especially in the coastal area) a situation which calls for more sofisticated methods.

File: LATRINES

KWALE WATER AND SANITATION PROJECT

CONSTRUCTION OF DEMONSTRATION LATRINES

	LOCATION	PLACE	TWIN	SINGLE	COMPL	REMARK
59	WAA	Makaomema Mosque		1	87/88	July
60	DIANI	Magaoni Pr. School		1	87/88	July
61	TSIMBA	Kwale High School	1		87/88	July
62	LUNGA LUNGA	Maledi Pr. School		1	87/88	July
63	LUNGA LUNGA	Menzamwenyne Pr. Sch.		1	87/88	July
64	MWAVUMBO	Gwesheni Pr. School		1	87/88	July
65	MWAVUMBO	Mavirivirini Pr. Sch.		1	87/88	July
66	TSIMBA	Kwale Jamii Mosque		1	87/88	August
67	PONGWE	Chwaka Mosque		1	87/88	August
68	KINANGO	Moyeni Pr. School	1		87/88	August
69	SAMBURU S	Ndohivyo Pr. School		1	87/88	August
70	MSAMBWENI	Milalani Pr. School		1	87/88	September
71	PONGWE	Mtimbwani Jamia Mosque		1	87/88	September
72	TSIMBA	Lunguma Pr. School		1	87/88	September
73	TSIMBA	Kwale Proj. Camp	1		87/88	September
74	KINANGO	Dumbule Pr. School	1		87/88	September
75	LUNGA LUNGA	Mgombezi Pr. School		1	87/88	September
76	LUNGA LUNGA	Mwangulu Pr. School		1	87/88	October
77	SAMBURU S	Vinyunduni Pr. School		1	87/88	October
78	PONGWE	Mwagwei Pr. School	1		87/88	October
79	PUMA	Mazola Pr. School		1	87/88	October
80	DIANI	Mbuani Mosque		1	87/88	October
81	PONGWE	Majoreni Pr. School	1		87/88	October
82	DIANI	Maumba Pr. School		1	87/88	October
83	SAMBURU S	Samburu Pr. School		1	87/88	October
84	WAA	Matuga Girls School	1		87/88	October
85	PONGWE	Fikirini Chwako Pr. Sch.		1	87/88	December
86	KIKONENI	Mabafueni Pr. School		1	87/88	December
87	KIKONENI	Mwabandari Cat. Church		1	87/88	December
88	TIWI	Kitsanga Mosque		2	87/88	January
89	MWAVUMBO	Birikani Dispensary		1	87/88	January
90	MSAMBWENI	Ramisi Sec. School		1	87/88	February
91	WAA	Waa Sec. School		2	87/88	February
92	WAA	Waa Pr. School		1	87/88	March
93	LUNGA LUNGA	Ngathini Pr. School		1	87/88	March
94	KIKONENI	Mwanguda Pr. School		1	87/88	March
95	MSAMBWENI	Barabarani Mosque		1	87/88	March

6. TRAINING AND EVALUATION PROGRAMME

6.1 General

During the 9 months under review KWAHO involvement in the project gained momentum mainly because of three factors:

(i) The 4 new staff recruited namely Material Development Officer and 3 Field Assistants having finished their probation were given specific tasks to fill the gaps identified in the community participation.

(ii) 2 extension workers, one for Kikoneni location and the other for Dams were recruited to strengthen the community involvement.

(iii) There was a general reorganisation of staffing, and all staff got specific assignments instead of working generally in community liasion and mobilization.

KWAHO continued to share the community mobilization role with the Ministry of Culture and Social services where staffing was KWAHO 3 full-time staff while MoCSS provided 2 staff on part time basis. The remaining 13 KWAHO staff were involved in project management, training, evaluation and material development. the activities and targets met in the specific sections are given below.

6.2 Community Participation

Of the full-time 3 KWAHO staff provided, one Assistant Field Officer was posted to carry out community mobilization in springs in the period under report. Community mobilization was carried out in communities where springs have been protected.

In the area of drilling and handpump installation, 2 extension agents (1 KWAHO and 1 MOCSSS) are supervised by the Social Development Officer (MOCSS). Community mobilization covered Kikoneni location, Kidomaya area (Lunga-Lunga and Vanga locations) and Nguluku - Mivumoni area of Msambweni location.

A total number of 25 communities were reached and meetings were carried out. As result 22 committees have been formed out of which 10 have been registered with MOCSS as self help groups. 8 committees have opened bank accounts for safe-keeping of money collected towards operation and maintenance.

Community participation has been greatly enhanced by the formation of a project siting team that has been working with communities to recommend to the management sites that are suitable.

6.3 Siting

A siting team was formed consisting of 5 members:

- Geologist (survey)
- Hydrogeologist (drilling)
- Public Health Technician
- Sociologist
- Social Development Officer

The terms of reference of this committee can be summed up as giving professional guidance to communities in the selection of sites for water points and therefore create a systematic approach to the construction operations free of manipulation by influential people in the communities.

In the last few months the recommendations of this committee have put this project back to the right footing and path for the future development, as it has assisted in the formation of water committees at the planning stages.

6.4 Training

The training team has been working in Diani, Msambweni and Kikoneni areas. In Diani a total number of 106 tranees representing 46 handpumps were trained in operation and maintenance. Each water point was required to produce 5 trainees but in cases where committees run the affairs of more than one water point - the number selected was to this ratio. This explains the figure for training at 106 instead of 215 for the 43 water points. This trainig was completed in September 1987.

In Msambweni training has been continueing and is expected to be completed around 15-04-1988. The training covers 21 water points who have selected 93 trainers. The training takes place in 4 centres.

In Masifini area (Msambweni location) a total of 8 water points have been covered and training is being completed by end of this month (March 88). The number of trainees in this area are 38, and were trained in 3 centres.

Training awareness meetings have begun in Kigombero - Kivuleni area of Kikoneni location.where training will start very soon. The area has water points (with handpumps) but the total number of trainees will only be known after completion of training awareness meetings in all points.

It is important to note that the training team has split into two groups, each with three people (including the

Training Liaison Officer and the Assistant Training Officer) a factor which is going to speed up the pace of training to catch up with the backlog of handpumed water points especially in Kikoneni and Majoreni areas.

6.5 Evaluation

Survey was carried out as follows:

- Kikoneni location -- July 1987 and January 1988
- Msambweni location -- March 1988
- Diani location -- February 1988
- Hinterland (borehole) -- July 1988

The purpose of these surveys were to establish what activities were being carried out and where (sites), and wether these activities were in line with the set objectives of the programme (how) and to come up with recommendations.

What:

Activities included observations and group discussions and to a lesser extent interviews with opininon leaders and some beneficiaries. All these methods were used to establish:

a/ The level of community participation/organisation from the planning through implementation to actual use of a facility.
b/ The technical aspects from the project.

Where:

These activities were being carried out in spring protection sites, boreholes, roof-catchment tanks and VIP latrines.

Results:

Most of the sites were completed (technically) except Mazunguni and Mwanakamba springs. Most boreholes were operating well and so were the latrines. However, poor facility utilization was noticed in some of the areas. This was attributed to poor community organization (participation) which has lead to existence of inefective committees. As a result there were several cases of dirty environments in facility sites. This was especially true of springs.

Recommendation:

The comunities need to be reminded of their roles if the project is going to achive self-management by committees. Health Education as a component of the project should be taken more seriously through discussions held with the beneficiaries. Also lectures in schools etc. in order to promote hygiene education which is visibly missing is of outmost importance.

6.6 Handing over of completed water points

A handing-over committee set up in April 87, finally managed to prepare the first handing-over ceremony in Diani location on 23-10-1987. This colorful ceremony was presided over by the Minister for Water Development, Hon. Kyale Mwendwa, with representatives from concerned ministries, Provincial Adminstration, the World Bank and SIDA.

A total of 43 water points were handed over, even though only 26 were actually handed-over because the rest had not been fitted with Afridev components. This situation has been put to the attention of the management, and only 5 handpumps are remaining to be standardized.

Handing-over is being planned for the completed water points in Mafisini and Msambweni sometime in May - June 1988.

6.7 Material development

Two materials i.e. diarrhoea and maintenance cards which had been under test were completed, and passed for printing. The printed materials are being studied by the relevant authorities befor public distribution.

A training guide to assist both trainers and trainees is under test. and will be completed by June, 1988.

The production of health education posters (see appending) also took place and the activity was carried out jointly by the Material Developmemt Officer (KWAHO) and the Public Health Education Officer. The impact of these posters is being studied.

6.8 Bomani Dam

Community work at Bomani Dam started in mid September 87 and each day an average of 60 people has been attending. The community have mainly been involved in the digging of trenches, all the pipe works, collection of stones,

construction of erosion protection, making of blocks, concrete mixing, pegging and digging of holes for fencing poles, planting of grass, providing poles, fetching water etc. The participation has been varying depending on work load on the site and up to 200 people have worked on a single day as required.

Accomplishment:

Some work still remains to be completed such as construction of erosion protection in the spill-way, fencing, construction of comunal water points and cattle water trough.

Problems:

Problems that have hampered the work as far as community participation is concerned have been largely the long drought that has created both lack of water and food for the community in the area. As a result, there has been out-migration by the people which has in turn influenced work output andtherefore participation.

Other problems have included lack of proper timing of activities by the technical team and weak mobilization strategy that have also contributed to demoralising the community.

Future plans:

It is hoped that with the rains, the remaining activities will be undertaken since water will no longer be a problem and also tha project is looking into ways and means of solving the problems of food shortages in the area.

9. BUDGET - EXPENDITURES FY 1987/1988

Period: 1st July 87 -- 31st March 1988. (Kshs x 1000) Rate 1 SEK = 2,90 KShs

Acc. No.	Budgettext	Budget 87/88	Expenditure Project	Expenditure SIDA/S-BCO	Expenditure Total	Commitments	Grand Total
21.	PLANNING						
210.	Project Support Activities	500,000	78,733	153,699	232,432		232,432
211	Project Planning General	1,000,000	344,395		344,395		344,395
212	Project Planning Consult.	50,000		148,640	148,640		148,640
213	Project Camp General	3,500,000	1,191,183	1,561,561	2,752,744	2,125,000	4,877,774
214	Project Camp Consultant	50,000		145,928	145,928		145,928
215	Water Study, General	150,000		3,164	3,164		3,164
216	Water Study, Consultant	100,000		2,506	2,506		2,506
219	Sundry Planning	50,000					
22.	VEHICLES, PLANT & EQUIPM.						
220	Plant and Equipment	1,500,000	45,900	733,875	779,775		779,775
221	Vehicles	850,000	328,480	1,188,646	1,517,126		1,517,126
23	CONSTRUCTION W/S						
230	Drilled Wells	4,500,000	2,306,954	2,044,797	4,351,751		4,351,751
231	Dug Wells	80,000	300		300		300
232	Spring Protection	1,500,000	454,227		454,227		454,227
233	Rainwater Catchment	500,000	147,936		147,936		147,936
234	Dam Rehabilitation	1,500,000	517,254	683,256	1,200,510	200,000	1,400,510
235	Rehabilitation of W/S	310,000	51,296	22,416	73,712	250,000	373,712
236	Support to Self Help W/S	150,000	23,095		23,095		23,095
239	Sundry, Constr. W/S	100,000					
24.	CONSTRUCTION SANITATION						
240	Demonstration Latrines	240,000	300,608		300,608		300,608
241	Support to Self Help Lat.	120,000					
249	Sundry, Construction	50,000					
25.	COMMUNITY PARTICIPATION						
250	Community Participation	100,000	63,613		63,613		63,613
26.	HEALTH						
260	Health Education	100,000	160,323		160,323		160,323
27.	TRAIN.& EAVAL. PROGRAMME						
270	Train.& Eval. Programme	100,000	191,342		191,342		191,342
29.	SUNDRY, KWALE PROJECT						
290	Sundry	1,000,000		3,236	3,236		3,236
		8,100,000	6,205,639	6,691,724	12,897,363	2,575,000	15,472,363

KWALE WATER AND SANITATION PROJECT - PROGRESS CHART

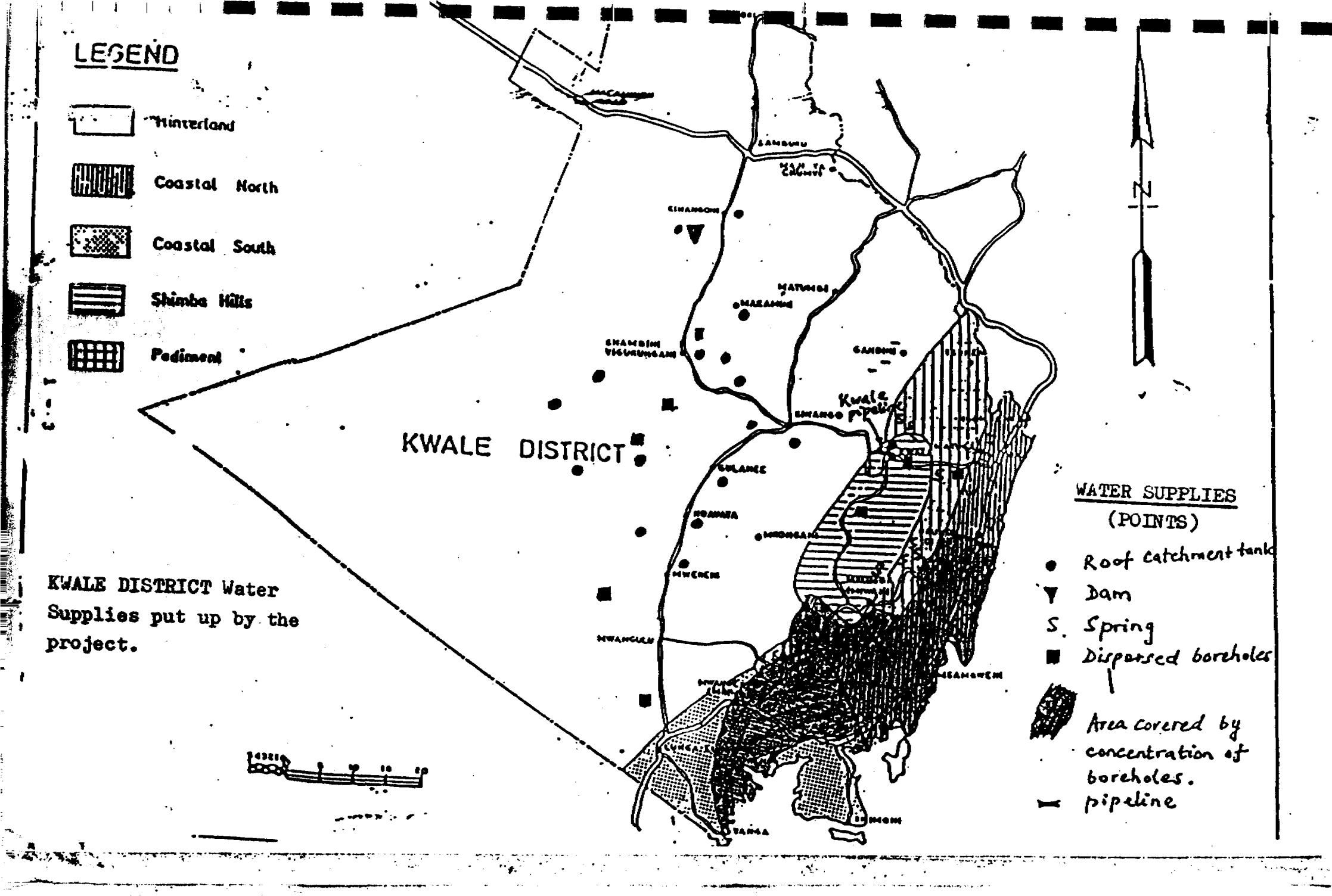
MARS 1988

Type Water Supply	1/1/85 - 30/6/87	1/7/87 - 29/2/88	Rep Per MARS	Total No	Population Per Unit	Serve Total
Protected Target	25	16	2	43	500	21500
Carried out Springs	15	8	2	25	500	125(
Drilled Target	115	48	6	169	200	33800
Carried out Wells	127	25	3	155	200	310(
Improved Target	15	0		15	200	3000
Carried out Dug wells	1	0		1	200	20
Rainwater Target	7	16	2	25	50	1250
oof Carried out atchment	10	7	0	17	50	85(
Target	0	0		0		0
Carried out	0	0		0		0
Small Target	3	3		6	1000	6000
Carried out ms	0	0	0	0	1000	0
lf help Target	1	4		5	1000	5000
Carried out s	2	0	0	2	2250	4500
onstration Target	83	32	4	119	TARGET	70550
Carried out trines	58	41	4	103	TOTAL SERVED	49050

KWALE

Date 15/4-88

Sign .....


LEGEND
Hinterland
Coastal North
Coastal South
Shimba Hills
Pediment
KWALE DISTRICT
KWALE DISTRICT Water Supplies put up by the project.
N
WATER SUPPLIES
(POINTS)
Roof catchment tank
Dam
Spring
Dispersed boreholes
Area covered by concentration of boreholes.
pipeline

KENYA-FINLAND RURAL WATER DEVELOPMENT PROJECT IN WESTERN KENYA

GENERAL

Kenya-Finland Rural Water Development Project is based on agreement on technical cooperation between the Governments Kenya and Finland, signed in 1975. The first agreement of t project was signed in February 1981 for a period of Febru 1981-October 1983 and was called an Investigation and Planni Phase. The main purpose of this phase was to draw up a wat supply development plan for the project area.

The First Implementation Phase, November 1983-December 1985, to continue the activities started during the planning phase focus on implementation and community participation.

The Second Implementation Phase, January 1986-December 1988, mainly to continue same activities as during the First Phase.

The competent authorities in the implementation of the proj are the Ministry of Finance of Kenya and the Ministry for Forei Affairs of Finland. For the implementation of the proj activities the Ministry for Foreign Affairs of Finland ha concluded a consultancy contract with the mutually selecte consultant KEFINCO. Kefinco works under the supervision of h Ministry of Water Development.

The project is financed by Kenya (10%) and Finland (9 % Governments together. The Finnish contribution is paid by th Finnish International Development Agency, FINNIDA, and the Ken a contribution, Local Component, is paid by the Ministry of Fina c of Kenya.

The project area covers about 39 % of the area of West r Province and about 4 % of Nyanza Province, totalling 3654 sq km The present population is estimated to be about one mill c people, 34 % of the Western Province population being inclu c and about 4 % of that of Nyanza Province. The average populatic density of the project area amounts to about 270 persons/sq km

The project covers parts of four Districts, Kakamega, Bungoma ar Busia in Western Province and Siaya in Nyanza Province. h project area receives a mean annual rainfall of 1100-2000 mm. Th area is bound by Lake Victoria in the west, Mt. Elgon in h north and Nandi Escarpment in the east.

The project area is almost totally rural, more than 95 % of h population earn their living from agriculture. The land i generally privately ovned, the plots being quite small, a f hectares only.

OBJECTIVES

The Government of Kenya aims at providing the whole population with a safe supply of water by the year 2000.The changes of meeting the target will be enchanged by carefully selecting the level of technology opting for low-cost solutions whenever feasible. A low-cost water supply cannot be regarded as a final target but in most cases and circumstances, especially in rural areas, it provides a considerable step ahead in improving the water supply situation. The project aims at reaching the national target within the project area.

The main objectives of the project are:

- to rech the national target of safe water supply within the project area applying low-cost technology and utilization of ground water.
- the improvement of water supply situation shall be supported through the involvement of the people in construction, operation and maintenance.
- the full benefit of water shall be utilized merely through long lasting primary health care education at all levels of the communities.
- community participation and training are the main areas of the project together with a steady pace of implementing water supply facilities.

OUTPUTS

The main outputs of the project are:

- construction of spring protections
- construction of shallow wells
- construction of borehole wells
- construction of gravity schemes
- construction or rehabilitation of piped schemes and water treatment plants

ACTIVITIES

The activities of the project are:

- spring protections
  - construction, maintenance
- shallow wells
  - construction, maintenance
- borehole wells
  - drilling, maintenance
- handpumps
  - installation, maintenance
- wash basins
- cattle troughs
- communal tanks
- iron removal plants
- ram installations
- seismical investigations
- test pumping
- water quality control
- water committees
  - forming,siting,registration,land easement,training
- women involvement
- training
  - staff,community,pump attendants,sprin attendants,leaders,KEWI,WECO,other organizations (public meetings, seminars film shows,courses,on-job training etc.)
- service and maintenance of vehicles and equipment
- stores
- precast contruction
- improvement of local manufacturing
  - pumps,concrete rings,blocks,bricks,pots
- use of spill water
- experimental activities
- cost control
- reporting
- data collection (computers)
- investigations,studies and surveys
- cooperation with Primary Health Care Programme

INPUTS

Inputs of the Goverment of Kenya are contribution of 10% of th total costs of the project, secondment of the project coordinato and other kenyan professionals required and operation an maintenance of the water supplies handed over to MoWD.
Inputs of the Government of Finland are contribution of 90 % o the total costs of the project, employment of the implementing consultant for the project and providing of equipment an necessary materials for the implementation of the project.
Inputs of the communities are operation and maintenance an partly construction of the water points.

