DOMESTIC WATER SUPPLY PROGRAMME

KAHAMA DISTRICT, TANZANIA

DOMESTIC WATER SUPPLY

A GENDER IMPACT STUDY REPORT FOR KAHAMA DISTRICT, SHINYANGA REGION, TANZANIA

BY

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Abstract

A Gender Impact Study (GIS) was conducted in Kahama and Meatu Districts in Shinyanga Region, in order to determine how the domestic water supply programme can involve women more effectively. A joint Shinyanga Regional report is given under a separate cover by Dr. C. Hauli, Mrs C. Sana and V. Bashemererwa.

This report for Kahama District provides more detailed information which could not be accommodated in the regional report but which is considered to be crucial for a future water programme in the villages. The villages studied in Shinyanga region had not been included in the water supply programme before. There is now a plan to include these villages in the next phase of the programme. This is one of the recommendations that came up during the de-briefing sessions at both Regional and Embassy levels.

In order to come up with viable sustainable projects, this report provides detailed information on the current status of the water sources in the area, the actual and envisaged roles and positions of women in the programme; and their participation in agricultural activities. The questions of household food security, income, leadership and power are also covered.

The report also analyses the current and anticipated benefits of the water programme especially vis-a-vis the women's needs.

It is envisaged that if equipped with this information and if experience is drawn from previous programmes in other villages, the project implementers should be able to build successful and self sustainable projects in the area.

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under the guidance of Dr. Crispin Haule the Regional co-ordinator and assistance of Mr. C. Mulazi the District Resource person.

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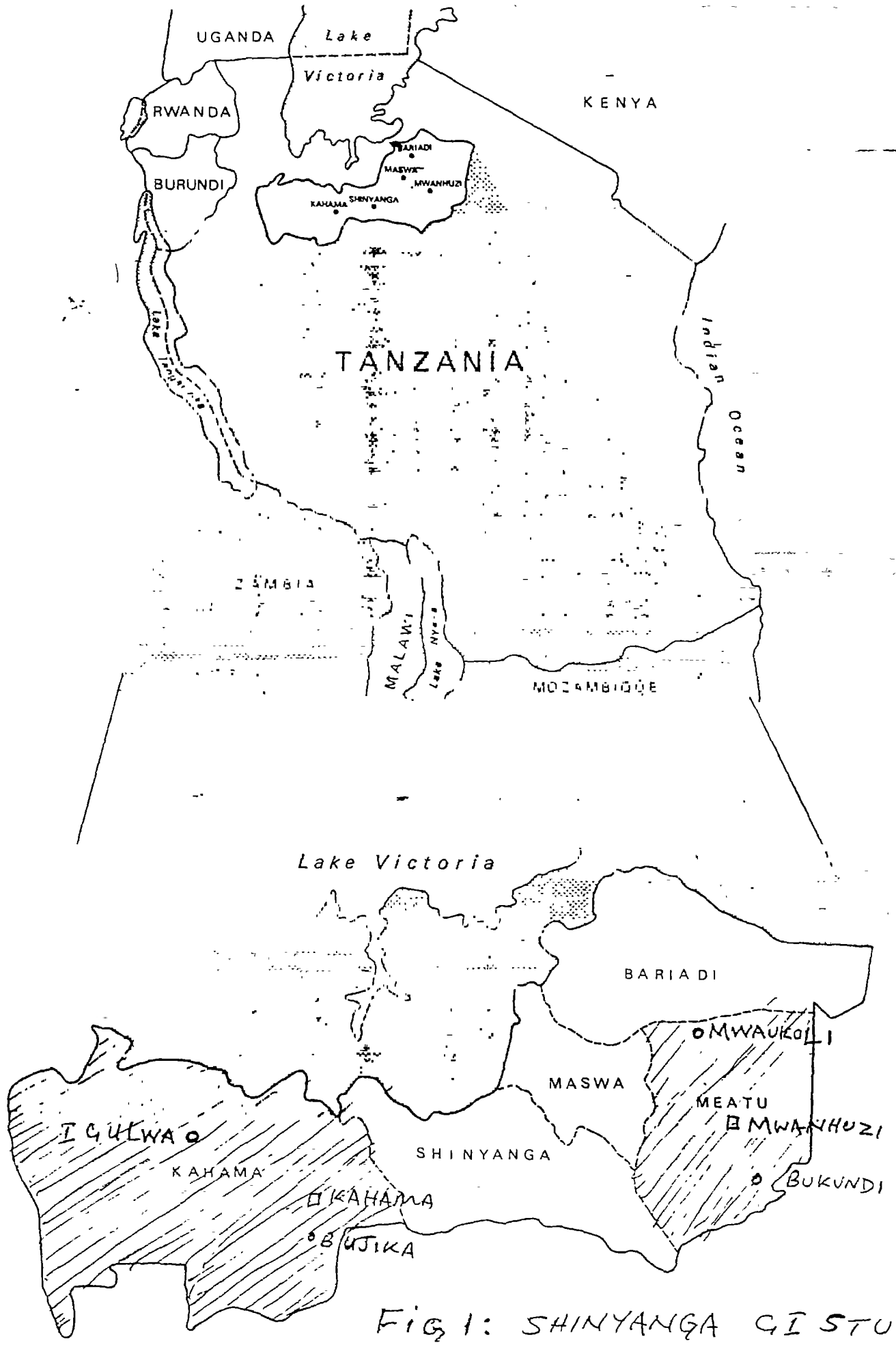


FIG 1: SHINYANGA CI STUDY A

I. INTRODUCTION

1.1 Background Information

The purpose of the Gender Impact Study (GIS) was to gather specific gender information which could be used in planning and monitoring activities of the domestic water supply for the 1991 - 1995 phase.