PROJECT FACILITIES

The present project facilities include four office blocks covering an area of 450 sq m and two service blocks with a floor area of 20 sq m. The project stores comprises of the mechanical and construction stores. The total area of the stores are. 690 sq m. The floor area of the workshop is 350 sq m and is serving about 60 vehicles. The area of the concrete foundfy is about 80 sq m and is mainly used for construction of well covers and development of the concrete structures for the wells. The water laboratory at WECO premises with a total area of 55 sq m is serving as a provincial water laboratory maintained by MoWD and project together. All above mentioned facilities are situated in Kakamega.

PERSONNEL

The present organization chart of the project is presented in appendix 1. The number of the staff at the beginning of 1988 is:

- 14 Kenyans seconded from the ministries
- 12 Expatriates
- 218 regular monthly paid employees
- 59 casuals
- 22 subcontractors in well construction
- 11 subcontractors in spring construction
- 2 subcontractors in piped scheme construction

GARAGE

The following vehicle fleet is in use:

- 1 excavator
- 8 lorries
- 2 drilling rigs
- 35 cars (mainly Land Rovers)
- 7 trailers
- 35 motorbikes

All cars and motorbikes including the vehicles of Primary Health Care Programme are serviced and maintained at the project's workshop.

PRODUCTION

Up to the end of March 1988 the project has completed following water points within the project area:

	SPRINGS	SHALLOW WELLS	BOREHOLE WELLS	TOTAL
INV. PHASE	21	114	82	217
PHASE I	183	294	266	743
PHASE II	497	376	197	1070
TOTAL	701	784	545	2030

The production of water points in Phase II is presented i appendix 2.
In addition of this the project has constructed or rehabilita the following piped schemes or water treatment plants:

- Sega served 2500 persons
- Alupe served 300 persons
- Moding served 400 persons
- Malava served 2000 persons
- Chwele served 1100 persons
- Butula served 2000 persons
- Shikusa served 2000 persons
- Kakamega served 50000 persons
- Maseno served 15000 persons
- Webuye served 20000 persons
- Kaimosi served 20000 persons

The following small water supplies are also constructed by th project:

- Kitinda Dairy
- Kakamega Hospital
- Sangalo Institute
- Moi Girls High School, Vokoli
- Navakholo Health Centre
- Sio Port Health Centre
- Bumala "B" Health Centre

These together are serving about 1500 persons.

Estimating that one water point is serving around 200 people th whole service coverage reached by the project up to the end o March 1988 is about 530 000 people.

During the year 1988 the project will still construct about 3 waterpoints serving about 86 000 people and Nambale and Ukwal piped schemes serving together about 4000 people. End of the ya 1988 the service coverage will be about 620 000 people.

COST CONTROL

The project and the consultant have various obligations towards FINNIDA,Ministry of Water Development, other Kenyan authorities, legal book-keeping in Finland and four District in the project area. The present cost control system, which satisfies all above mentioned needs and is simultaneously and effective instrument in project management and planning would be very complicated. The present system is designed to serve first of all the project itself but it gives the basic information to be used for other purposes.

Cost control based on invoicing

This system is based on the actual expenditures and the cash flow giving for the project to compare the actual invoicing to the budget. The activities of the project are divided into 16 main sections. Each section is subdivided into labour, contractor, local material and foreign material items. When necessary there are subitems such as fuel, spare parts of the cars, spare parts of the drilling rig etc. Main part of the local construction material is bought in a bulk and for this purpose a separate item called as local bulk material is established. See appendix 3. End of each month all paid invoices or salaries are transferred for separate cost codes concerned. Begining of the next month the balance of used costs comparing to the budget are available according to the above mentioned cost codes.

Production cost control

The above described system does not give the actual information of direct production costs of main production activity. In production cost control each section is keeping full record of the use of materials and payments for the contractors. Those costs are monthly recorded into the production cost control sheets as shown in appendix 4. Finally the direct production costs are filed and added with labour costs giving an average direct production cost of each activity in line of the amount of production. As such the direct production costs per unit are available.
In order to calculate the total production costs the following indirect production costs are added:

- freights
- transportation
- stores
- office costs (partly)
- community participation
- water laboratory

The distribution of the indirect production costs is based on t
actual direct production costs. See example in appendix 5. W
indirect production costs are added into the direct product
costs the unit price of total production is available.
Other costs of the project are:

- costs of home office
- technical assistance
- office costs (partly)
- investments (cars,houses,equipment)

In order to calculate the unit costs also the overheads shall b
added into the production costs. This is done based on th
production costs distribution except if the investment can b
directed straight for the specified activity. (drilling rig).

Cost distribution per Districts

The requirement to show the cost distribution per each distric
is given by the DDCs. This distribution is based on product
activities in each district as shown in appendix 6.

Local component invoicing

Ten percent of the total costs are paid by the Government o
Kenya. Actual invoicing and payment procedure is carried
through the district treasury. The invoicing system
established during the year 1986. The invoicing is based on th
actual production of water points in each district. The u
prices reflecting into the ten percent contribution were deci
by the project and the district heads.An example of loca
component invoice is presented in appendix 7. The situation
the local component payments paid by the districts is presen
in appendix 8.

HANDPUMPS

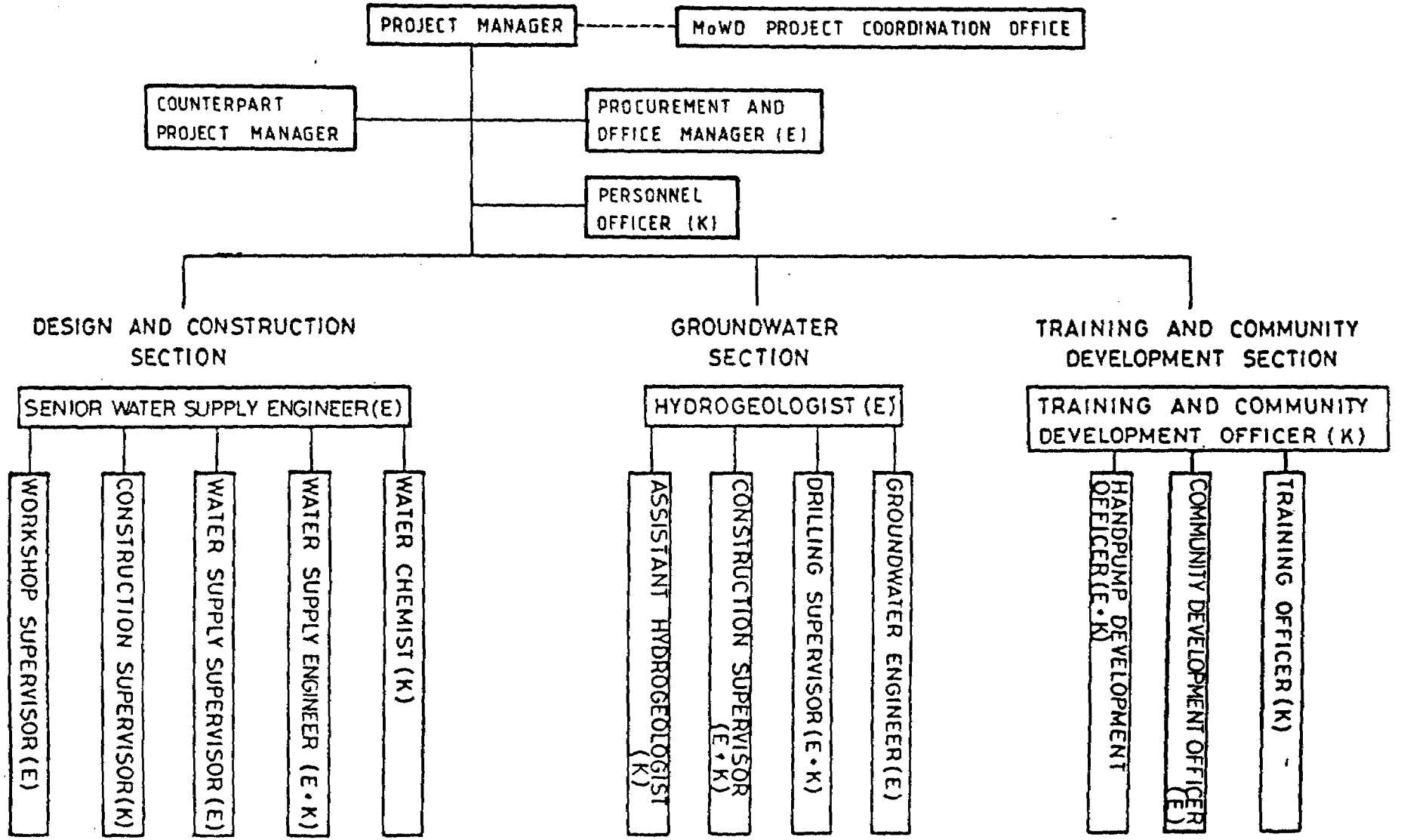
The report of handpumps used in the project is presented in a
annex " Interim Report of Handpump Maintenance and Development".

1.1.1987

KENYA - FINLAND RURAL WATER DEVELOPMENT PROJECT

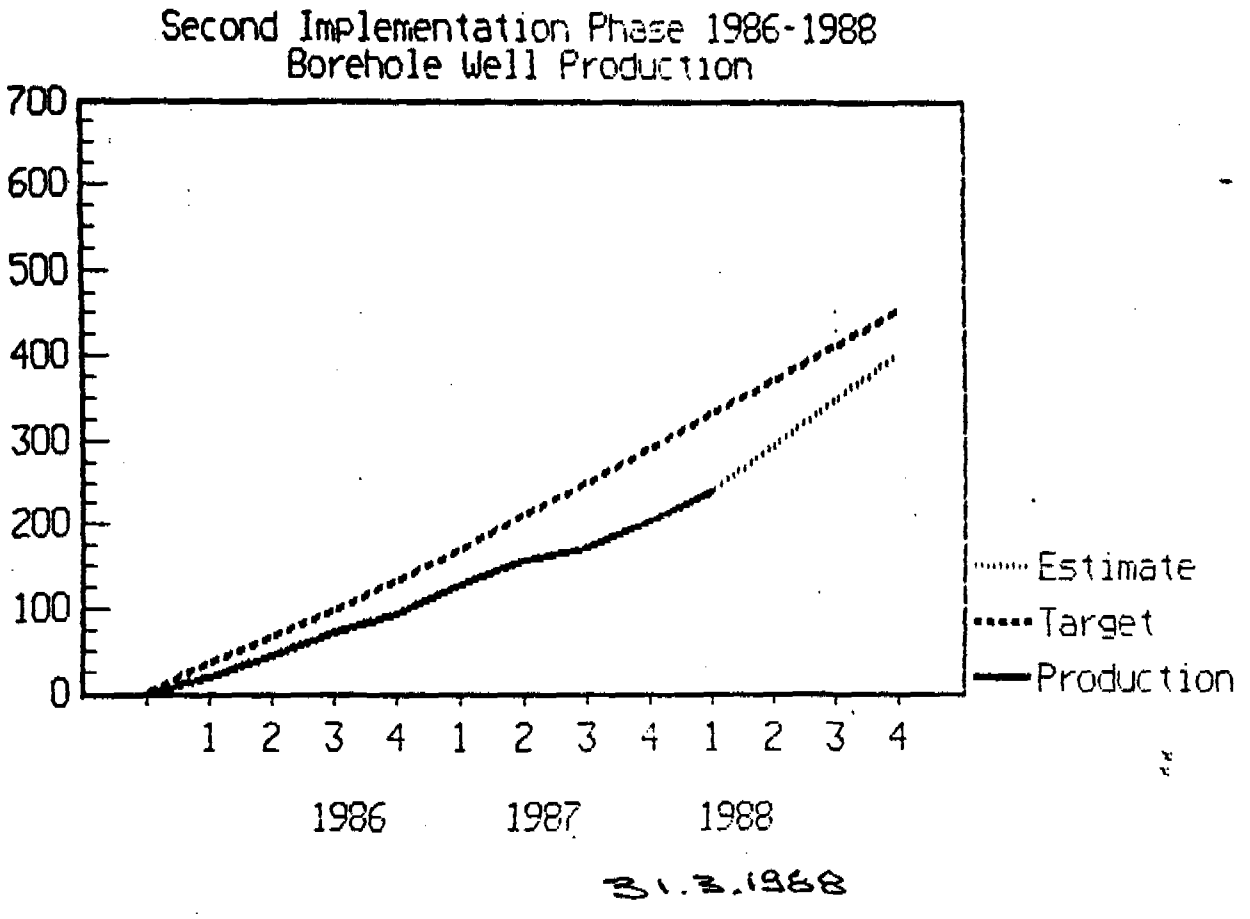
SECOND IMPLEMENTATION PHASE

ORGANIZATION CHART

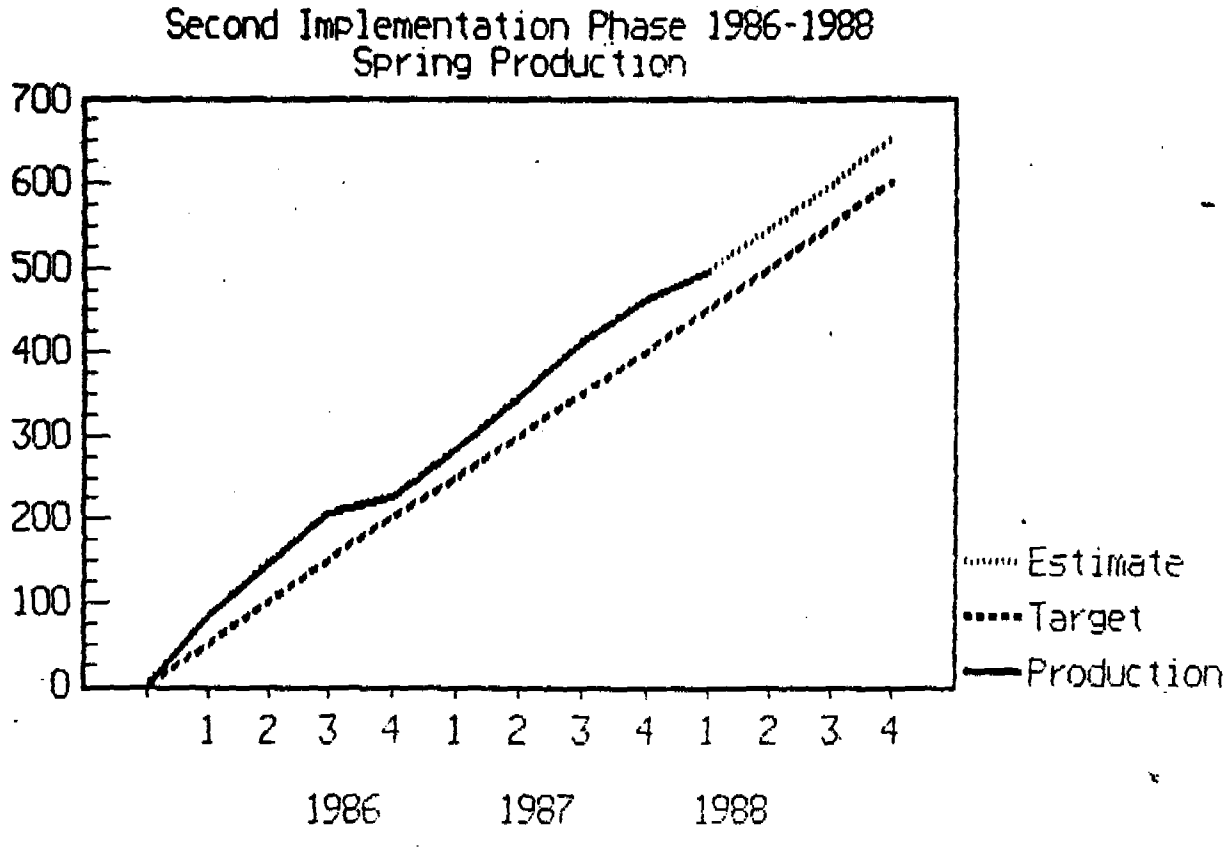


APPENDIX 1

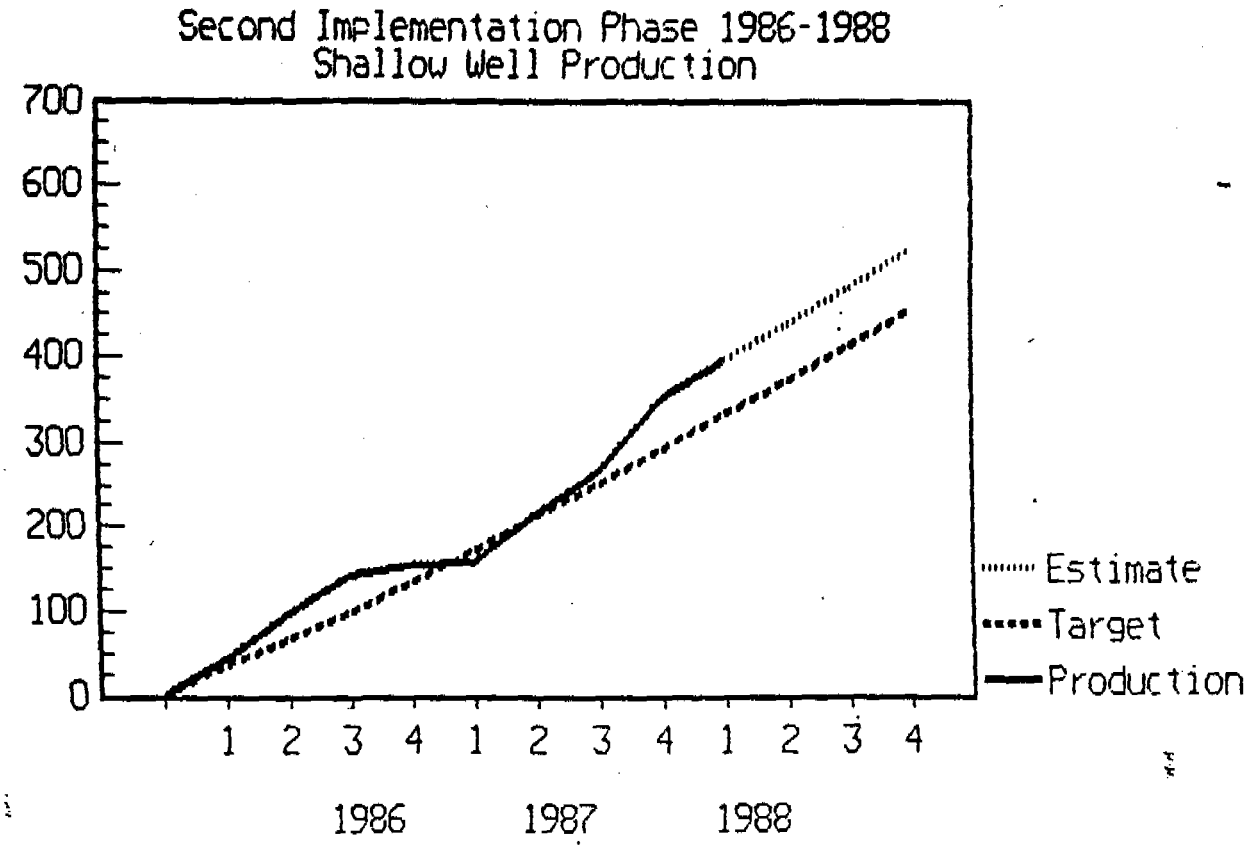
APPENDIX 2



31.3.1988


Second Implementation Phase 1986-1988
Spring Production
700
600
500
400
300
200
100
0
1 2 3 4 1 2 3 4 1 2 3 4
1986
1987
1988
Estimate
Target
Production

21.3.1988


Second Implementation Phase 1986-1988
Shallow Well Production
700
600
500
400
300
200
100
0
1 2 3 4 1 2 3 4 1 2 3 4
1986
1987
1988
Estimate
Target
Production

31.3.1988

KEFINCO

COST BREAK DOWN

01 INDIRECT COSTS

02 PROJECT OFFICE, HELSINKI

03 PERMANENT PROJECT STAFF

- 0301 FINNISH STAFF
- 0302 KENYAN STAFF
- 0303 INDIRECT LABOR COSTS

04 DUG WELL PRODUCTION

- 0401 WELL CONSTRUCTION
- 0402 WELL REPAIRS, DEEPENINGS
- 0403 IRON REMOVAL PLANTS

05 BOREHOLE WELL PRODUCTION

- 0501 DRILLING
- 0502 SLAB CONSTRUCTION
- 0503 SEISMIC SURVEYS
- 0504 TEST PUMPING

06 SPRING PROTECTIONS

- 0601 SPRING CONSTRUCTION
- 0602 RAM INSTALLATIONS
- 0603 GRAVITY SCHEMES

07 PIPED SCHEMES

08 HAND PUMP INSTALLATION AND DEVELOPMENT

- 0801 INSTALLATION
- 0802 MAINTENANCE
- 0803 DEVELOPMENT

09 COMMUNITY PARTICIPATION

10 WATER LABORATORY

11 HYDROGEOLOGICAL INVESTIGATIONS

12 DEVELOPMENT ACTIVITIES

13 GARAGE

- 1301 GENERAL
- 1302 LAND ROVERS
- 1303 LORRIES

14 CONCRETE SECTION

15 SUPPORTING ACTIVITIES

- 1501 GENERAL WORKS
- 1502 DRIVERS
- 1503 OFFICE, STORES
- 1504 ESTATE

16 EQUIPMENT

17 LOCAL BULK MATERIALS

Material report Kefincc

0401 DUG WELL CONSTRUCTION month.....

Completed units:.....=.....% of the year production

Materials	unit	Unit price	Period used	Period cost	Year tot c	Year budget	%
Sand	ton						
Ballast	ton						
Cement	bag						
Wire mesh	m sq						
Flexo band	pack.						
Misc.	KES						
.....	.....						
.....	.....						
.....	.....						
.....	.....						
Sub total							
Block	pc						
Ring 1000	pc						
Ring 800	pc						
Cover DW	pc						
Sub total							
Compl. contr.	KES						
Total	KES	**	**				

Material report Kefin

0402 DUG WELL REPAIRS, DEEPENINGS month.....

Completed units:.....=.....% of the year production

Materials	unit	Unit price	Period used	Period cost	Year tot c	Year budget
Sand	ton					
Ballast	ton					
Cement	bag					
Wire mesh	m sq					
Flexo band	pack.					
Misc.	KES					
.....	.....					
.....	.....					
.....	.....					
.....	.....					
Sub total						
Block	pc					
Ring 1000	pc					
Ring 800	pc					
Cover DW	pc					
Sub total						
Compl. contr.	KES					
Total	KES	**	**			

Material report Kefinc.

0403 IRON REMOVAL PLANTS month.....

Completed units:.....=.....% of the year production

Materials	unit	Unit price	Period used	Period cost	Year tot c	Year budget	%
Sand	ton						
Ballast	ton						
Cement	bag						
Wire mesh	m sq						
Flexo band	pack.						
Misc.	KES						
.....	.....						
.....	.....						
.....	.....						
.....	.....						
Sub total							
Block	pc						
Ring 1000	pc						
Ring 800	pc						
Cover DW	pc						
Sub total							
Compl. contr.	KES						
Total	KES	**	**				

Material report Kefi

05 BOREHOLE WELL PRODUCTION month.....

Completed units:.....=.....% of the year production

Materials	unit	Unit price	Period used	cost	Year tot c	budget
BS cas. 130	m					
BS cas. 183	m					
PVC plain 3"	m					
PVC plain 4"	m					
PVC plain 5"	m					
PVC plain 6"	m					
PVC plain 7"	m					
PVC screen 3"	m					
PVC screen 4"	m					
PVC screen 5"	m					
Driving shoe	pc					
Pentonite	bag					
Filtersand	ton					
Fuel (rig)	l					
Drilling oil	l					
Gelatine	kg					
Detonators	pc					
Sand	ton					
Ballast	ton					
Cement	bag					
Round bar 1/4"	6 m					
Wire mesh	m sq					
Misc.	KES					
.....	.....					
.....	.....					
Sub total						

Material report Kefim

05 BOREHOLE WELL REHABILITATIONS AND FLUSHINGS month.....

Completed units:.....=.....% of the year production

Materials	unit	Unit price	Period used	Period cost	Year tot c	Year budget
PVC plain 3"	m					
PVC screen 3"	m					
Pentonite	bag					
Filtersand	ton					
Fuel (rig)	l					
Drilling oil	l					
Sand	ton					
Ballast	ton					
Cement	bag					
Round bar 1/4"	6 m					
Wire mesh	m sq					
Misc.	KES					
.....	.....					
.....	.....					
.....	.....					
.....	.....					
Sub total						
Block	pc					
Frame	pc					
Sub total						
Compl. contr.	KES					
Total	KES	**	**			

Material report Kefincc

0601 SPRING CONSTRUCTION month.....

Completed units:.....=.....% of the year production

Materials	unit	Unit price	Period used	cost	Year tot c	budget	%
Sand	ton						
Ballast -	ton						
Cement	bag						
Round bar 1/4"	6 m						
Wire mesh	m sq						
PE membrane	m sq						
G.I. pipe 2"	m						
Filterpipe	m						
Misc.	KES						
.....	.....						
.....	.....						
.....	.....						
.....	.....						
Sub total							
Block	pc						
Sub total							
Compl. contr.	KES						
Total	KES	**	**				

Material report Kefin

0602 RAM INSTALLATIONS month.....

Completed units:.....=.....% of the year production

Materials	unit	Unit price	Period used	Period cost	Year tot c	Year budget
Sand	ton					
Ballast	ton					
Cement	bag					
Round bar 1/4"	6 m					
Wire mesh	m sq					
G.I. pipe "	m					
G.I. pipe "	m					
PVC pipe "	m					
PVC pipe "	m					
Water tank	cu. m					
Hydram	pc.					
Misc.	KES					
.....	.....					
.....	.....					
.....	.....					
.....	.....					
Sub total						
Block	pc					
Sub total						
Compl. contr.	KES					
Total	KES	**	**			

Material report Kefinco

0603 GRAVITY SCHEMES month.....

Completed units:.....=.....% of the year production

Materials	unit	Unit price	Period used	Period cost	Year tot c	Year budget	%
Sand	ton						
Ballast	ton						
Cement	bag						
Round bar 1/4"	6 m						
Wire mesh	m sq						
G.I. pipe "	m						
G.I. pipe "	m						
PVC pipe "	m						
PVC pipe "	m						
Water tank	cu. m						
Misc.	KES						
.....	.....						
.....	.....						
.....	.....						
.....	.....						
Sub total							
Block	pc						
Sub total							
Compl. contr.	KES						
Total	KES	**	**				

ITEM	SHALLOW WELLS	BOREHOLE WELLS	SPRING PROTECT	REP&DEEP OF SW	GRAVITY SCHEME	IRON REM.PLANT	PIPED SCHEMES	SPRING REPAIR	TOTAL
Materials	1,958,501.00	1,593,032.00	962,299.00	406,628.00	76,683.00	33,210.00	6,925,557.60	67,965.00	11,983,575.60
Labour	515,120.35	949,754.60	216,803.72	55,220.25	0.00	0.00	555,435.60	0.00	2,292,334.52
Contrac.	869,850.00	17,600.00	479,300.00	509,675.00	18,800.00	12,900.00	2,382,766.80	32,450.00	4,323,341.80
SUB. TOTAL	3,343,471.35	2,560,386.60	1,638,402.72	971,323.25	95,483.00	46,110.00	9,863,759.80	90,315.00	18,599,251.72
Indir.costs	675,355.55	517,178.44	330,944.77	196,199.84	19,286.93	9,313.97	1,992,403.77	16,223.01	3,756,906.08
Hand pumps	2,809,696.88	2,151,629.09							4,961,325.97
Comm. part.	996,440.03	763,060.74	438,285.94		29,456.38				2,276,243.09
Water lab.	168,282.12	128,868.25	82,463.36		4,805.81	2,320.79			386,740.33
Garage	1,422,219.33	1,089,116.95	696,930.76	413,173.78	60,615.90	19,613.91	4,195,767.93	34,163.76	7,911,602.21
Const.Sto	66,211.33	50,703.77	32,445.57	19,235.29	1,890.87	913.12	195,333.70	1,590.49	368,324.13
Supp.activ	505,854.55	387,376.79	247,884.12	146,957.53	14,446.22	6,976.27	1,492,349.49	12,151.36	2,813,996.32
TOTAL	9,997,531.14	7,668,320.63	3,517,357.25	1,746,889.68	204,984.90	85,247.95	7,875,854.99	144,443.62	41,074,389.85

APPENDIX 5

[redacted] PHASE II YEAR [redacted]

PRODUCTION CO[redacted]DI[redacted]PLAN[redacted]N

ITEM		KAKAMEGA	BUNGOMA	BUSIA	SIAYA	TOTAL
SHALLOW WELLS	PCS	52	40	65	38	195
Costs	KES	2,663,341.64	2,048,724.34	3,329,177.05	1,946,288.12	9,987,531.14
REP&DEEP.OF SWs	PCS	107	15	53	19	194
Costs	KES	963,490.70	135,068.79	477,243.06	171,087.13	1,746,889.68
BH WELLS	PCS	79	6	0	22	107
Costs	KES	5,646,890.93	428,877.79	0.00	1,572,551.90	7,648,320.63
SPRING PROTECT.	PCS	84	62	88	5	239
Costs	KES	1,236,225.98	912,452.51	1,295,093.88	73,584.88	3,517,357.25
SPRING REP.	PCS	22	12	1	5	40
Costs	KES	79,443.99	43,333.09	3,611.09	18,055.45	144,443.62
GS WATER POINTS	PCS	0	7	2	0	9
Costs	KES	0.00	159,432.70	45,552.20	0.00	204,984.90
IRON REM.PLANTS	PCS	5	0	4	0	9
Costs	KES	47,359.97	0.00	37,887.98	0.00	85,247.95
PROD.COSTS.PSs	KES	9,408,340.95	7,988,307.05	0.00	175,967.18	17,572,615.18
WATER POINTS	PCS	215	108	153	65	541
PRODUCT.COSTS	KES	20,065,094.16	11,716,196.26	5,188,565.25	3,957,534.67	40,907,390.35
OVERHEADS	KES	4,325,536.02	2,528,241.00	1,119,641.33	853,997.42	8,827,416.28
TECHN.ASSIST.	KES	9,201,027.38	5,377,926.47	2,381,636.65	1,816,573.40	18,777,163.90
INVESTMENTS	KES	6,064,231.46	3,544,494.50	1,569,693.83	1,197,270.82	12,375,690.61
TOTAL	KES	39,635,889.02	23,166,858.24	10,259,537.57	7,825,376.31	80,887,661.14
TOTAL 1988	KES	39,635,889.02	23,166,858.24	10,259,537.57	7,825,376.31	80,887,661.14
PERCENT	%	49%	29%	13%	10%	100%

ARRREVIATIONS: SW=SHALLOW WELLS BH=BOREHOLE WELLS PS=PIPED SCHEMES
R&D=REPAIRS&DEEPENINGS GS=GRAVITY SCHEME IRP=IRON REMOVAL PLANT

APPENDIX 6

KENYA-FINLAND RURAL WATER DEVELOPMENT PROJECT

CONSULTANT: KEFINCO DATE: 31 JAN 1988 BUNGOMA DISTRICT

CERTIFICATE FOR INTERIM PAYMENT NO 20

PRODUCTION AND VALUE INCLUDING LABOUR AND MATERIALS FOR PERIOD: OCT-DEC 1987

CONSTR. & VALUE	INV. NO 6		INV. NO 13		INV. NO 14		INV. no 20		INV. NO	
	NUM	TOTAL KSH	NUM	TOTAL KSH	NUM	TOTAL KSH	NUM	TOTAL KSH	NUM	TOTAL KSH
DUG WELLS 18,710	3	56,130.00	1	18,710.00	14	261,940.00	5	93,550.00		
BH-WELLS 27,720		0.00		0.00		0.00		0.00		
SPRINGS 6,850		0.00	55	376,750.00	7	47,950.00		0.00		
SUB TOT		56,130.00		395,460.00		309,890.00		93,550.00		
INV.PLAN.DES.										
DUG WELLS 450	3	1,350.00	1	450.00	14	6,300.00	5	2,250.00		
BH-WELLS 2,320		0.00		0.00		0.00		0.00		
SPRINGS 450		0.00	55	24,750.00	7	3,150.00		0.00		
SUB TOTAL		1,350.00		25,200.00		9,450.00		2,250.00		
TOTAL		57,480.00		420,660.00		319,340.00		95,800.00		
PAID		PAID		PAID		PAID		PAID		

RECOMMENDED

PROJECT MANAGER PROJECT COORDINATOR PROVINCIAL WATER ENGINEER DISTRICT WATER ENGINEER

APPENDIX 7

APPENDIX 8

KENYA-FINLAND RURAL WATER DEVELOPMENT PROJECT

SUMMARY OF THE LOCAL COMPONENT PAYMENTS DURING PHASE II 31-3-88

PERIOD	INVOICED KES				INV. TOTAL KES	PAID TOTAL KES
	KAKAMEGA	BUNGOMA	BUSIA	SIAYA		
JAN-JUN 86					2,072,184.00	2,072,184.00
JUL-DEC 86	1,670,220.00	57,480.00	875,860.00	1,011,680.00	3,615,240.00	2,969,660.00
JAN-JUN 87	1,915,620.00	420,660.00	19,160.00	405,740.00	2,761,180.00	845,560.00
JUL-DEC 87	1,696,340.00	415,140.00	1,205,340.00	492,480.00	3,809,300.00	2,736,520.00
JAN-JUN 88						
JUL-DEC 88						
INV. TOTAL KES	5,282,180.00	893,280.00	2,100,360.00	1,909,900.00	12,257,904.00	
PAID TOTAL KES	3,366,560.00	893,280.00	1,520,060.00	771,840.00		8,623,924.00
PAID %	64%	100%	72%	40%		70%

KENYA FINLAND RURAL WATER DEVELOPMENT PROJECT

INTERIM REPORT OF HANDPUMP MAINTENANCE AND DEVELOPMENT

1. PREFACE

The following postulates of The Abidjan Statement are to be remembered in th operation of the handpump office:

Clause 4. TECHNOLOGY CHOICE must match the community resources available for upkeep of the system. Research into low-cost community water supply and sanitation technologies has demonstrated that equipment is now becoming available to match the favored strategy of full community management of completed systems.
The experience has shown, for example, that properly chosen handpumps, suitable for maintenance by trained caretakers, supported where necessary by the area mechanics, are best guarantee for dependable long-term water supplies. In-country manufacture and planned distribution of pumps and spare parts brings added reliability.

Clause 5. MAINTENANCE is the key to long-term success. Community maintenance, supported by national strategy of standardization and well-organized distribution of spare parts, brings substantial increases in reliability and and reduction in recurrent costs - bringing per capita costs down appreciably when compared with the alternative of centralized maintenance practiced in many countries (projects). The result is more dependable supplies of safe water, and continuing improved health.

2. PRINCIPLES OF OPERATION

2.1 Principle 1. Maintain all handpumps in working condition.

2.1.1 Outlines

- To keep existing pump repairmen in business and control them, also evaluate their performance time to time. Presently about 350 pumps are covered by pump repairmen.
- Have two mobile teams as long as VLOM&M pumps (NIRA AF85, Afridev) are installed in such a number that one of the teams could be dissolved.
- Maintain all spare parts available in sufficient number.
- Pilot program of distributing pump spares is not started. The VLOM&M method is so close in reach that parts for existing pumps is not considered worthwhile to be circulated.
- Maintain revenue collection at present 70 % being paid of invoiced at any given time, and 85% of all invoiced.
- Main revenue is created by the Handpump Inspector who tours around project area with motorcycle. Mobile teams bring in a good share of the revenue also, as well as Repairmen CP location representatives are still to show their capabilities, since receipt books were given to them just recently.

2.2 Frequency of repairs

Repairs done at Invest. and Phase I

9.84 - 12.85	Mobile Teams		Repairmen		Total	
- Dug wells	90 nos	33%	57 nos	21%	167 nos	53%
- Drilled wells	129 nos	46%	-	-	129 nos	47%
	219 nos	79%	57 nos	21%	276 nos	100%

Table 1.

Repairs done at Phase II

1.86 - 4.87	Mobile teams		Repairmen		Total	
- Dug wells	86 nos	10%	144 nos	17%	230 nos	27%
- Drilled wells	372 nos	45%	231 nos	28%	603 nos	73%
	458 nos	55%	375 nos	45%	833 nos	100%

Table 2.

2.2.1 Serviceability

The time between breakdowns in dug well pumps has been 21 months in Phase I and 33 months in Phase II.
In drilled well pumps, times have been 6 and 9 months respectively.
The above figures show first of all improved reliability and also that maintenance skills have increased. But note has to be made that more preventive, not invoiced routine service (greasing and inspections in advance) is carried out by Repairmen, Mobile Teams as well as by Pump Inspector, which are included in figures at table 2.

2.2.2 Repairmen (area mechanics)

Two repairmen started in September 1984 and have been working until to-day. Six repairmen have began their trade in July - August 1986, one was removed from his duties on January 1987.

On Investigation and Phase I repairmen worked 32 man months altogether and did 57 invoiced repairs which represents about 2 repairs per man in a month.

From the beginning of Phase II until the end of April 1987 did 86 man months and 375 repairs which is about 4 repairs in a month per man.

The income of repairmen was on average 310 Kes/month and additional 210 Kes/month was paid by the project for inspecting and reporting.

2.2.3 Mobile Teams

Both Teams have started in the beginning of the First Implementation Phase but invoiced repairs have started in September 1984, so they have been in operation up to-day.

In Phase I Mobile Teams worked 32 MT months and did 219 repairs which equals about 7 repairs in a month.

On Phase II up till now they have done 32 MT months and 458 repairs being about 14 in a month.

2.3 Maintenance invoicing

Invoicing is the money which is collected (invoiced) from communities of done repairs.

Invoicing at Invest. and Phase I

9.84 - 12.85	Mobile Teams	Repairmen	Total
- Dug wells	15.034 Kes 32%	8.482 Kes 18%	23.516 Kes 50%
- Drilled wells	24.005 Kes 50%	-	24.005 Kes 50%
TOTAL	39.039 Kes 82%	8.482 Kes 18%	47.521 Kes100%

Table 3.

Invoicing at Phase II

1.86 - 4.87	Mobile Teams	Repairmen	Total
- Dug wells	31.552 Kes 22%	28.863 Kes 20%	60.415 Kes 42%
- Drilled wells	57.765 Kes 41%	23.158 Kes 17%	80.923 Kes 58%
TOTAL	89.317 Kes 63%	52.021 Kes 37%	141.338 Kes 100%

Table 4.

2.3.1 Repairmen

In Phase I repairmen did 21 % of the work and created 18 % of revenue. In Phase II they did 46% of repairs bringing in 37 % of the money, which shows that their efficiency remained about same.

During Phase I each of them invoiced about 260 Kes in a month and in this Phase 600 Kes per month. Average invoice of one repair being 160 Kes and now 140 Kes.

2.3.2 Mobile Teams

In Phase I they invoiced about 1200 Kes in a month and in Phase II they have done 2800 Kes per month being 175 Kes and 195 Kes per repair.

2.4 Invoiced cost per capita

2.4.1 Dug wells

The average invoiced cost of a pump repair in Phase I has been 140 Kes and in Phase II the same.
Giving per capita invoiced recurrent cost of 0.6 Kes in Phase I and 0,65 Kes Phase II.

2.4.2 Drilled wells

The invoiced repair cost in Phase I was about 190 Kes Phase II being the same.
The invoiced per capita recurrent cost was 0.85 Kes in Phase I and 1,15 Kes in Phase II.

2.5 Maintenance cost to the project

Maintenance cost is the actual cost to the project to keep all handpumps in operation, including preventive maintenance.

Cost of Mobile Teams

(Jan. 1986 - April 1987)	Total Kes	Per rep. Kes	Per Capita/year Kes	USD
Labor costs	284.000	620	2,4	0,15
Spare parts	71.000	155	0,6	0,04
Transport, recurrent	165.000	360	1,4	0,08
" , fixed	68.000	150	0,6	0,03
Sub Total	588.000	1285	5,0	0,30
+ Overheads	294.000	642	2,5	0,15
TOTAL	882.000	1927	7,5	0,45

Table 5.

Cost of Repairmen

(Jan. 1986 - April 1987)	Total Kes	Per rep. Kes	Per Capita/year Kes	USD-
Labor costs	85.000	230	1,7	0,10
Spare parts	57.000	150	1,1	0,07
Transports	5.000	15	0,6	0,03
Sub Total	147.000	390	2,8	0,17
+ Overheads	73.500	195	1.4	0,09
TOTAL	220.500	585	4,2	0,26

Table 6.

Notes:

- Above costs are well in line with the figures published by World Bank Handpumps project.
- Labor costs include the time used for preventive maintenance (e.g. greasing, inspecting, reporting etc.)
- Almost half of the Repairman labor cost is the money paid for inspections and preventive maintenance.
- In the spare part costs are included those parts which are changed due to defects, and also those which are changed to new (e.g. fulcrums, cylinders) without being charged and brought to workshop for rebuilding.
- A part of the labor costs consists of inspections and preventive maintenance.

3. PRINCIPLE 2. INSTALL NEW HANDPUMPS

3.1 Outlines

- Make sure that the best pump type is installed to a particular use.
- Keep on developing well cover and their design to be more suitable and durable for the purpose.
- Existing aggressive water with iron down the hole parts in pumps is most probably the cause to high iron contents in some wells. The project must work towards getting deep well pumps DTH parts to be made out of plastic material.
- Work towards having a VLOM pump installed at as many wells as practical, and the old types gradually to be changed to new VLOM pumps.

3.1.1 Data and records

- To maintain pump, maintenance, repair and revenue statistics up to date.

- Make micro computer programs to hold above information amongst well, bore hole, springs and costs data in database program for reports, records, development and decision making.

3.2 New handpump installation costs

Jan. 1986 - Apr. 1987		Per pump	%	%
Labor costs	451.000 Kes	1.695 Kes	13.0	20.0
Materials	1.782.000 Kes	6.700 Kes	51.5	77.0
Transports, recurrent	52.000 Kes	195 Kes	2.0	2.0
" , fixed	21.000 Kes	80 Kes	0.5	1.0
Sub Total	2.306.000 Kes	8.670 Kes		100.0
+ Overheads	1.153.000 Kes	4.340 Kes	33.0	
TOTAL	3.459.000 Kes	13.000 Kes	100.0	

Table 7.

4. PRINCIPLE 3. DEVELOP HANDPUMPS AND INTENSIFY LOCAL PRODUCTION

4.1 Outlines

- VLOM&M method has been uncovered with NIRA AF85 and Afridev pumps and the main task is to amend minor issues on the pump design in view of consumers repairing the pump and doing the routine maintenance.

- To have local conditions in the project established so that development trials can be done by the project until locally producible configuration has been developed.

- Arrange a user survey to collect data about the usage of pumps and the method of pumping. And to unearth their relation to the requirement to maintenance and development and get the manufacturer remedy accordingly whatever the findings are.
  Response from dominant pump supplier has been very development conscious.

- Keep track on information, innovations and new pump types available.

- To be in working relation with World Bank Handpumps Project to test new products for it and in return obtain technical advises and guidance from it.

4.1.1 Local production

- Evolve production design so that labor intensive methods could be adopted.

- A produced pump should be such that the quality does not deteriorate if the quality control is not the strictest one, and allows tolerances.

- To encourage local plastic pipe industry to produce pipes to required dimensions and tolerances, and to participate in developing better plastic pipe connections.

- To observe when the time is ready for production, namely handpumps will publicly be recognized as an intermediate means of water supply.

- Gather market survey information.

- Keep on observing when it is financially feasible to start the production. Either have import tax and duty lifted from materials and parts or have the same put on imported reciprocating pumps.

- To maintain the started negotiations with VLOM&M pump manufacturer for technology transfer.

4.2. Present situation

The project is using presently eight types of pumps:

1.	NIRA AF 76	568 numbers
2.	India MK II	283 numbers
3.	NIRA AF 85	81 numbers
4.	NIRA AF 84	1 number
5.	NIRA AF 83	18 numbers
6.	Volanta	3 numbers
7.	Vergnet	2 numbers
8.	Malawi(Afridev)	2 numbers
	Total	959 numbers

1. NIRA AF 76 is the pump the project started off initially and it was a good representative of its kind by the time. However, quite naturally better constructions have been developed today.
This pump type is still the most numerous one at the area. The pump is not VLOM&M type at its entire meaning, and it also uses galvanized iron riser pipes.

2. India MK II produced by WECO at Kakamega has proven to be a durable representative of its class. It is used at settings to which so called shallow well types are not capable. A disadvantage is that it is not at all VLOM&M pump and has G.I. riser pipes.

3. NIRA AF 85 is a pump type with two advantages, namely being VLOM&M pump and having non corrosive DTH parts. It is the type presently being predominantly installed.

4. NIRA AF 83 and 84 are pumps which have been taken to the project for the purpose of being tested for further possible use. The pumps, although being rather durable have not shown any real advantages to be widely used .

5. Volantas are at the project for the same purpose as NIRA AF83&84, and were supplied by World Bank. As they are quite heavy of the construction and rather expensive they are not one of the types to be used further. The few pumps are still maintained by the help of WB for testing the interesting rod configuration, and also for further testing of new rod designs.

6. Vergnet pump is said to be withdrawing from the market and is is going to be changed to other, types more widely used in the project area.

7. Malawi pump the predecessor of the Afridev is going to serve to its end and to be replaced with another deep well type.

4.2.2 Frequency of repairs
of most common pump types (since beginning)

	Installed %	Repaired by Mobile Team %	Repairmen %	Total %
India Mk II	29 %	20 %	11 %	31 %
NIRA AF 76	60 %	37 %	28 %	65 %
NIRA AF 85	8 %	-	-	-
NIRA AF 83	2 %	4 %	-	4 %
	99 %	61 %	39 %	100 %

Table 8.

4.3 Future plans

4.3.1 General

New handpumps are developed continuously and there are rather few types which justify to be chosen to replace older types which, however, were perfect choices by the time when selection was done.
Better pump designs will be generated in future, but if VLOM today pumps can be obtained then in sake of development, these means should not be disregarded which would provide a considerable step towards community self reliance.

The following technical conditions are prevailing in the project area:

Presumption is taken that at least a part of the project area belongs to an aquifer area similar to West Africa, in which iron content of water is initially low but exposure of bare iron will oxidize it and ferro contents become unacceptably high.
Due to this, non-ferrous DTH parts have to be used at least below SWL before it is too late and a massive DTH parts changing has to take place.

4.3.2 Shallow water levels

The mean water level at all the constructed wells is well above 20 meters. Altogether 80% of all pump settings are less than that.The most common setting is between 7 and 10 meters.
This fact supports decision of choosing pump type which operates best at these depths and gives the best efficiency ratio.

NIRA AF 85, from shallowest down to 18 meters DWL.

The construction of this pump type is simple enough for the attendants. They are able to repair and maintain it after few days training. Therefore there is a good reason to elevate the use of the pump.
The pump has all plastic DTH parts hence being immune to any aggressiveness in the water. The durability of the construction has already been proved. Matwara-Lindi Water Development Project has about 500 of NIRA AF 85 pumps. This project is very satisfied with the overall performance.
Constructionally insignificant improvements in the design should anyhow be done.

4.3.4 Medium depth water levels

Over 15% of pump settings fall between 20 and 45 meters, most of them being less than 30 meters. This means that if a type with plastic DTH parts is available its use should be intensified.

Afridev, from 18 meters down to 45 meters DWL.

This type will most probably sooner or later replace other pumps at its range. It has been developed in view of VLOM by WB and the results prove that attendants are able to do all the routine maintenance on it.
This pump has also plastic DTH parts which make it more suitable for the purposes of the project than those with G.I. riser pipes.
Within few months this type will be available produced in Kenya including plastic DTH parts.

4.3.5 Deep water levels

Remaining 5% of wells have water level below 45 meters,- however mostly less than 60 meters. (only 1 % of settings are more than 60 meters.)

India Mk II, from 45 meters down to 80 meters DWL.

(Or Afridev down to 60 meters, and remaining, 9 pumps today, other solution remains to be found.)

India Mk II is a very old design in this rapidly changing field and the population of it is about 2.000.000 pumps which proves Mk II to be the most popular pump in the world. The way it has dispersed has made it a safe purchase regardless its shortcomings. The construction of it is quite durable but it does not meet the criteria of VLOM at all. This makes it not a desirable choice in view of communities which are prepared to obtain responsibility of village level maintenance.
The complex construction makes it vulnerable to the fact that if indispensable skilled maintenance disappears pump will remain unattended.

4.4 Conclusions

Comparison of pumps

	NIRA AF 85	Afridev	India Mk
VLOM&M	Yes	Yes	No
Plastic DTH	Yes	Yes	No
Yield/force	High	Fair	Low
Yield/norm.stroke	0.6 lt	0.3 lt	0.2 lt
Routine maintenance			
-tools	3 nos	2 nos	15 nos
-dry wt./meter	1.0 kg	0.6 kg	3.8 kg
-aver.lift 7 m	10 kg	4 kg	50 kg
- 18 m	24 kg	11 kg	72 kg
- 30 m	-	18 kg	121 kg
- 45 m	-	28 kg	180 kg
- 60 m	-	40 kg	240 kg
- 80 m	-	-	318 kg
Origin			
-head	imported	local	local
-riser pipes	imported	local	local
-cylinder	imported	imported	imported

Notes:

The durability of NIRA AF 85 is good and pumps being used for two years have had almost no wear. The only wearing part has been plunger seal (kes 220)to be replaced after 1 to 2 years. But even if the seal is totally worn out, the pump gives almost the original yield.
Required preventive maintenance is to tighten the riser and the rod joints. This can not be considered as a defect but in view of VLOM it is an advantage because it can be done once or twice in a year so keeping up the abilities of the pump attendants.
Skills and facilities for local production exist.

Afridev pumps are not yet in use by the project.The effort of research put into it is certainly far more than to any other type so far. This gives high expectations of it, and where it is in use, reports have been encouraging. The plastic handle bearings are the only known wearing parts. Being cheap and easily accessible they will safeguard the existence of service abilities. Some adjustments in design are still expected.

India Mk II pumps have been serving fairly well but preventive maintenance has been taken care of. Ball bearings and chain requires frequent lubrication otherwise life expectations of especially bearings are fairly short. The replacement of bearings is a highly skilled job.

- According to users' opinion a good yield is more important than the required force.

- Serviceability by consumers themselves (pump attendants, women) is greeted with enthusiasm.

- According to male community members a slightly heavy pump is more desirable than a very light one. They are the ones to provide funds for maintenance, and light pumps tend to have faster wear because small unattended children go to play with them.

5. PRINCIPLE 4. PARTICIPATE ON ATTENDANT/REPAIRER TRAINING

5.1 Outlines

- Participate with CP section on training and designing the training of handpump attendants.

- Pump repairman training has been halted in favor of training of pump attendants. Observations are being done frequently to assess the need of possible additional trainees.

- Pump repairman maintenance system which the project has had since September 1984 can not be considered a very stable solution.
  Some misconduct has already taken place and one repairman has been removed from his duties.
  Secondly, men who have learned some trade tend to move to urban centers in a hope of obtaining better income. Some questions have already been raised by those who have been trained. All the more, because they are going in the long run to loose the small support they are presently enjoying from the project.

- On the other hand there will be an increase of private wells which will boost their business. Promoting of private well construction should be done by the project not only to increase the business of repairmen but also to create pump markets.

5.2 Pump attendant Training

5.2.1 Group

- Pump attendants are trained in groups of 16 to 20 women of 8 to 10 wells. This size is found to be the most convenient because personal contact with every attendant will be maintained.This size of the group can be handled by two teachers.
  Practical and oral testing for such group can also be conveniently arranged.

5.5.2 Teachers

- Training has been carried out by two officers from the project. The entire program and lessons were designed by The assistant Handpump Development Officer who also gave the lecturers. He was assisted by the Assistant Training Officer who took notes for records and helped on some practical issues.

5.2.3 Participants

- All participants are women who are chosen by the community. The project has nothing to do with the choosing the trainees.

- Voluntary basis is emphasized when guidelines are given to consumers in the course of choosing the participants. Women, when certified pump attendants, will not expect to receive any pecuniary advantage but may, if consumers feel so, receive some help in their farming, for example. This has been accepted in every respect.

- Women are chosen because they are the dominant group traditionally responsible for obtaining consumed household water and also are more stationary persons in the rural areas than men.

5.2.4 Areas

- The project has so far established three separate "cells" of 10 well sites each, 42 attendants altogether. These cells will increase there coverage gradually. The trained women are not only enthusiastic to teach new attendants but the men and local leaders support them also. Adjacent well committees, after receiving pump to which a village level attendant can be trained start looking for trainees. They realize the savings and immediate help, when required, being made available by the program.

5.2.5 Plans

- The project will establish 30 to 40 cells evenly divided around the the project area. Project will train the attendants also with the help of those trained already. Remaining training will be taken care by the pump attendants themselves. They will expand the coverage and only the monitoring is done by the project.

5.2.6 Shortcomings

- The project area is still scattered with not VLOM pumps and new installation will not produce even cells to start with. Serious consideration has to be made to overcome this problem.

6. ORGANIZATION

6.1 Staff

6.1.1 Handpump Development Officer

Seppo Halminen

- In charge to administer maintenance operations
- Implement handpump development designs
- Computerization
- Organize data and records

6.1.2 Assistant Handpump Development Officer

Mohammed Asman

- In charge of managing maintenance and installation operations
- Maintenance revenue collection
- Keep records updated
- Participate in handpump development designs

6.1.3 Handpump Mechanic

- Recondition used handpumps
- Manufacture handpump designs
- Assist keeping up records

6.1.4 Mechanic Helper

- Assist Handpump Mechanic
- Assist keeping up records

6.1.5 Mobile Team I

- Foreman, 2 plumbers, 2 helpers and Driver
- Maintain, install and repair handpumps

6.1.6 Mobile Team II

- As team I

6.1.7 Handpump Repairmen

- Presently seven in number
- Maintain and repair handpumps

Rep

Lake Basin Development Authority

AN

OVERVIEW

Rural Domestic Water Supply and Sanitation Programme

LAKE BASIN DEVELOPMENT AUTHORITY - RURAL DOMESTIC WATER SUPPLY AND SANITATION PROGRAMME - AN OVERVIEW.

1.0. INTRODUCTION

The Lake Basin Development Authority is a statutory organisation created by an act of parliament in 1979. The act empowers the Authority to undertake overall planning, coordination and implementation of development projects within its region. The Authority's area of around 47,000 sq. km. covers the catchment area of Lake Victoria and includes the Provinces of Nyanza, Western and parts of Rift Valley. It extends as far as Nakuru District in the East, West Pokot in the North and the Tanzanian border in the South. To the West is Lake Victoria.

In this area which is only 8% of the total land surface of Kenya are 8 million people or 42% of the country's population. This results in a very high population density of almost 450 persons per sq. km.

Since its inception, the Authority has initiated many regional development projects to create employment and to improve the well being of the population. These projects include Livestock Multiplication Centres to produce better cattle, giving higher milk yields and food supplies; Brick and tile manufacturing to bring building materials cheaply to the people; Fish farming to provide an inexpensive food source; Seed processing projects to produce seeds for agricultural development, food and income generation in the area and Agricultural projects to produce enough food for consumption within the region and for exportation, just to mention a few.

While income generating projects are important to improve the livelihood of the region's population, equally important are those that improve the people's health. Projects which upgrade medical services and health clinics, or provide clean safe water One such project is the Rural Domestic Water Supply and Sanitation Programme. This Programme concentrates on Nyanza Province which is approximately 12,000 sq. km. in area and has a population of around 2.7 million people, most of whom are rural dwellers.

It is funded by the Netherlands Government through the Royal Netherlands Embassy in Nairobi and executed by the LBDA on behalf of the Kenya Government through a steering committee. The committee is chaired by the LBDA and has representatives from the Ministry of Water Development, Health and Culture and Social Services, plus the Chairmen of all DDC's in Nyanza, non-governmental organisations involved in water and the Co-ordinator of the Programme.

1.1. OBJECTIVES

The Programme has two main objectives:
Firstly, the improvement of the quality of life of the region's rural population and secondly, making the recipient communities responsible for the long term sustainability of the water and sanitation facilities which the Programme constructs.

In order to achieve the first objective, the Programme provides:

- Water points;
- Demonstration VIP latrines and
- Health and Sanitation Education to the communities.

The second objective is met by:

- Involving the communities at an early stage in the Programme activities;
- Educating and training the communities in basic maintenance and management of the facilities;
- Encouraging income generating activities around the water points.

2.0. IMPLEMENTATION

To carry out these activities successfully, the Programme has created two main departments under a Programme Co-ordinator. These are:

- Technical and
- Community Development.

Community development department has sections dealing with:

- Extension services;
- Women's Activities;
- Socio-economic survey and
- Monitoring and Evaluation.

While the Technical Department has sections involved with:

- Inventory of water resources;
- Geophysical surveys:
- Construction and
- Maintenance.

2.1. SELECTION OF NEEDY COMMUNITIES

With over 4.000 rural communities in the Province. most of which need a new or improved water point, it is obvious that a selection must be made to determine those most in need. Therefore, before any construction work takes place, these needy communities must be identified. This is done through three surveys:-

- Socio-economic survey
- Inventory of existing water resources and
- Hydrogeological survey

Their results are compared to produce a final selection.

The Socio-economic survey uses questionnaires to identify the number of health facilities, common diseases trends. income generating activities, employment trends. income per capita, number and types of schools in an area, types of water sources, distances to water sources. existence of postal and other communication services, organisational capacities within a given region and other socio-economic amenities

These questionnaires are completed through 3 groups of people:

- Household:
- Key informants and at
- Public barazas.

The results of all these questionnaires give the socio-economic status of the communities and enables the Programme to identify those most needy from the socio-economic point of view. The results are also used to prepare a regional socio-economic data bank for planning purposes.

Next is the Hydrogeological survey which establishes ground water potentials in the region both to cater for the Programme needs and for the preparation of a regional water resources master

plan.

Ground water is expected to occur within the weathered layers of the predominently hard rocks which occur in the area, but more particularly at faults and in fracture zones. In order to detect faults and fractures, aerial and satellite photographs are studied. Those detected are plotted on geological maps of the area.

Closely linked with the socio-economic and hydrogeological surveys in the identification of needy communities is the inventory survey. In many communities, people already have access to drinking water but the source may be either insufficient or contaminated. However, some of these existing water sources need only to be upgraded in order to improve their quality or yield. The inventory survey takes stock of all the existing water sources, the water use patterns as well as the ownership and maintenance responsibilities if any, of existing water points.

All the survey data collected in the field is then analysed by computer at the Project Headquarters in Kisumu When the results of the three surveys are correlated, a final selection is made of the most needy communities which can then be included in the Programme.

2.2. COMMUNITY PARTICIPATION

Before construction work begins, the Programme has to ensure that the would be beneficiaries have a demonstrated potential to receive and accept ownership of the facilities. Land must be provided free of charge at the proposed water point site as well as an access road.

In order to help the communities, the Programme has appointed water and sanitation extensionists who are posted to the operational areas. They create awareness among communities regarding acceptance of ownership, operation and maintenance of the water points. The Programme insists that every recipient community forms a water committee to be responsible for the day today running of the water point. The extensionist guides the community to form this committee. The Programme also advises that the water committee should open a bank account and have at least KShs. 2 000/= for maintenance costs before any water point is constructed or upgraded.

Working closely with the extensionist, is the hydrogeologist who confirms the possibility of water by locating the fractures in the hard rocks in the field, thus confirming the aerial and satellite photograph survey.

The selected sites are then presented to the District Development Committees through the Divisional Development Committees of each

division.

The Divisional Development Committee debates the selection and distribution of the selected water points. When it approves the sites, then the next stage of the Programme can start

2.3. WELL CONSTRUCTION

A geophysical survey is now undertaken at each proposed water point using electronic test equipment. This geophysical survey gives:

- The depth of the unweathered bed rock;
- Location of faults, fractures and lithological boundaries;
- Presence and depth of the ground water table and
- Salinity of ground water, after interpretation by computer in the office.

The results of the geophysical survey, particularly those relating to the depth of water and geological conditions determine the method of well construction. If the water is less than 25 metres below the ground and the rocks suitable, then the well is dug by hand. But if the ground water is shallower, around 15 metres below ground level, and if there is sandy or clay soils with little or no hard rocks, then the well is hand drilled. Both hand drilling and digging of the wells is done by private local contractors or youth polytechnics. In many cases their experience is limited in this type of work, so the Programme's Supervisory staff encourage and train them. Water anticipated at a greater depth means the well must be drilled by machine.

The well is then pump tested to confirm its potential yield and water quality. Having ascertained the water yield and quality, a concrete slab is cast over the top of the well. This not only provides a base for the pump and a spillway for excess water, but equally importantly prevents surface water from seeping into the well itself and causing contamination. A pump is then installed on the concrete base. Again, the casting of the slab and the pump installation is done by local contractors, trained by the Programme.

2.4 ROLES OF THE WATER COMMITTEE

After the pump installation, the well becomes available for community use. Although the Programme is responsible for any breakdowns of the pump or failure of the well for the first six months, the water committee assumes general responsibility of the well and its surrounds immediately it becomes functional

The committee which is selected from amongst the water point users consists of:

- Chairman
- Secretary
- Treasurer and
- Between seven and thirteen members

One of the first tasks of the water committee is to appoint a pump attendant who is responsible for keeping the water point clean and tidy and undertaking simple maintenance on the pump and concrete surround.

Next, the committee ensures that a fence of euphobia or similar shrubs, is planted around the well. This is to ensure the security of the water point from cattle or vandalism and also to prevent contamination.

The water committee implements by-laws governing the water point and collects the maintenance fees from the water users. At the end of the six months monitoring period, the water point is formally handed over to the water committee, which then assumes total responsibility for its upkeep and maintenance on behalf of the general user community.

2.5. MAINTENANCE

So far, repairs of major breakdowns of the hand pump have been carried out by the Programme's own maintenance officers. The committee reports the breakdown immediately it occurs to the maintenance officer who gives an estimate of the costs and carries out the repair. The committee is responsible for the payment of the amount to the Programme. Private maintenance mechanics will eventually take over the responsibility of pump repairs from the Programme staff. This will be possible when the number of wells and pumps increases and it becomes a feasible economic proposition.

Currently, the Programme relies on imported hand pumps. However, a local firm based in Homa Bay has now been awarded contracts for the manufacture of pump heads. This arrangement is progressing well and soon all the pump parts and spares will be manufactured and assembled locally. This helps to create more employment in the LBDA region

With the availability of locally produced hand pumps, spare parts and local maintenance mechanics, the entire maintenance system will be privatised.

2.6. OTHER WATER SOURCES

In addition to the provision of new water points, the Programme also concentrates its activities in developing other water sources. A needy community may be well served by natural springs. If on the recommendation of the Inventory Survey team, a spring is of acceptable quality and has sufficient water yield, it is improved for communal use.

Springs are improved by the Programme in 2 ways, either by excavating the area around the spring, enclosing it with a concrete structure, setting a steel pipe in the concrete as a controlled outlet and draining excess water by a spillway to prevent mosquito breeding and the spread of water borne diseases, or, where the yield of the spring is low or its location does not allow the water to flow away by gravity, the spring eye is dug to about 3 metres deep, a concrete superstructure is built over the hole and a hand pump installed. It becomes in effect, a shallow well.

There are some needy communities with limited chances of ground water possibilities and no springs for protection. In such instances, the Programme looks at the possibility of dam construction or improvement, roof catchment or small scale piped water schemes. In the rural areas, rain harvesting by way of roof catchment for communal use is only possible where there are large buildings with corrugated roofs. The run-off water from the roof is collected and stored for future use. Dams store surface water on a different scale for communal use, but are subject to possible contamination by cattle or the community itself.

3. CONSTRUCTION OF VENTILATED IMPROVED PIT LATRINES

The construction of water points is a large part of the Programme's work, but it also constructs ventilated improved pit latrines commonly known as VIP latrines. These are erected as demonstration units at:

- Chief's Camps
- Health Centres
- Schools or
- Market Centres.

They show the rural dwellers the advantages of more effective sanitary methods. They are built using local materials and range from the permanent, with brick walls and iron roof to temporary, with mud walls and grass thatched roofs.

The VIP latrines are built in a cluster of up to five types at any given demonstration centre. This enables the community members to choose which method or type best suits them in terms of affordability.

If a community elects to have a VIP latrine, and is prepared to dig the pit, the Programme supplies free of charge, the concrete slab and the vent pipe. The construction of the pit and the erection of the building are carried out by the community itself together with the subsequent maintenance.

4. WOMEN INVOLVEMENT

While providing facilities for the communities in the form of new or improved water points and latrines, the Programme encourages the water users, mainly the women, to benefit fully from them. Initially, the extensionists persuade the water users to form women's groups around the water points. Like the water committee, a women's group is composed of a:

- Chairman
- Secretary
- Treasurer and
- Any number of ordinary members.

The women's group is primarily a catalyst for:

- Health and Sanitation improvement
- Education of other community members in health and sanitation matters
- Income generation to improve their lifestyle.

Firstly, the women have to advocate for and improve their own:

- Personal and family hygiene
- Nutrition and food supply and
- Home cleanliness.

They should also strive to reduce child mortality rates due to diarrhoeal and other water borne diseases through the use of safe clean water.

Secondly, women being powerful rural socializers, act as educators to the communities, bringing behaviour and attitude changes to their families and friends, especially with the introduction of the new or improved water and sanitation facilities

Finally, the women groups start water related income generating activities. This not only improves the socio-economic conditions of the communities, but also ensures that money is available to members which may be used for maintenance of the water point. Additionally, the income generating activities also include food production for the community.

Examples of income generating activities undertaken by women groups include:

- Livestock
- Bee keeping
- Fish farming
- Kitchen gardening
- Pottery
- Brick making and
- Handicrafts.

5.0. TRAINING AND INSTITUTION BUILDING

Even though women's groups and the water committees may have been formed, the extensionists continue to visit the communities, monitoring and evaluating their progress. This is in addition to motivating them in their continued efforts in the upkeep of the facilities. Their efforts are also directed at attitude and behaviour change with regard to health improvement and proper sanitary practices.

In the field of health education, the extensionists work closely with sanitation foremen who are actually Public Health Technicians. They educate the communities in the prevention of water related diseases. The Programme can thus be seen in part as a training exercise. It trains the communities to adopt better health and sanitation practices and its staff to perform their jobs efficiently and effectively.

5.1. COMMUNITY TRAINING

Community training is directed at:

- Chairmen of water committees and women groups who are trained on leadership skills;
- The Secretaries who are trained in reporting, recording and letter writing skills and

- Treasurers who are trained in simple book-keeping and accounting methods

In addition to training the officials of water committees and women groups, other members and water users are also trained in their roles for the continued sustenance of the facilities.

The second category of community training involve practical skills which are given to:

- Pump attendants on preventive and simple corrective maintenance at the water points;
- Health artisans on the construction of VIP latrines;
- Private pump maintenance mechanics to take-over the repair works from the Programme staff and
- The local manufactures of hand pumps.

5.2. STAFF TRAINING

Staff training is Programme specific and includes:

- On the job training mostly given to field surveyors and construction supervisors;
- Training in communication and instructional skills;
- Project management;
- Financial management;
- Management of women development activities
- Hydrogeology and social development.

Whichever type of training is given to a staff member, whether internal or external, whether acquired locally or abroad, the aim is to make the staff more efficient and effective in delivering Programme services to the communities.

6 CONCLUSION

Considerable progress is being made by the Programme in its endeavour to meet its objectives of uplifting the living standards of the rural communities and making the recipients responsible for the operation and maintenance of the water and sanitation facilities. And its efforts in this direction range from the construction of water to sanitation facilities through community education and training of staff.

So far, the Programme has successfully completed over 300 water points and this is in line with the target of 500 water points by the end of 1988. 50 improved pit latrines have also been constructed at various demonstration centres.

Already there is positive progress with regard to change in the health standards of the recipient communities and many income generating activities are springing up around the water points. But these have to continue to increase and be sustained.

Last but not least, the success of the Programme will be judged not merely on the number of water points and sanitary facilities established, but on the improvement in the quality of life among the recipients of the facilities.

COMMUNITY PARTICIPATION IN WATER SUPPLY AND SANITATION

BY MR. A.M. MAKOKHA, HEAD OPERATION AND MAINTENANCE, MOWD

Community participation in the Water Sector dates as far back as the 1940's when the first protected springs were constructed by villagers in Western Kenya. However, from this period up to the 1960's most water supplies in the rural areas were constructed by individuals or the central government without involving the communities. In mid 1960's UNICEF, through the Ministry of Health implemented over 100 water supplies throughout the country in the rural areas. As MOH did not have, as one of its functions, the operation and maintenance of water supplies, it must have been assumed that the beneficiaries would run the supplies themselves. It would therefore appear than this was the first official indication that water supplies were to be operated and maintained by the consumers.

As it turned out, these supplies were hardly ever operational as the beneficiaries did not even know who the water projects belonged to. In an evaluation of the operational status of these supplies in 1975, UNICEF and MOH came to the conclusion that it was necessary to educate the communities to take over the supplies. At this time the self help movement in the country had taken root. It was therefore considered that a campaign for community participation be launched in a series of seminars in Farmers Training centres where MOH, MCSS and MOWD would mobilise the communities to take over the water supplies.

Most of the schemes actually ended up being rehabilitated. 40% of the schemes have been incorporated in larger MOWD water projects, another 40% are actually functioning now run by the communities while there is no up to date knowledge on 20% of them.

The above would seem to indicate that community participation in the planning, implementation, operation and maintenance of water supplies is indeed a very workable proposition and should play an important role in the efforts of the government to supply water to rural communities. This is why it is heartening to note that a systematic approach to CP is being implemented by the three main projects at this workshop. It should go a long way in providing not only the service but also the complimentary inputs necessary for the full exploitation of the available wholesome water.

It is however, surprising that whereas CP in earlier projects was mainly on piped schemes, the three projects at this workshop are only involving the communities in handpump projects. This is perhaps because it is considered that most rural villagers do not have the know-how to operate and maintain more complicated machinery.

Whereas the above may be true in many developing countries at large, in Kenya, this may only be true in very few isolated cases. Indeed in most parts of the country a handpump point source will soon be considered as an improvement only if there is one for every homestead in which case the issue of CP would have to be considered in a different perspective.

The role of communities in water supply planning, implementation and operation and maintenance has been demonstrated in all sizes of water supplies in all areas of the country. In North-Eastern, there are boreholes equipped with diesel pumpsets which are virtually operated by herdsmen who provide their own diesel and oil. MOWD carries out corrective maintenance when the equipment breaks down in this cases.

As the recurrent bill for operation of water supplies keeps increasing, it is thought that handing over of water supplies to communities might be a viable proposition. In this connection, MOWD in collaboration with SIDA is carrying out pilot studies with several water supplies to determine the role consumers can play in running them. Should this be successful, the intention is to handover water supplies to consumers and establish a system of control and monitoring by the Ministry that would be able to intervene only in cases that may not be within the capabilities of the communities to handle.

In carrying out the above it is hoped that communities will be fully involved in the supply of services to themselves. In particular, it will be possible to reconcile the apparent aim of most projects to provide water for domestic consumption with that of most communities which view domestic water as water, not only for themselves but, also for their livestock and small vegetable gardens.

It is believed that the above pilot project will be a success. This belief is in a sense based on experiences from projects like the ones represented in this workshop. The projects in this workshop are different in their approach from earlier self-help project in two ways. First, the approach to CP is systematic and multi-disciplinary. In this respect MOWD pilot studies are similar. The second difference however is not common to both projects. The technology applied in the projects at this workshop is mainly the handpump with the concept of village level operation and maintenance stressed. This in itself represents a different variable where both the approach to CP and the technology are new to the community as indeed the handpump is. The fact that community involvement in the projects at this workshop is reported to be working well should therefore indicate that it can work even more easily when there is only one variable - approach to CP.

Closely related to the above is the involvement of women's groups and other organised self-help groups in income generating activities. A big number of women's groups are already involved in the operation of grinding mills and in certain cases public transport.

Most observers familiar with the level of organisation and management involved in these activities are of the opinion that any group capable of the above is more than qualified to operate and maintain most water supplies.

It is with the intention of exploiting this existing management capacity that the projects at this workshop are taking CP seriously. This being so it would appear logical to involve the communities in the different project areas in the planning implementation and operation and maintenance of projects with different levels of technology. If participants in this workshop could go away convinced of the capabilities of the communities they are working in, and of the need to test out the viability of handing over several types of piped scheme (pumped or gravity), it will go a long way in ensuring the sustainability and upgradability of whatever facilities are being provided to the consumers.

I will also be an important complimentary input to the pilot projects that MOWD is engaged in as the experiences in different approaches in different areas would be invaluable to the determination of the types of consumer management organisation that could be set-up.

WORKSHOP ON MANAGEMENT OF COMMUNITY PARTICIPATION
IN RURAL WATER, SUPPLY AND SANITATION PROJECTS
23RD - 26TH MAY, 1988 SAROVA LION HILL NAKURU

COMMUNITY INVOLVEMENT WITH SPECIFIC REFERENCE TO KENYA-FINLAND RURAL WATER DEVELOPMENT PROJECT

Introduction:

I am going to share with you the experience gained through working with Rural Communities in Western Kenya. The Kenya Finland Rural Water Development Project is based on the Agreement on the Technical Co-operation between the Governments of Kenya and Finland, signed in 1975.

The Project covers 3,654 km^2 with an estimated population of one million people. The Project area covers parts of Kakamega, Busia and Bungoma Districts in Western Province, and parts of Siaya District in Nyanza Province.

The area Boarders Lake Victoria and Uganda in the West, Mt. Elgon in the North and Nandi escarpment in the East. The Project area is totally rural, with 95% of the population earning their living from Agriculture. The land is privately owned, with plots being at average 2 hectres.

The Concept of Community Participation

The main communities served by this water project are:

Luhias, Luos, Tesos and Saboats. The project working hand in hand with the communities provide indivial water points to the communities these are Shallow Wells, Bore-holes and Protected Springs. In addition the Project makes mini-piped schemes for rural centres.

The main objectives are:

- To provide clean water closer to communities within the project area.
- Through Health Education, to ensure that the safe clean water is used for both human and livestock consumption.
- To create village level maintenance system.

- **To effectively use the water points for other economic activities so as to derive maximum benefits.**
- **To create self reliance among the beneficiaries**

How Do Communities Get Involved ?

- Siting

This is the actual selection and pinpointing of area/plot or piece of land for the purpose of establishing a potable water point.

Acting on the requests from the communities, the project sends a letter to the Chief requesting him to organise for a locational siting meeting, thus inviting leaders and wananchi to discuss the following:

- Quota for the location
- Sub-locational siting programmes
- Target for those who should attend - these include Women Leaders, Village elders.

The Second Step is:

- To send Contact letters to Assistant Chiefs requesting them to arrange for Sub-Locational Siting Meetings in their respective Sub-locations on dates agreed upon during the Locational Siting Meeting.

- The Third Step

The meeting is organized at the Sub-locational level, chaired by the Assistant Chief and attended by all the affected Wananchi, with even representation from all areas so that each community is given a chance to participate in the site selection.

The following is discussed:

- Criteria For Water Point Allocation

1. The Water point should be within the Project Area
2. The site intended for the allocation of the water point should be a top priority area i.e. School, Health Centre, Church, Market or Village Centre.
3. The site of the well should be chosen by the community
4. The water point should serve at least 200 people or more.
5. The community must be ready to raise all the funds for maintenance and accept full responsibility for its use.
6. The community to be served by the well should elect a Committee from amongst its Consumers of which half of the members should be preferably women.
7. Legal documents concerning land easement should be signed by the land owners before actual construction commences.
8. The community should be ready to:
   (a) Dig the well down the water level within a period of 2 weeks, in case of a Shallow Well.
   (b) Hard core is brought by the community on Harambee basis during Spring Construction.
   (c) Access routes to be cleared and made passable for both Seismic and Drilling teams.
9. Further water points are allocated to the community taking into consideration the following:
   (a) Co-operation of the community in maintaining the existing wells

On reaching a compromise, the community chooses the sites accordingly which is followed by the confirmation of the chosen sites.

Fourth Step

This is the stage where sites chosen by the communities are confirmed for their suitability by the technical staff. For any reason, a site is changed, the communities which participate in the earlier site is called and explained why the site had to be changed and thereafter the well committees are requested to prepare their communities towards construction.

Fifty Step

This is the construction stage and it involves different water points as follows:

Spring Protection

The role of the community during Spring Protection includes:

(a) Collection of 1 - 2 lorries of stones (Hardcore)

(b) Clearing of the site

(c) Provision of Labour

(d) General Development of the site e.g. Wash Basins, Bathing Hides, Cattle Trough, Fencing etc.

(e) Formation of the Committee and Collection of Funds for Maintenance.

Shallow Well Construction

The role of the community is to choose a good site, followed by:

(a) Digging of the water pit to the water level ranging from 3m to 10m.

(b) Clear the site and making of an access route incase of difficulties.

(c) Assist with labour force where necessary.

(d) Plan for other developments around the water point such as:

Wash Basin
Bathing Hide
Cattle Trough
Irrigation

(e) Formation of Water Committee so as to prepare for future maintenance of the water point.

Bore Hole Construction

The Community's role is to choose a site which is convinient for them Although Bore-Hole Construction involves the use of machines, the community plays the following role:

(a) Digging of a mud hole incase of mud drilling method

(b) Clearing the road for the Heavy lorries

(c) Providing the labour when called upon.

(d) Development around the water point

(e) Committee formation and funds collection in preparation for maintenance.

Procedure For Land Easement

As you know, the land issues are very sensitive, and to ensure that the water points constructed by the project remain the property of the community, the land owners go through a land legalisation process, legalising the small plots on which the water points have been constructed. The Land Easement process takes this form.

- During the Siting, the Communities identify the land owner, and the Project staff follow it up by recording his name, and Title Deed number. This is followed by the confirmation of the details provided by the land owner by the Land Office, which issues the Land Form LR 12 and the correct information is typed out. This is followed by the signatures of the following, Land Owner, Water Bailiff of the area and the District Officer.

  The form is then approved by the Land Registrar, who allocates it a number. This has an advantage of not allowing the land owners to change their minds or to threaten the communities with blocking the access to the water source.

Community Training

There are 3 types :

The project together with members of the community organize Seminars for the following target groups:

1. Leaders
2. Water Care takers
3. Water Committee Members

The purpose of Community Training is to enhance Community Participation i

- Proper utilization of water
- Device a method of Funds Collection and Control
- Detect faults on the water Pumps
- Create a sense of Onwership within the local people.

During the Community Seminars, the participants are exposed to issues to do with water and Health. The following methods of training are put into use:

- Group Discussions
- Study tours
- Film Shows
- Demonstrations etc.

The Impact of the Health Project

Complementing the efforts of the water project is the Kenya Finland Primary Health Care Project which is situated within the same Project Area, and works in close co-operation with the water project. The main objective of this project is to improve the Health of the people of Western Province by developing primary Health services and to educate the communities on the importance of good health. In addition Health Centres are being built with facilities for Primary Health Care, Immunization and Maternal Care. As a result, several Health Centres are being renovated and developed further.

One of the most important tasks of the Health project is the Sanitation aspects, which includes the construction of demonstration latrines so as to educate the local communities on the use of latrines. The co-operation is felt at the village level where the Water Committee deals with both Water and Sanitation issues.

Annex 8.

Lake Basin Development Authority

COMMUNITY PARTICIPATION IN

LBDA - RDWSSP

BY

OKINDA-OGWANDE, ALFRED

Rural Domestic Water Supply and Sanitation Programme

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COMMUNITY PARTICIPATION IN LAKE BASIN RURAL DOMESTIC WATER AN SANITATION PROGRAMME

1.0 INTRODUCTION

Lake Basin Development Authority (LBDA) is an Organization established by an Act of Parliament to plan and co ordinate the implementation of development projects in th Kenya part of Lake Victoria catchment areas. It has a Board of Directors and a Managing Director as its Chie Executive

The Rural Domestic Water Supply and Sanitation Programme (RDWSSP), is only one of the Projects being implemented by Lake Basin Development Authority (LBDA). The Prima goal of the RDWSSP is to:-

"Provide safe water, easily accessible in quantitie adequate for drinking, food preparation, personal hygie and in some cases (small) livestock, at a cost in keeping with the economic level of the Communities and throug facilities which can easily be operated and maintained at the Local level"

In the LBDA area, the provision of safe and clean wate supplies is a pre-requisite to the controlling and th prevention of water related diseases as well as th general health conditions of the rural Communities.

The installation of Community sustained protected wat supplies is considered to be the most effective measure that could help reduce the menace of water relat d diseases in the region. The provision of improved wate points means the quality of water is up-graded, the reliability is assured, the quantity of water available is increased and its distance from the consumer reduced.

The major objectives of the RDWSSP are:-

(i) The exploitation of ground water in order to crea e a network of impr d domestic water supplies by means of wells/bore s fitted with handpumps with the possible additional benefits of productive use

(ii) The establishment of ownership of the wells geared to the multitude of existing local organizations with a view to secure proper management operati and maintenance of the wells.

(iii) To provide training with a view to strengthen LBDA's ability and capacity in planning. Survey and design and promote active involvement of the local private sector with regard to construction. procurement and supply;

(iv) To elicit the co-operation of the various relevant organizations in the region for extension input such as Health, Social Services, and Community.

In order to realize the above objectives, the RDWSSP created two Departments: Technical and Community Development. The Technical Department initiates technical surveys leading to the provision of safe and clean water to needy Communities. The Community Development Department on the other hand, steers the mobilization of the beneficiaries towards appreciation, responsible ownership, operation and maintenance of the facilities provided by the Programme.

The establishment of Community Development Component within the RDWSSP emanated from the realization that Community participation is essential for the success of the Programme. Here, the two Departments work together in harmony and compliment each other fully. The Community Development Department is divided into four (4) Components: Socio-economic Survey, Community Mobilization, Women Development and Public Health. All the four Components are involved in an integrated Community mobilization Programme aimed at:-

(i) Creating peoples awareness of the RDWSSP and their role in it;

(ii) Motivating the participation of the beneficiaries (both men and Women), in all phases of the Programme including Surveying, Siting, Construction, operation and maintenance of the improved water points;

(iii) Motivating the contribution by the beneficiaries in varied forms, including land, labour, finance, materials and participation in the organizational aspects of the Projects;

(iv) Encouraging Women's income generating activities around water points;

(v) Improvement of the health conditions of the beneficiaries through intensive education on safe and clean water and ownership and use of latrines.

The product of successful Community Development is a stable self-reliant Community with an assured sense of social and economic responsibility to the facilities provided to them.

1.1 The Importance of Community Participation in Rural Water Supplies

In general terms, Community participation implies development to be achieved with and by the people, not just for the people. Thus in relation to rural water supply systems, Community participation can be defined as active and meaningful involvement of the target Communities in the planning, construction, management, operation and maintenance of such systems. "Community participation embodies the idea of self-help which has been used to characterize both individual and collective efforts." (Okinda-Ogwande, 1986 : 17).

Participation results in self-actualization. It makes the participants develop a sense of responsibility. Participation is a value in the development process as well as a condition for development to take place. It has to be conscious so that the participant is aware of the benefits of participation. He/She must have the means to participate autonomously rather than episodic. It has to be instrumental and social.

Participatory rural development has received a great deal of attention in recent years in development literature, national plans, political platforms, and in lending programmes of most donors. This is due to the recognition of the fact that no rural development Programme can effectively succeed without the full participation of the intended beneficiaries. In rural water supply systems, Community anticipation is an indispensable Social component. Genuine and unfailing involvement of the intended beneficiaries right from the initial stages ensures the success of Community water supply system.

Enthusiastic Community participation can play a significant role in developing and increasing Community awareness, a sense of responsibility, and pride of ownership toward the village water supply system, resulting in success and a high level of performance of the system. This should precipitate the emergence of initiative among the people and a desire to continue harvesting the fruits of participation.

Migot-Adhola (1986.146), emphasizes the need to involve the Community not only in terms of the contributions of the members' time, money and labour in building a facility, but also involvement of the Community's in decision making, setting of priorities, plan implementation and devising a system of maintenance

There is frequent failure by recipient Communities of water supply projects to take responsibility for pump. Statistics indicate that 35 to 50 per cent of pump installations in developing countries are in-operable three to five years after they are put in place (USAID. 1982).

The objectives of promoting Community participation in the RDWSSP are:

(i) to utilize effectively the resources of the users by encouraging the Community to invest cash and labour in the operation and maintenance of water points.

(ii) to ensure the success of Community water supply systems and reduce the chances of systems failing as a result of misuse, vandalism, or a lack of maintenance;

(iii) to increase the usage or consumption rate of improved water by the Community;

(iv) to eliminate the paternalistic approach to development and encourage Communities to depend upon and pool together, in the spirit of Harambee, their potential manpower and financial resources in order to be self-reliant instead of becoming passive Government aid recipients;

(v) to promote better Sanitary practices, water use and health education;

(vi) to develop and increase Community awareness, a sense of responsibility, and pride of ownership;

(vii) to promote and encourage Community run and initiated self-help water supply schemes to enable the Country to fully or partially meet the United Nations Water Supply and Sanitation Decade objectives.

The overall responsibility for the fulfillment of the above objectives lies on the Community development department of the RDWSSP. The Community Development component has well defined strategies for precipitating Community participation in the RDWSSP.

2. COMMUNITY DEVELOPMENT STRATEGIES

2.1 The role of Community Development

The need for Community development in the RDWSSP emanates from the realization that the success of any implementation Programme will completely depend on active popular participation of the people especially in the field of operation and maintenance.

The term "Community development" has come into international usage to connote the processes by which the efforts of the people themselves are united with those of Governmental Authorities to improve the economic, social and cultural conditions of countries, to integrate these Communities into the life of the nation, and to enable them contribute fully to National progress" (Clinard Marschall, B. 1968:117). This complex process is made up of two essential elements:-

(i) the participation by the people themselves in efforts to improve their conditions of life with as much reliance as possible on their own initiative; and

(ii) the provision of technical and other services in ways which encourage initiative, self-help and mutual reciprocity.

Although the idea of local initiative and self-help are deeply rooted in Kenya as demonstrated by the successes of the Harambee movement in Kenya, local initiative and self-help in the provision of domestic water supply and sanitary facilities is relatively new. In the Past rural water development Programmes did not involve the beneficiaries in the maintenance process and hence there was limited degree of success.

The poverty, hunger, disease and other problems of rural Communities have not stimulated self-improvement and the acceptance and adoption of technical assistance from outside, unless such assistance involve the target groups right from inception. It is for this reason that Community development Programmes should play an important role in raising Community spirit and enthusiasm in problem solving

Community development Programmes should therefore involve co-operative endeavors between Government and Villagers. In the RDWSSP, this co-operation is motivated through financial and technical provision of safe and clean water. This then set in motion Community development as a process and as a method of achieving the stated goal and objective of the RDWSSP. As a process therefore, the Community development programme initiates Community awareness as to the benefits of safe and clean potable water, and better sanitation practices

The burden of the ownership and sustenance of the water points and sanitary facilities rests with the beneficiary Communities themselves. It is for this reason that the community development efforts focus on social changes that would make the beneficiaries assume the responsibility of maintaining the facilities provided by the Programme. Through community development efforts, the target groups move gradually from a state of what is to what is not, from the existential to the potential, from a state of minimum to one of maximum co-operation, from participation of a few to participation of many and from a condition of dependence to one of self-reliance.

Community development is however a slow process which requires well defined and flexible strategies. Although Rural Communities are believed to be homogeneous to a large extent, they are heterogeneous in terms of Kinship networks, Socio-economic status and access to key public institutions. This is why the Programme emphasizes a complete understanding of the cultural and Socio-economic dynamics of the population before any Community mobilization commences.

In order to keep in line with the Government's policy of Districts' focus for Rural Development, the Community Development Programmes liaises very closely with the Local Administration, and the District Development Committees through the Sub-District Development Committees organized at the Divisional level. To ensure co-ordination and continuity of the Community Development process, the Staff of the Ministries of Water Development, Culture and Social Services, and health Stationed at the Divisional and District levels form part of the Community Mobilization Team.

The Community Development Department has a two-prolonged approach consisting of "Community Mobilization for appreciation, responsibility and up-keep of the constructed water supply and mobilization for improved Sanitary protocol in the recipient Communities." The Community Mobilization process is done in several stages. Each stage or process will be described in detail.

2.2. SOCIO-ECONOMIC SURVEY

1. The search for Needy Communities

The first stage in the process of Community development is an extensive socio-economic survey of the Programme area to satisfy four basic objectives:

- To identify the most needy Communities which would first benefit from the Rural Domestic Water Supply and Sanitation Programme;
- To assist the Programme in Meeting selection criteria for the provision or improvement of water points;
- To create a Socio-economic data-base as a prerequisite for effective regional planning;
- To facilitate Monitoring and Evaluation. The Socio-economic Survey precedes all the other programme activities. Through this survey, the Programme is able to gather information on six points of interest:

1. Needs of the Community for Water Supply improvement in relation to existing Water Supply Sources and Distances to those sources;

2. Community desire for such improvement as expressed in their willingness to pay for them through cash, labour or material contributions;

3. Preference for private or Communal facilities, i e. do the Communal preference represent socializing forums or do they lead to overcrowding and quarreling;

4. Perception of health, sickness and nuisance as they are affected by water supply practices;

5 Health status of the Community Sanitation practices and attitudes beliefs relating to the use of latrines;

6 The existence of effective functioning Community Organizations - Women groups self-help groups etc.;

The above issues provide the basis for determining which villages will be prioritized

The findings indicate the priority scores of villages, sub-locations and locations and help determine which ones will qualify for the allocation of water points.

(II) THE SITING OF THE IMPROVED POINTS

Once the area with highest need has been determined, the second process is set in to motion, the actual siting of the water points. Here, the Technical Survey establishes whether the sites, which have been selected by the Community itself together with the Community mobilization team, are Geo-physically feasible localities.

In order to reach an agreement on the preferred Community collection points, the sub-locational development Committee members, under the chairmanship of the Assistant Chief, decides on the centrally situated areas within the needy villages. These areas then become the focus of the technical survey.

The involvement of women in the siting exercise is given prominence during the allocation exercise. The already existing active women groups are considered for sites as a means of enhancing their activities.

After sites have been selected, a complete list of sites for a whole Division is drawn up and presented to the DDC through the Divisional Development Committee for approval for approval. On this occasion, the Programme Team explains to the Sub-DDC members, the policy and objectives of the Programme. The role of the Local Administration in the Community mobilization process is emphasized.

It is after the approval of selected sites by the Sub-DDC that Community mobilization campaigns start, focusing on Community Organisation tailored to fit the Programme's goal.

2.3 COMMUNITY MOBILIZATION

The Community Mobilization process which is set in motion after the presentation of sites to Sub-DDC, is the most crucial stage in the Community development process. It involves the preparation of the beneficiaries to accept the responsibilities that goes with the ownership of water points. This process is done in several steps

1). Community Extension service

The Community Extension Service involves an intensive Community awareness and information campaign. The main actors in this stage are Water and Sanitation Extensionists, and Sanitation Foremen who visit each Community promoting the concepts of better health and Sanitation methods. It is a systematic campaign of health awareness using the improved water points as the entry point. The major roles include:

- Settlement of landownership issue;
- Mobilization of water users to form and register water committees, and select pump attendants;
- Mobilization of Water Committees to decide on the mode of maintenance fee subscription and raising and banking of at least Kenya Shillings Two thousand (K.Shs.2.000/=) for Maintenance purposes;
- Liaison between the Programme and the Communities on the one hand and between the Programme and the Field Staff of the Ministry of Culture and Social Development Assistants of the Ministry and relevant non-governmental organisations on the other hand

(II) Group Action Education

The second stage in the Community Mobilization process is Group Education. The aim of group education is to give education to as many Community members as possible The focus is on men and women whose areas have been earmarked for water points. During this exercise, the Communities are educated on the following key topics:

- the aims, objectives and policies of RDWSSP;
- the role of the beneficiaries in the whole process of Rural Water Supply System;
- the role of women in use operation and maintenance of the water facilities.

- Basic Primary Health care information;

- the need for ownership and use of pit latrines.

This group action education focuses not only on the Communities, but also the Government and Non-Governmental Organizations Staff.

(III). Community Training

Community training is the third stage of Community Mobilization process geared towards the beneficiaries of water and sanitation facilities. Community training is given to six (6) categories of people:-

a). The entire user Communities are trained on the usage and benefits accruing from the water and sanitation facilities;

b). Specialized training for the water committee officials on preventive maintenance, leadership, and water point management;

c). Training for women groups around water points for greater involvement in the management and alternative uses of water;

d). Specialized training for Pump Attendants on the proper operation, preventive and simple curative maintenance of the pump;

e). Community artisans are trained on VIPs latrines' principals and construction techniques;

f). Finally, Community leaders and line Ministries are trained to ensure continuity and long term sustenance of the water and Sanitation facilities when the Programme phases out of the operational areas.

(IV). The Handing Over of completed water points and sanitary facilities to the beneficiaries

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The community Mobilization efforts of the RDWSSP culminate in the handing over of water points to the beneficiaries for operation and maintenance through the water Committees. The Sanitary facilities on the other hand are handed over to respective Institutions. The supervisory responsibility for the successful maintenance of the water points and sanitary facilities is handed over to the line Ministries of Water Development, Culture and Social Services and Health.

Handing over of waterpoints takes place six months after the Pump installation. During the, six months grace period. the Programme monitors the function of the handpump. water yield and carries out any repairs or deepening free of charge. On the other hand. the Community has a chance to learn and understand the entire arrangement for the maintenance system.

Before water points are handed over. the Water Committees' will have been given a grace period in which to understand the maintenance system. This grace period begins from the time the Pump is installed and the water declared safe for use.

The handing over ceremony is done at locational level and brings together the Programme Staff, the Committee Officials from different sites. Government representatives from the line Ministries. and officials of Non-Governmental Organisation. dealing with water. and the Local Administration. The sites are handed over to the respective water Committee Chairman in the form of a Maintenance Guide. which also contains the certificate of ownership. Copies of certificates of ownership are kept with the Offices of the District Commissioner. the District Officer of the Area and the District Water Engineer. As soon as all the sites in a Division are handed over to the beneficiaries. the Extensionist hitherto working in the area is phased out to a new Division. Meanwhile. the Programme Monitors the performance of the water committees in all the aspects of the Programme.

2.4 WOMEN DEVELOPMENT COMPONENT

The Women Component was created in the RDWSSP to focus primarily on enhancing women's participation in Water and Sanitation. The tasks of the component can be summarized as follows:

- To ensure that women play a prominent role in water Committees:
- To mobilize women for appreciation of improved water supply points:
- Increase the Women's perception of ways in which good quality water can be used to improve local situations:
- Motivate Women's involvement in income generating activities around water points:
- Provide training for selected women for leadership in local water development activities

- Activate the existing network of Women's organizations in the programme area and mobilize them behind the drive for increase of water collection points. the upkeep and maintenance of these points.

Women mobilization efforts therefore evolve around four essential roles of women in water and Sanitation. Namely: Acceptors. Users. Manger and Change Agents.

As the main Acceptors of the new improved water points. women are involved in decisions related to allocation and distribution of water points during the siting exercise. As users and promoters of changes in behaviour women are trained as trainers. and also educated on alternative uses of water. better waste disposal practices. and hygienic water storage methods. As traditional managers of water and waste in their households and in the Community. Women are mobilized to play a leading role in water Committees. They are also the focus of health education campaigns to help reduce environmental health risks. Preventative maintenance of the water points also form part of the training of women as managers. and change agents. Women group leaders are trained as trainers to inculcate awareness to the rest of the Community and also act as a reference group.

To ensure that their is co-ordination of field activities. the Women Component liaises very strongly with the Ministry of Culture and Social Services and Non-Governmental Organizations. on matters concerning Women Groups. All the Agencies concerned with the promotion of women in the development process are therefore involved in Women mobilization processes.

2.5 PUBLIC HEALTH AND SANITATION

The major task of the Public Health and Sanitation Component is to ensure that lucid health educational Programmes are formulated and made available to Field Educators and Public Health Promoters in all Health Institutions in the Programme's operational areas. At the same time. the Component sensitizes people on improvement of Sanitation.

Health Education campaigns are conducted at Public barazas. Group education forums. in Schools. at water points. and through the radio in various local languages. The Health Education Programme. is meant to support Community mobilization efforts and motivate general awareness of the people on how to prevent common diseases caused by inhygienic and poor sanitary practices. The radio programme messages are supposed to bring about the desired behavioral changes on the micro level.

The Sanitation aspect focuses primarily on the improvement of Sanitary facilities of the target groups. Emphasis is thus given to ventilated improved pit latrines. for human waste disposal. The Communities are mobilized to realize the need for usage of latrines. and for improvement of family and environmental health.

Demonstration VIP latrines are therefore constructed in key Public Institutions where they can be viewed by large numbers of the beneficiaries.

In order to support and supplement individual water point members who have seen the need to construct VIPs. and have asked for technical advice from the Sanitation Foremen, slab and vent pipes are distributed free of charge to individuals through the water Committee. The individuals. then become the reference group for the rest of the Community members. The Vent pipes and slabs are also meant to act as incentives to individuals to Construct VIP latrines. This is why they are given freely to those who have endeavored to dig pits.

3.0. COMMUNITY PARTICIPATION RESULTING FROM COMMUNITY MOBILIZATION EFFORTS

Incorporating the general methodological elements which make up the basics of Community development strategies. the RDWSSP has achieved a notable degree of Community participation. This process was intended to prepare Communities for the eventual task of the sustenance of water points and motivation of sustained better sanitation practices. It was also intended to trigger off autonomous self-help practices in water and sanitation. Important strides have been made in demonstrating that the combination of Community resources and public support can produce favourable results.

The target Communities have generally responded positively to Community mobilization efforts by accepting and performing their roles with enthusiasm. However, it must be pointed out that achieving full co-operation and participation of the Communities takes a great deal of time and effort. Initially, some communities were so suspicious that they could not believe the coming of water until they saw positive progress. The question of cultural lag, drastically slowed down Community Mobilization work. However, as the programme expanded to other areas, the Communities became more appreciative, receptive and their adaptive capacity to new ideas has improved tremendously. It now takes less time to prepare Communities to accept their responsibilities for the water point than it took three years ago. The following are the phases in the RDWSSP:

3.1. Planning Stage

During the Socio-economic, and water Inventory Surveys, the Communities assisted tremendously by volunteering information that was required for the identification of needy Communities. Had it not been for the co-operation of the Communities and the local administration, it would not have been possible for the Survey Teams to determine the administrative boundaries, the names of existing water sources, Schools, markets, Villages etc.

For the Socio-economic Survey, the sub-locational development committees were very instrumental in helping to allocate sites. During the siting exercise, prior to the start of construction, the Community Development Department consulted with local authorities and Community representatives on the sites for the new water points Effective Community participation in the planning has yielded fruitful results and reduced the chances of Community conflicts or clan rivalries.

3.2 Construction Stage

Community participation in the Construction process involves, providing accommodation to diggers, creating access roads from the main or minor road, drilling or digging, and providing security for construction tools and equipment.

For spring protection, the Communities have willingly participated in the clearance of site, excavation of the drainage ditch, collection from the vicinity and bringing to site the stones for back filling the springs.

During pump installation, the Pump Attendant assists in the exercise in order to become familiar with the various components of the pump.

3.3. Water Point Management

The ability of the Communities to participate in the maintenance of the water points, and sustain better Sanitation practices is dependent upon their means or Socio-economic status. Self-help scholars emphasize the virtues of size as an important human resource that can be exploited by the rural people Communal water points can therefore easily be maintained if the beneficiaries pool together their resources The willingness to participate, on the other hand, is influenced by the level of Community cohesion and the extent to which the beneficiaries can identify with the Project.

The Community mobilization process has to a large extent succeeded in encouraging self-help and the development of the Communities' psychological incentive to maintain the facilities provided by RDWSSP. So far, Water Committees, have not been difficult to organize. Nearly, 95 percent of Communities which have been mobilized have water Committees. All are handed over water points, and have bank accounts The Community Mobilization campaigns have generally succeeded in raising people's consciousness on the use of safe and clean water as a means of health improvement.

3.4. Alternative Water Use

Community participation in alternative water use, outside domestic use has been witnessed in, cattle watering, laundry, and income generating activities. Women can be singled out as the major actors in alternative water use. They form the focus of water points and improvement of sanitation, primarily because they are the major users of water and the manager of home sanitation. The RDWSSP has attracted Women's participation in the following areas:-

- Water Committees;
- Income generating activities around water points;
- reactivation of existing Women's groups through provision of water supply.

There is equal participation of Women and men in water Committees. Women are thus fully represented in decisions governing the use of water points.

Mobilization of women who participate in income generating activities around water points has yielded encouraging results. High yielding water points with quality water, have attracted Women's activities in the growing of vegetables and fruits. A number of women groups have sprung up around water points engaged in market gardening activities. Existing Women's groups which have been reactivated by the provision of water, have also intensified their activities around water points which include:-
Brick making, market gardening, pottery, farming, and tree nurseries.

3.5. Maintenance of Water Points

Operation and maintenance of the Rural Water System is a crucial part of the RDWSSP. The beneficiary Communities are generally willing to contribute and associate with the system. To date, the Programme has not experienced any serious cases of damage or vandalism. The Water Committees participate actively in two kinds of maintenance. Site Management/Preventive maintenance and curative maintenance.

(i) Site Management/Preventive maintenance

The Water Committees, in agreement with other users reach a consensus on use and control of use by various user categories such as women, children, cattle watering etc.

Table 3.5.1

PUMP BREAKDOWN RECORDS 1987 FOR NDHIWA AND MBITA DIVISIONS

Types of Breakdown
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1 - Pond Out at thread end
2 - PVC riser out at thread end
3 - Piston sedal worn out
5 - Bearing worn out
6 - Pump handle broken
7 - Cylinder blocked
10 - Risers disconnected
11 - Water Finishing

Site Reference Number	Name of Site	Method of Construction	W.L (M)	Intake (M)	Date of Installation	Date of Breakdown	Date of Repair	Date of Invoice	Cost	Paid (Yes/No)	Type of Breakdown
Nd-004	Ndhiwa Mkt	Dug	11.00	14.00	05/Oct/84	05/Apr/87	15/Apr/87	15/Apr/87	315.00	Y	1&2
Nd-012	Mirogi Boys'Sch	Machine Drilled	18.00	31.00	02/Apr/85	25/Jan/87	-	-		-	2
						18/Jun/87	07/Jul/87	07/Jul/87	366.00	Y	1
Nd-092	Punga Pri.Sch	Dug	13.30	14.00	21/Jan/87	30/Jan/87	-	-		-	1
						10/Mar/87	23/Mar/87	-		-	4
						15/Jul/87	21/Jul/87	21/Jul/87	210.00	Y	2
Nd-082	Minya Pri.Sch.	Machine drilled	19.00	43.00	07/Mar/86	17/Jun/87	27/Jun/87	27/Jun/87	170.00	Y	2
						10/Sep/87	20/Sep/87	20/Sep/87	260.00	Y	1
						19/Oct/87	30/Oct/87	30/Oct/87	320.00	N	2
Nd-075c	Okero	"	11.00	35.00	26/May/86	15/Feb/87	18/Feb/87	-	-	-	1
Nd-074	Wangapot	Dug	16.00	17.50		03/Sep/87	08/Sep/87	08/Sep/87	208.00	Y	2
Nd-083b	Aota Ouredho	Machine drilled	4.50	15.00	07/Mar/86	14/Jul/87	18/Jul/87	18/Jul/87	172.00	Y	2
Nd-001	Obera Sec. Sch.	Dug	18.00	20.20	28/Mar/86	02/Aug/87	04/Sep/87	04/Sep/87	350.00	N	5
Nd-056b	Rapelhi	Machine drilled	21.00	60.00	02/Apr/85	15/Jul/87	16/Sep/87	16/Sep/87	600.00	Y	5
						11/Nov/87	14/Nov/87	11/Nov/87	180.00	Y	6
Nd-105	Kamenya	Dug	11.90	15.75	19/Jun/86	03/Jan/87	17/Mar/87	-		-	2
						13/Sep/87	14/Sep/87	14/Sep/87	219.00	N	2
Nd-007	Osani Mkt	Machine drilled	11.90	34.00	09/Mar/87	-	11/Oct/87	11/Oct/87	600.00	N	5
Nd-s.1	Pala Spring	ST	1.20	3.75	31/Mar/85	29/Sep/87	13/Oct/87	13/Sep/87	213.00	N	2
Nd-w.2	Ndhiwa dis	Dug	11.00	16.50	02/Apr/85	17/Feb/87	-	-		-	-
Nd-w.45	Obera Community	Dug	6.70	12.50	13/Mar/84	28/Mar/87	11/May/87	-	-	-	5
Nd-107	Malala	Dug	12.30	15.65	15/May/86	08/Nov/87	24/Nov/87	24/Nov/87	203.00	Y	2
Nd-073b	Ngiya	Machine drilled	6.00	35.00	13/Nov/86	07/Nov/87	09/Dec/87	08/Dec/87	260.00	N	2
Nd-086b	Ngala	"	18.00	25.00	03/Jul/86	06/Mar/87	11/Mar/87	-	-		
Nd-048B	Opore	"	25.70	76.00	10/Sep/87	-		-	-		
Mb-006	Makondo	"	34.00	40.00	25/Oct/84	15/Jan/87	20/Jan/87	-	-	-	2
						09/Mar/87	17/Mar/87	-	-	-	1
						15/Oct/87	24/Oct/87	24/Oct/87	400.00	N	5
Mb-038	Magunga	"	52.40	64.00	14/Dec/86	10/Jul/87	22/Jul/87	-	-	-	-
Mb-045	Wasoli	"	23.00	53.00	05/Dec/86	16/Nov/87	21/Nov/87	21/Nov/87	263.00	N	2
Mb-047	Misare School	"	39.50	88.00	20/Nov/86	06/Mar/87	18/Mar/87	-	-	-	1
Mb-049	Onyuera	"	28.30	85.00	18/Nov/86	10/Apr/87	14/Apr/87	-	-	-	1
						12/Dec/87	16/Dec/87	16/Dec/87	310.00	N	2
Mb-050	Mbita Mkt	"	34.50	55.00	24/Aug/86	15/Jan/87	19/Jan/87	19/Jan/87			9
						13/Mar/87	23/Mar/87	23/Mar/87			
						09/Jan/87	15/Jun/87	-	-	-	
						04/Oct/87	14/Oct/87	15/Oct/87	268.00	Y	2
						27/Oct/87	30/Oct/87	14/Nov/87	310.00	Y	1
						10/Dec/87	16/Dec/87	05/Jan/88	255.00	Y	2

PUMP BREAKDOWN RECORDS 1987 FOR NDHIWA AND MBITA DIVISIONS (CONT.)

Mb-060	Gamba Village	Dug	21.20	22.00	20/Jan/87	10/Dec/87	16/Dec/87	05/Jan/88	255.00	Y	2
Mb-063	Ochieng' Odiere	"	6.35	16.00	25/Aug/86	01/Sep/87	15/Oct/87	15/Sep/87	263.00	N	2
Mb-065	Nyenga	Machine drilled	42.00	52.00	13/Feb/87	30/Sep/87	15/Apr/87	-	-	-	8
Mb-067	Wadianga	"	36.90	64.00	21/Nov/86	-	11/Sep/87	29/Sep/87	327.00	Y	8
Mb-078	Bishop Mugendi	"	24.65	55.00	24/Nov/86	-	18/Apr/87	-	-	-	?
Mb-078c	Roo Valley	"	36.00	55.00	24/Nov/86	30/Jan/87	02/Feb/87	-	-	-	1
Mb-079	Yongo	"	11.90	36.00	18/Nov/86	27/Oct/87	06/Nov/87	09/Nov/87	255.00	N	2
Mb-081	Kachola	"	48.00	67.00	07/Aug/86	06/Sep/87	11/Sep/87	11/Oct/87	-	-	8
						12/Feb/87	17/Feb/87	17/Feb/87	-	-	11
Mb-s-081	Soko Obllo	Dug	5.00	9.05	01/Jul/87	21/Oct/87	26/Nov/87	27/Nov/87	300.00	N	4
Mb-084	Ponge	Machine drilled	9.05	20.00	23/Aug/86	24/Oct/87	30/Oct/87	-	-	-	5
Mb-085	Ogongo C/Camp	"	10.20	35.00	18/Jul/86	14/Aug/87	24/Oct/87	26/Oct/87	400.00	N	5
						01/Apr/87	15/Apr/87	-	-	-	1&2
Mb-086	Sigana	"			23/Aug/86	31/Oct/87	10/Nov/87	10/Oct/87	256.00	Y	2
Mb-088	Ohanga	"	43.00	58.00	17/Sep/86	04/Sep/87	07/Oct/87	-	-	-	11
Mb-091	God Jope	"	19.15	61.00	18/Jul/86	/Apr/87	27/Jul/87	-	-	-	11
Mb-093	Mukikende	"	26.70	67.00	21/Nov/86	-	12/Jul/87	21/Jul/87	-	-	2
						13/Jun/87	16/Jun/87	-	-	-	2
Mb-094	Nyakayiemba	"	18.00	30.00	18/Jul/86	24/Oct/87	30/Oct/87	30/Oct/87	310.00	N	1
						04/Aug/87	07/Aug/87	07/Aug/87	310.00	Y	8
						04/Sep/87	07/Sep/87	-	-	-	8
						12/Dec/87	15/Dec/87	17/Dec/87	262.00	Y	7
Mb-095	Kigoto Village	"	46.75	55.00	19/Jan/87	-	-	02/Mar/87	310.00	Y	1
Mb-096	Kiambe	"	13.60	25.00	14/Dec/86	-	-	-	-	-	-
Mb-098	Miriya Village	"	26.00	40.00	13/Dec/86	12/Apr/87	21/Apr/87	-	-	-	1
						25/Jun/87	04/Jul/87	-	-	-	8
						28/Aug/87	03/Sep/87	03/Sep/87	100.00	Y	1
						09/Sep/87	11/Sep/87	-	-	-	-
Mb-104	Kodemba	"	9.50	20.00	23/Feb/87	22/Jul/87	23/Jul/87	25/Aug/87	100.00	Y	7

Site Management involves maintaining the fence, the superstructure, the soak pit, the washing slab and cattle watering trough where applicable, and the general environmental sanitation of the water point area.

So far, Satisfactory site maintenance has been achieved through the organization of the water Committees. In addition, Community enthusiasm in maintenance has been experienced through spontaneous initiative of the users themselves, particularly women.

(ii) Curative maintenance

Community participation in curative maintenance is limited to:-

(a) The water Committee Officials reporting the nature of the breakdown to the nearest Programme maintenance Office;

(b) The Water Committee paying for the cost of a maintenance Officer's return transport for diagnostic visit;

(c) The Water Committee remitting payment through Post Office Money for the total cost of the repair works;

From the available pump breakdown records and invoices to Communities for the repairs and spares, there evidence to suggest that the Communities are responding positively to the maintenance system. (See Table 3.5.1)

However, there are some Communities who are still slow in responding and adapting to payment system. With time and as the Communities get used to the water and the payment system, we should expect almost 95% per cent of success.

4. CONSTRAINTS TO COMMUNITY PARTICIPATION IN WATER AND SANITATION

It is the desire of every rural water and sanitation programme to achieve popular participation of the beneficiaries in the planning, implementation and sustenance of the improved facilities. However, a number of factors impose limits on the ability of the communities to participate effectively in water and sanitation Programmes.

In the RDWSSP, the major constraints are three folds:

(i) Socio-economic constraints

The new rural water supply systems require new structural adjustments in community organisation network. Due to cultural lag, the communities adaptive capacity to the required attitudinal and organisational changes is quite slow. This lengthens the community mobilisation process. Community time for change also varies considerable with the RDWSSP time. The RDWSSP activities are scheduled and can only run for a given period. The degree of adaptation of new technologies also varies considerably between the progressive and the laggard communities.

The willingness of communities to pay for maintenance, build ventilated improved pit latrines is closely related to their socio-economic status. Poor communities need a lot of community mobilisation effort to participate effectively in water and sanitation.

(ii) Physical Constraints

Popular participation efforts in sanitation, particularly the construction of VIPs are hampered by soil texture. Communities in areas with black cotton type of soil or where the water table is high, face difficulties in efforts to improve on their sanitary practices.

Low water quality and quantity can also act as a hindrance to popular participation and people's adoption of health education messages.

5. CONCLUSION

Community participation in the RDWSSP of the Authority or water and sanitation projects in general is a basic necessity which is not guaranteed.

It has to be motivated through effective community development approaches based on the complete understanding of the socio-economic situations and the cultural dynamics within diverse recipient communities.

The water problem of the rural communities can be summed up as the gap between the need and demand for improved water supplies. Need is related to the actual requirement of water irrespective of considerations of affordability, while demand essentially involves affordability in terms of comparison of incomes and costs. Looking at the problem in these terms, it is safer to conclude that the hand pump technology provides the best alternative for improvement of rural water supplies because it is affordable, reliable and can be sustained by communities themselves. It is therefore the challenge of the water and sanitation programmes to bridge this gap by ensuring that communities are developed to the extent that they will be able to sustain the water points.

While Community Development is a viable approach to the involvement of the beneficiaries in the management and maintenance of water and sanitation Programmes, it should be realised that community development is an endless process and that self-help attitude can only be developed gradually through various educational approaches.

I have tried in this paper, to share with you the experiences that the RDWSSP has undergone in the promotion of community participation. I hope that through discussions that will ensue, the workshop will be able to identify suitable approaches that can yield even better results.

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COMMUNITY PARTICIPATION IN KWALE WATER AND SANITATION PROJECT

PAPER PRESENTED AT WORKSHOP ON MANAGEMENT OF AND COMMUNITY INVOLVEMENT IN WATER SUPPLY & SANITATION PROJECT: SAROVA LION HILL HOTEL, NAKURU 23RD - 26TH MAY, 1988

(MR. MUNGUTI KATUI-KATUA-SENIOR PROGRAMME OFFICER - KWAHO/KWALE)

The Kwale Water & Sanitation Project is part of the Kenya - Sweden Rural Water Supply Programme, and is implemented by an integrated team comprising of staff from Ministry of Water Development, Ministry of Health, Ministry of Culture and Social Services and Kenya Water for Health Organization (KWAHO). The programme stated in July 1985.

The communities covered are spread over the Kwale District, which has an area of 8,240 km^2 and a population estimated at 340,000.

The project is involved in the provision of Water and Sanitation as part of the International Decade for Water Supply and Sanitation. The technical activities of the project are Handpumps on shallow wells/boreholes, spring protection, dam construction, rain water (roof) catchments, self-help schemes and augmentation of existing small water supplies and construction demonstration VIP latrines.

Community participation is aimed at all these except for augmentation of existing small water supplies. The philosophy of community involvement in water projects is based on the promise that it encourages community identification with and prepares communities for responsibility of carrying out operation and maintenance tasks. The role of community participation is shared between KWAHO and MoCSS. KWAHO has 14 staff involved in various aspects of community involvement while MoCSS has 2 part-time staff in the project. Community mobilisation is aimed at the promotion of community involvement in the identification, planning, implementation and maintenance stages of the programme while training, evaluation and material development activities supplement such efforts.

HANDPUMPED WATER SUPPLIES

The communities have been involved in this aspect of water supply since 1984, when a pilot project South Coast Handpumps Project launched community Liaison and Training activities in Diani and Msambweni locations.

a. SITING:

The project recently established project siting team comprising of the Hydrogeologist incharge of drilling, geologist survey, a social development officer, the Training Liaison Officer and a Public Health Technician to systematise siting of water points by giving professional guidance to the local communities.

Project had realized that some influential persons in the community used to take advantage, and indicate sites that were not central and acceptable to the beneficiaries, but in their weakness the leaders and communities presented such as acceptable sites. The complaints would only reach the project too late for alternative action. In other cases, proposed sites did not take into account the necessary technical factors, and when project teams suggested alternatives it took time to agree upon new sites.

Now, the siting of water points entails that the siting team and the water (leaders) committee physically count house holds in order to establish the central point and the number of users. This process has streamlined siting, and raised productivity.

b. IMPLEMENTATION/MANAGEMENT ASPECTS:

The beneficiary communities form water committees to oversee and maintain the water supplies. These committees are formed through elections during which minutes are taken to record the proceedings. These minutes are later presented to the office of the Social Development Officer (MoCSS) for registration and the groups are issued with a certificate to operate as self-help groups.

Once registered, the water committees follow the necessary processes - collection of funds (which starts as soon as committee is formed), taking photographs and getting recommendations from the Social Development Office to open Bank Account.

The Water Committee is also responsible for selection of 5 volunteers who train as caretakers for the pumps. It is also the job of the Committee to ensure that the pump surroundings remain in hygienic condition, and that collection of funds for maintenance continue. they also report to the project when their pump breaks down, in cases before handing-over.

At the moment the project has trained a total of 250 volunteers, and the number is rising as project activities spread.

During implementation the communities contribute labour and materials towards construction of the facilities. This is not seen as a major factor of community participation in the project, as the project stresses the organizational and management tasks of the committees (and communities) as the prime measure of community participation. We believe communities could bring materials and contribute their labour without necessarily being committed to a project.

METHOD OF COMMUNICATION

The project has extension staff divided to Senior Staff (Heads of section in community services), Assistant Officers and extension

workers. The senior staff are charged with the task of interpretation of project philosophy and policies in the spirit of collective responsibility. They carry out training, evaluation and develop educational materials to enhance community involvement and understanding of project goals.

The Assistant Officers were all recruited last year (1987) to fill in the gap between Senior Staff and the Extension Workers; and are mainly the bridge in terms of communication, supervision and direction.

The extension workers (8 in number) are all recruited locally, and live within the communities. They were recruited through recommendation by the Water (Users) Committees and had demonstrated leadership abilities by participation in running of the water affairs. These are the backbone of the project, and it is due to their communication abilities the project has had a lot of success in community involvement.

DAM CONSTRUCTION

The project has undertaken one dam construction. It is this activity that the sacrifice of stone collection, pegging, digging of trenches, laying of gabions etc. has been very visible. The community had raised KSh.40,000 to get the priority amongst other needy communities. Initially, the communities did a lot of work but as time went by drought and famine reduced their participation to at most 20 people, and finally, to almost nobody at all.

With the rains the project took employed labour for one week to save the possible wash-away of the spill-way which could have resulted to the loss of the whole dam. After this, the community has been reluctant to work in order to complete the remaining works. Dialogue is still on.

This shows how delicate the business of community participation can be, and how necessary it is to keep communication between project and the beneficiary communities going and alive even at a time of emergency. It is true that the measures taken are very sound, but sustainability of credibility is very vital.

The project has, however, had very encouraging indicators from the local community leaders that they will want to complete the works, now that rains have graced their farms, and there will be no more out-migration of able bodied men to other areas in search of food and paid labour.

We would like to share this experience with the other projects, because dam construction requires a lot of time on site for the users - an activity that is voluntary - compared to handpumps, springs, roof catchments etc.

Plan International Embu/Meru

General Information

PLAN International is a non-governmental, non-religious, non-political development organization working with children and their needy families in the fields of education, health, water and skills development.

In Kenya, PLAN has programs in Embu, Meru, Taita-Taveta and Kiambu districts.

Introduction

PLAN International Embu, is working in Gachoka Division of Embu District. PLAN aims to support and assist communities in their development efforts to meet their needs in food, health, education, and water.

One of PLAN's goals is to assist the communities get access to potable water all year round within a 2 kilometer walking distance.

The Programme Area

Gachoka Division, Embu covers an area of 138 sq. km. which is two-thirds of the total land area of Embu district.

It is bordered by Tana River to the south, Rupingazi River to the west and Kitui District to the east.

The estimated population (1987) is 105,000 persons. The population is mostly rural and population density varies from 135 persons per square kilometer in Mbeti Location to 20 persons per kilometre in Kiambere Location, the average being 77 persons per square kilometre.

Water Resources

Gachoka Division receives rainfall ranging from 550 mm per year in the lowlands to over 1000 mm per year in the highlands. Most of the rainfalls in two seasons; March to May and October to December.

There are only 2 perennial rivers, the Tana to the south and the Rupingazi - Thiba system. There are several ephemeral rivers that empty into these two main rivers.

The traditional water sources are these two rivers, ponds that collect during the rains, ephemeral springs, dug wells and small wells dug in sandy river beds.

The installed water projects include ENA Water Supply, a large rural water project serving the upper areas, a few pumped water supplies and a few boreholes.

A recent PLAN survey showed that 62% of the people have some sort of water source within 2 km. walking distance.

Most of the traditional sources are either over-utilized or contaminated.

Water Programme

PLAN International puts its water programme under the health department as the provision of potable water is seen as a mean to achieving good health.

In the past, PLAN Embu has in conjunction with the communities in Gachoka and the Ministry of Water Development assisted in improvement of dug-wells, construction of rainwater storage tanks in schools and health facilities and extension of piped water supplies.

Due to scarcity of surface water resources, PLAN decided to assist the community with a borehole drilling programme during which approximately 100 productive wells will be drilled and equipped with handpumps.

Programme Approach

Identification & Planning

Base data has been collected by making use of water questionnaires, holding meetings with communities hence assessing the needs, resources etc.

Where borehole drilling ranks high among the list of priorities, the communities have organized themselves into water associations and taken part in suitable site identification (with assistance of hydrogeological survey).

The roles of PLAN and communities in the implementation process have broadly been agreed upon.

Implementation

During the implementation phase, PLAN will:

1. Make available a well-drilling machine and funds to drill an estimated 50 wells initially.

2. Arrange for training of management committees, installation and maintenance personnel selected by the communities from among themselves.

3. Assist communities in purchase of handpumps on cost-sharing basis. (PLAN and the communities have opted to go for the Afridev type of handpump).

4. In conjunction with Ministries of Health and Water Development, and other NGOs, carry out training of communities in proper water use, sanitation and health.

The communities will:

1. Assist PLAN's well drilling team with cleaning of roads, sites provision of water and possibly arranging for accommodation.

2. Select among themselves caretakers to be trained in installation and scheduled maintenance.

3. Collect funds for purchase of pump on cost-sharing basis and for scheduled maintenance.

4. Attend trainings in health, sanitation etc. arranged by PLAN.

Community Approach

1. PLAN is able to reach the communities through Community Development Workers who are living with communities and in most cases come from there.

2. Community Health Workers (CHW's) trained by PLAN health Department play a key role in health training at the community level.

PLAN Embu
Project Completed and Planned Projects FY 89

Type of Project	Completed No.	Target Popul.	Planned FY 89 No.	Target Popul.
Roof Catchment Tanks 25 - 60 m.cu.	30	Primary Schools	20	Primary Schools
Dug Wells (Shallow)	4	2,000	4	2,000
Sub-Surface dams	2	1,000	-	-
Boreholes	2	600	50	1,200
Individual Water tanks 6 m.cu. & 4.5 m. cu.	4	4 families	250	250 families
Surface water projects (PWS)	4	20,000	4	20,000

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PLAN INTERNATIONAL MERU

Introduction:

PLAN International Meru is working in Igembe and Ntanyiri Divisions of Meru District. The programme aims at providing potable water close to the communities and in sufficient quantities.

Projects implemented 1984-1988

Piped gravity schemes

Four (4) in number gravity schemes serving an estimated population of 40,000 people have been implemented.

Earth Dams

Two (2) in number earth dams have been constructed in the drier parts of the programme area neighboring Isiolo District. The two dams are serving about 2,000 persons and 6,000 livestock units.

Boreholes

In the drilling programme 52 in number productive boreholes have been sunk and equipped with handpumps and are serving an estimated population of 15,000 people.

Planned projects - Financial year 1989

- Rehabilitation of one (1) existing water supply project to serve 10,000 people.
- Installation of one (1) new domestic water supply project to serve 4,000 people.
- Extensions on one existing water supply project to serve an additional 2,000 people.
- Protection and development of 5 (five) springs.
- Training of caretakers in maintenance of boreholes and handpumps.

Current and Future Operations & Maintenance Management in the Rural Domestic Water Supply and Sanitation Programme of LBDA

The current Operation and Maintenance Management of LBDA-RDWSSP is arranged such that communities and the programme are involved. While the minor repairs are carried out by trained pump attendants, the major breakdowns are handled by zonally based programme maintenance officers. This arrangement is worked out through a simple procedure which has to be initiated by the water point committee officials as explained below.

When a pump is broken down, the committee is responsible for sending a representative to the field maintenance office to report breakdown. The maintenance officer then visits the water point to carry out diagnosis tests and informs the committee what the actual problem is and provides explanations as to what the spares cost would be. The officer then makes arrangements to repair the pump and issues an invoice to committee officials. Payment for repairs is then submitted to the Programme by Postal Money order.

Future maintenance as it is envisaged, shall have to be privatised and it is hoped that the current Maintenance Mechanics of the programme shall take the trade on a private basis. However, this future arrangements shall require that both pumps and spares are available locally. In this respect, the concentration of physical water facilities should be higher to ensure economic viability of spare parts stocking by local merchants and establishment of private repair shops.

Operation and Maintenance - Quest for Sustainability

Future Operations and Maintenance as a sustainability guarantor requires consistent, methodical and ardent execution of community education. It should be a case of considered privatization with the recipient communities as its main stay.

What has been illustrated in the previous discussions on community development points at what we consider as a workable solution to the Quest of project sustainability in the long term. It has been demonstrated that communities are willing and ready to assume responsibility of operation and maintenance of their water points. Through the project period, appreciable progress has been achieve, but more needs to be done.

A number of issues need to be sorted out in this important area. The success of the Project shall be measured by the way in which the recurrent investment arrangements shall have been worked out by the end of the project period. It is my considered opinion that the communities have to carry out the responsibility of future operation management and maintenance. To facilitate this, a greater number of water points need to be established. With the increase of water points

PRESENT AND FUTURE MAINTENANCE MANAGEMENT IN THE KWALE WATER AND SANITATION PROJECT

PAPER PRESENTED AT THE WORKSHOP ON MANAGEMENT OF AND COMMUNITY PARTICIPATION IN RURAL WATER SUPPLY AND SANITATION PROJECTS AT NAKURU 23 - 26 MAY, 1988

BY MUNGUTI KATUI-KATUA - SPO - KWAHO/KWALE

Introduction:

A vital component of community participation in water and sanitation projects in training of the beneficiaries towards the creation of local - level capability to respond to various aspects of operation and maintenance. The Kwale project has various types of water supply: hand pumps, spring protection, dam construction, rainwater catchments (roof) and self help water schemes. Demonstration of ventilated improved Pit Latrines (VIPs) is undertaken mostly in schools, mosques and churches to expose and interest individual usage in the homes. Training in operation and maintenance has only been limited to handpumps so far, although plans are under way to start training in the operations and maintenance of the other types of water supply (which are relatively new in the project).

The project initially started as a handpump testing project (in the South-Coast) in which a total of about 16 handpump types were tested for village level operation and maintenance, after which the AFRIDEV hand pump was adopted. Training for operations and maintenance is limited to the Afridev hand pump.

LEVELS OF MAINTENANCE

The communities collect money on weekly/monthly basis towards the purchase of spares and related costs. The project has installed 200 hand pumps. There are two types of maintenance in the project. Maintenance by project handpump technicians and maintenance by community pump caretakers.

(i) Maintenance by project handpump technicians:

The professed goal of the project is to prepare communities to take over the running of the handpump and carry out their own operation and maintenance. But before handing-over takes place the project maintains the pumps; and therefore in the case of a breakdown the communities report to the project and repairs are done at no cost. The communities however, utilise their funds for transport to the project, and also to their trainee (volunteers) to the centre-print where training takes place. The point is normally selected by the communities and converges about trainees of 4-5 pump prints.

Immediately after handing-over the communities assume operation and maintenance.

(ii) Maintenance by community pump caretakers:

The communities are responsible for the selection of 5 volunteers per pump to train as pump care takers. These trainees converge at a central point in their sub-area where training is conducted by staff from the project.

Initially a total of 24 women were trained (1985) as community water leaders and to undertake operation and maintenance. After an evaluation in early 1986, the communities while appreciating the good work done by the women trainees requested that training be availed to both men and women, so long as they volunteered.

Therefore since late 1986, the trainees (i.e. 5 trainees per pump) have been selected to include both men and women. These are extra - to the 24 who qualified in 1985.

So far 106 have been trained in Diani location where 43 hand pumps have been handed over to the communities. A further 134 have just been trained in Msambweni location and parts of Kikoneni location, covering a total of 34 hand pumps, and handing over is expected to take place in June, 1988.

SCHEDULE OF MAINTENANCE

To make the operation and maintenance easy and manageable, the project encourages schedule maintenance (routine maintenance) which is based on the simple principle of service - like cars go for service after 2500 or 5000 km for instance, irrespective of whether they are functioning well or not. For the Afridev this schedule maintenance, ensures change (replacement) of specified parts, an activity if adhered to strictly can make the pump last very long without trouble. The cost of schedule maintenance is calculated at KSh.200.00 per year and is incidentally the upper limit of cost of operation and maintenance in the Afridev barring the occurrence of a major breakage.

DISTRIBUTION OF SPARE PARTS

At the moment the issue of distribution of spare parts has not been resolved. It has always been thought that some private shopkeepers or agents of local manufacturers could stock the spares close to the user communities. But this, unfortunately, has not taken place mainly due to the newness of handpumps, and secondly because thee is not much demand anyway as pumps installed are still not yet many to attract commercial entrepreneurs.

The project in the meantime has stocked the spares at the Kwale offices, and can also be purchased at Msambweni sub-camp making the longest travelling for communities to a minimum of 20 km (an average KSh.10.00 by public transport). During handing-over the pump committee

receives a spanner, a fishing tool and purchases a kit containing spares required in the first schedule maintenance.

FUTURE MAINTENANCE

It appears like the project will continue to stock the spares until another viable alternative is found. Since the pump is also manufactured locally, some local entrepreneur may get interested in the business. However, this is in the very long-term.

It should be pointed out that the handpump is a new idea - having been around only for the last 4 years. It is still early to say with certainty what will happen to future maintenance. It is, however, safe to conclude that the communities who assume the operations and maintenance of the hand pumps will continue to look towards the project for guidance. And the project will tirelessly look for alternatives that will make the Afridev a truly village level operation and maintenance pump in all aspects (including distribution of spares), and advise communities as new developments arise.

HANDPUMP MAINTENANCE AND DEVELOPMENT

Introduction:

Since the inception of the Kenya Finland Rural Water Development Project, it has been its major concern to choose a maintenance system which would match the resources of the community. Several trials have been made inorder to find the best village level maintenance system.

There are 3 main types of maintenance systems:

1. The first type consists of 2 mobile vans, which go out to repair pumps whenever the breakages occur. This system has the disadvantages of being slow and costly.

2. Locational Repairmen

   These are selected by the community and have been trained by the project mobile team for two to four months after which they are installed on to their duties during a Colourful Ceremony organized by the Community. The repairmen have bicycles and tool kits. The communities pay for repairs directly to the repairmen while spareparts are purchased from the project. The advantage of this system is that the repairmen live within the community and can be easily contacted to repair the pump without much delay.

3. Water Care Takers

   The Water Care Takers are usually women chosen by the community. Their main duties are to keep the surroundings of the well clean and do preventive maintenance

   In 1987, the project identified a pilot area, and started training women in Pump Maintenance. The Training lasts 10 days and covers the following aspects: as outlined in Annex 1. The training has grown to be very popular, so far 400 women have been trained. As a result, Repairmen training has been halted in favour of training women.

To enable the Water Care Takers perform their duties effectively, the Project in collaboration with the Water Committees have drawn up the following guideline for them:

Their Role:

(a) **Well Maintenance and Repair**

(b) **Advice Well Committees on matters of Development at the water point.**

(c) **Teach Consumers good Health practice.**

(d) **Teach Consumers Health aspects concerning water in transit.**

Development

They are advised to encourage communities in:

- Building Bathing Hides
- " Wash Basins
- " Cattle troughs
- Digging of kitchen gardens

Good Health Practice

They are encouraged to:

- Dig soak pits for bathing hides and wash water drainage channel.
- Wash well cover and surrounding with soap and sand
- Wash pump stand stepping plates
- Clear Bush and Sweep well surroundings
- Clear drainage ditch and keep it running.
- Clear and maintain access road to water point.
- Do all washing at least 20m away from the well

Clean Water Drinking Cycle

- Wash hands with soap and water
- Wash the water collecting vessel and its cover with soap
- Draw water and replace the cover
- Draw from the storage vessel by pour method, tap or using long handle scooper.

Water Maintenance Activities

- Fence water point to keep animals away from the concrete slab
- Patch up any damages/cracks and split on the concrete slab.
- Inspect fence for strength and do all necessary repairs.
- Weed vegetable garden, flower bed and keep it neat.
- Once a month remove hand-pump for checks and clean it up.

Formation of Women Groups

For the Pump Attendants to succeed, they should be able to form groups which would enable the women to use the time saved to generate income. The groups can undertake the following projects:

- Repair of bicycles
- Block making
- Farming
- Brick making
- Fish farming
- Poultry keeping
- Diary farming
- Off farm activities - Business Enterprises.

The Role Played By the Spring Attendants

Within the Kenya Finland Rural Water Development Programme the emphasis have been mostly laid on the pumps, but it has been found necessary to encourage the formation of Spring Committees and the selection of Spring Attendants so as to maintain the Protected Springs.

The Spring Attendant plays the following role:

- Informs the Spring Committee on all the necessary repairs and maintenance of the Spring box.
- Reports to the Spring Committee on any changes in water quality, colour, smell, taste etc. or quantity.
- Enlighten fellow water consumers on aspects of Health Education related to water use, personal hygiene. The Project has already trained some Spring Attendants. The details of the Training Programmes are attached in Annex 2.

The Role Played by a Water Committee

Both Hand pumps and Springs have Committees which assist in the administration of the water source as follows:

- The Committee assumes the role of the Care Taker and ensures proper operation and maintenance of the water point.
- The Committee formulates ways and means for the construction of the water source point.
- Ensure proper implementation of Development activities
- Ensure proper Implementation of regular clean up and maintenance programmes.
- To inform the project representatives of any problems in water quality or quantity.
- To inform the Local Administration of difficulties encountered during implementation of maintenance programmes in consultation with the Consumers.
- To seek advice where possible.

Types of Pumps

It is important to note that the technology choice must match the community resources available for the up keep of the system. Research into low cost community water supply and sanitation technologies has demonstrated that equipment is now becoming available to match the favoured strategy of full community management of completed systems. Experience has shown that properly chosen handpumps, suitable for maintenance by Caretakers supported where necessary by area mechanics are best guarantee of dependable long term water supplies.

The Project uses different pumps depending on the depth of the well. The Nira Pump is used in Shallow Wells of depth of less than 15m. The Project has decided to retain two types of pumps which can be repaired at village level. These are AFridev and Nira AF 85. Up to date the Project has installed a total of 1,287 pumps as follows:

	TYPE	TOTAL PIECES
1.	Nira AF 76	687
2.	India Mark Two	290
3.	Nira AF 85	263
4.	Nira AF 83	29
5.	Nira AF 84	1
6.	Volanta	3
7.	Vergnet	2
8.	Afridev	12

1. NIRA AF 76

Is the pump the project started off initially and it was good representative of its kind by the time. However, quite naturally we have seen better constructions have been developed today. This pump type is still the most numerous one at the area. The pump is not VLOM&M type at its entire meaning, and it also uses galvanized iron riser pipes.

2. INDIA MK II

Produced by WECO at Kakamega has proved to be a durable represen of its class. It is used at settings to which so called shallo well types are not capable. Disadvantage is that it is not at a VLOM&M pump and has G.I. riser pipes.

3. NIRA AF 83

Is pump type with two advantages, namely being VLOM&M pump and n non corrosive DTH parts. Is the type presently being predominan installed.

4. NIRA AF 83 AND 84

Are pumps which have been taken to the project for the further possible use. Pumps, although being rather durable has not sh any real advantages to be widely used types.

5. VOLANTAS

Are at the project for the same purpose as NIRA AF83 & 84, and were supplied by World Bank. As it is quite heavy of the construction and rather expensive it is not one of the types to be used further. The few pumps are still maintained by the help of WB for testing the interesting rod configuration, and also for further testing of new rod designs.

6. VERGNET

Pump is said to be withdrawing from the market and they are going to be changed to other types more widely used in the project area.

7. AFRIDEV(MALAWI)

Pump the predecessor of the Afridev is going to serve to its end and to be replaced with another deep well type.

Local Production and Distribution of Spare Parts

The Project is located next to WECO, which is involved in the manufacture of India Mark II pumps. The project has given an order for the production of Afridev pumps which will be used in all deeper wells. There is a search for the manufacture of NIRA 85 within the region or the Country and this will be followed by decentralised system of distribution of spare parts at community level. This will bring substantial increases in reliability and reduction in recurrent costs, bringing the per Capita costs drown appreciably when compared with the centralised maintenance system. The result is more dependable supplies of safe water and continuing improved health.

ANNEX I

PUMP ATTENDANT TRAINING PROGRAMME

DAY 1

(a) Introduction: - Project activities
Project objective
Training objective

(b) Pump Types: - Gray nira
Direct action & India MK II & Malawing pump.

(c) Pump Maintenance System

(i) Mobile Maintenance teams

(ii) Locational repairmen

(iii) Pump Attendant

(iv) Merits & demerits of above maintenance systems

(v) Appropriate maintenance system

(Over use of individual 2 persons)

DAY 2

(a) Pump parts
(b) Pump Mode of working
(c) Hand pump tool kit
(d) Pump faults
(e) Identification of pump faults
(f) Correction of pump faults

DAY 3

(a) Steps in pump removal
(b) Steps in pump installation
(c) Organization of helpers

DAY 4

(a) Community involvement in pump repair work
(b) Cleanliness at the well site
(c) Development at the well site
(d) Film show - prescription for Health
- a handle on health

DAY 5

(a) Practical removal and reinstallation of the pump
(b) The pump performance reports

DAY 6

Theory and practical test

DAY 7

(a) Revision of the pump performance reports

DAY 8

Revision of : -
(a) Pump parts
(b) Mode of working
(c) Faults
(d) Fault identification
(e) Correction of fault

DAY 9

(a) Practical removal of the pump
(b) Practical installation of the pump
(c) Practical test on removal and reinstallation of the pump

DAY 10

(a) General revision of Training coverage
(b) Project objective
(c) Training objective
(d) Pump performance report
(e) Closure of training

ANNEX II

STEPS IN SPRING PROTECTION

1. Survey the Spring for:

   (a) Water Quantity

   (b) Water Quality

   (c) Topography - ease of access
   - ease of construction
   - nature of the soil
   - ground conditions

   (d) Sanitary aspects of the environment
   - are there latrines within 50 m of the spring
   - are there dirty stagnant pools of water nearby.

2. Enlighten the community on their involvement aspects:-

   (a) They should provide Manual Labour for excavation, concrete mixing and backfilling

   (b) They should provide stones for hardcore and spring packing

   (c) They should provide meals for the construction team

   (d) They should provide any locally available material fit for protection of the spring.

   (e) They should provide a mason to work under the instruction of the Pump Attendant.

3. Construction Programme

   Day 1

   (a) Clear the site off Bush and dig the surface water diversion ditch.

   (b) Clear the stream course and locate the spring eye.

   (c) Dig the spring flow diversion ditch and divert the flow

   (d) Design the spring

Day 2

(a) Set out the spring

(b) Excavate to reduce levels

(c) Layout and dig access steps

(d) Place hardcore and ram to provide a firm foundation base

Day 3

(a) Lay the reinforcement mesh

(b) Pour the foundation slab and compact thoroughly.

N/B:
(i) allow for free flow of any minor Spring in the excavated area

(ii) Allow the concrete to cure for 24 hours

(iii) Provide for wingwalls when constructing the slab.

(iv) Use concrete mix 1:2:3 with low W:C ratio

Day 4:

(a) Build the spring walls using bricks and cement mortar, mix 1:3 with 6mm Ø reinforcement bar in the joints.

(b) Place the lowest draw off pipes in the fourth course.

(c) The fifth course covers the pipes.

Day 5

(a) Plaster the retaining and wing walls internally

(b) Plaster the communal walls internally

(c) Sand screed the floor to falls

(d) Allow all plastered surfaces to cure for 2 hours. then neat cement them.

(e) Allow these surfaces to harden for 2 days

Day 6

(a) Excate upstream to clearly expose the spring eye, and pack the excavated spring course with rough stone.

(b) Divert the flow from the diversion ditch to test the performance of the built structure.

(c) Top the rough stone with balast and level out.

(d) Place polythene sheet cover on last and backfill with earth.

Ministry of Culture & Social Services
Presentation by Mr. W. Syeunda, Principal Community Development Officer

Historical background

The Ministry started as the Ministry for Co-operative and Social Services, which was later changed to Ministry for Housing and Social Services. The Ministry of Culture and Social Services was established in 1980 with three departments; Social Services, Adult Education and Culture. The department of Adult Education was later removed from the Ministry.

The Department of Social Services

The department of Social Services consists of Community Development, Rehabilitation of the Disabled, Family Education and Training, Women's Bureau and Sports. These programmes are very much interrelated. Involvement of the Ministry in water supply and sanitation projects is mainly from the Community Development and the Women's Bureau programmes.

Community Development Programmes

The Community Development Programmes basically facilitate motivation and mobilization of local communities to participate in planning, implementation and management of their own development projects. The programme supports self-help activities through:

- Formation of self-help committee groups.
- Registration of self-help committee groups.
- Collection and analyzing of data on contribution to self help projects.

Contribution to self help projects in the country amounts to between KSh. 500 and 600 millions annually. Presently, the data collection programme is being reviewed and updated and it is suspected that the above mentioned figure could be much higher.

The Women's Bureau

The Women's Bureau was created in 1975. The objectives were to coordinate the activities of women in the country and to assist in the enhancement of the participation of women in the social and economic development. The formulation of the objectives was based on that women in rural areas form the majority of the population, relatively disadvantaged socially and economically but with a great potential. They need to be assisted in all ways possible to increase their productivity, and this for the benefit of the whole community.

The activities carried out by the Women's Bureau to meet these objectives are:

- To encourage formation of women groups with emphasis on income generation. Women groups can be used as avenues/channels for various development activities. Improved incomes for women has obvious advantages both social and economic.

- To train women in marketing and leadership skills and management of their activities in general.

- To do research in areas that can assist in generating useful information about the various aspects that concern participation of women in all aspects of national development.

Women Decade Conference.

The Women Decade Conference was held in Nairobi in 1985. Women came from all over the world to discuss, exchange experiences and to pass major recommendations and resolutions. Through this, the role of women in development came to the forefront.

Forward looking strategy to the year 2000 and beyond was discussed and various aspects related to problems that face women as members of the community and prevent or discourage them from full participation in all aspects of their development and enjoyment of a more fulfilling life was addressed. The water and sanitation sector was seen as crucial for the development. The involvement of women in this sector is now supported by governments, donor agencies and NGO's, for obvious reasons.

Role of the Ministry in Programmes of Water & Sanitation

The role of the Ministry of Culture and Social Services in water and sanitation programmes is to:

1. Provide information on the existing self help groups including women self help groups.

2. Register self help groups/projects.

3. Identify local Communities Leaders.

4. Train local Communities (T.O.T) in appropriate areas.

5. Work with other Ministries, N[illegible] etc. in motivating people to form self help groups and mob[illegible]zation of local resources for development.

6. Adult Education - Literacy and Functional Education.

Problems that face the Ministry in trying to carry out the above listed tasks are the manpower shortage and other resources constraints.

To overcome these problems the participation of NGOs in community participation efforts should be encouraged (e.g. KWAHO). NGOs are necessary for development, they provide alternative source of financing development and complement and supplement what the government is doing in providing for the social and economic needs of the people. One of the advantages of NGO's is that they are free of bureaucracy and hence able to achieve results faster.

Conclusion

Community participation should not be looked at as a domain of an agency of Ministry, it is a joint effort for governments, NGOs and donor agencies.

Community Participation involves complex socio - cultural aspects where one person's view or way of doing thing has to be shared with others and evaluated before any conclusions can be drawn.

There is need for patience (rigid time frames should be avoided) and contributions to community projects should as much as possible be voluntary. Those disadvantaged socially and economically should not be discriminated.