Previously the water and Sanitation programme was focused on target orientations to sustainability with emphasis on community or village participation. Wards and villages were pre-selected by the region and district administration. However it is not clear whether the villages selected had water as their major problem or whether the construction of the water points was their priority. In Kahama such eight villages in three wards were selected, these included Igunga and Iboja in Iboja; Busoka, Mkaja and Makunga in Makunga and Itogwanholo, Ntunguru and Sungamile in Isaka wards.

The objectives of the programme was to build 45 new wells and rehabilitate 60. However the programme was able to construct six new wells rehabilitated 56 and build 11 latrines for demonstration. The main target and focus of the programme then appears to have been result oriented. That is, great emphasis was placed on the number of wells and latrines to be constructed and this appear to have been the measure for success for the programme. The programme envisaged to provide the villagers free, clean and safe water by 1991.

Failure to meet these objectives can be attributed to various factors. The project did not create enough provision for participation of the target groups in selection, construction and maintenance of the water sources. Cost sharing which could have been used to raise a spirit of responsibility and participation amongst water users was kept at the minimum by the water projects. For example in 1967 the Government started a water programme in Bujika village which was not successful. Two wells

were left unfinished and one is not used because its water is salty in Shininga. Also pipes were left abandoned in the subvillage of Bujika. The villagers have never completed this project. They are not aware of how to go about it. It is a common feature for government officers handling water programmes to receive messages from the villagers requesting them to come and mend their pumps.(Government) Hence lack of participation and lack of sense of responsibility on the part of water users made programmes not successful. The programme was also hit by the Arab - Israel war of 1973 which because of the oil crisis led to hiked prices and increased cost of the equipments. The Budgetary disorders were further Compounded by the Uganda Tanzania war of 1978-1979.

The new phase of the programme hopes to pay special attention to the human resources and Institutional development aspects and further strengthen community and women development activities aided by structured training programmes. The emphasis and goals here are focused on the user groups as the target. There was therefore a felt need to conduct GIS during the inception period of the new phase and in accordance with the terms of reference the study focused on the position of women, their empowerment and gender relations in the project area. It also investigated among other issues the available opportunities for women in the area, established their needs, power, decision making structures and accessed positive and negative effects of the domestic water on the gender relations in the area.

II STUDY AREA

The study was conducted in two villages; Bujika in Nyandekwa and Igulwa in Ushirombo Wards (see fig 1, 2 and 3) Kahama was selected on the basis that it was the oldest and most expansive district in Shinyanga.

Bujika is 20 kilometers south and Igulwa is 78 kilometers west of Kahama District Headquarters. Bujika had five sub-villages of Nhalambo, Bujika, Kasela, Shininga and Magobeko and had a population of 1426 people and 314 households while Igulwa had seven sub-villages *viz.* ; Imaramagiso, Igulwa, Bulangwa, Businda, Butambala, Katende and Bwenda. It had a population of 15,279 and 1055 households. The population breakdown of the villages is given in table 1 below.

Table 1: Population status of Igulwa and Bujika sub-villages

Village/subvillage	Number of House holds	Population		Total
		Men	Women	
BUJIKA				
Nhalambo	88	145	159	304
Bujika	71	112	126	238
Kasela	32	68	84	152
Shininga	95	224	237	461
Mogobeko	55	124	147	271
Total	341	673	753	1.426
IGULWA				
Imaramagigo	120	359	432	681
Igulwa	300	2018	2200	4218
Bulangwa	140	670	871	1541
Businda	137	1370	665	1987
Butambala	128	262	125	387
Katente	355	2000	1897	3890
Bwenda	512	1905	1147	3102
Total	1055	7737	7540	15,279

2.1 Infrastructure

The villages are accessible by road. Bujika is easily accessible by the road from Kahama to Nyandekwa and Iboja. During this research the road from Kahama to Nyandekwa was being reconstructed by an Asian company and this will make transport of agricultural goods easy. The sub-villages are also easily accessible by all weather paths. Igulwa is on the new tarmac road from Shinyanga to Burundi. Both villages can be reached through public transport. There is a bus which operates between Kahama and Iboja twice a week. As for Igulwa, road transport by car is much easier as there is heavy traffic between Shinyanga and Burundi. The main form of transport within the villages was by foot and bicycle. Both women and men own bicycles. Bicycle cycling was also done between Bujika and Kahama for the purpose of going to the markets, hospital etc.

The average distance between the sub-villages in Bujika was about seven kilometers while in Igulwa it was ten kilometers. Most of the sub-villages were also accessible by car except Imaramagigo which because of the hill (Imaramagigo) was only accessible by foot or bicycle. Also most parts of the sub-villages in Igulwa e.g. Bulangwa, Businda and Katente were easier reached by a 4 wheel driven car as the roads had tree stamps and rocks protruding from the surface of the roads (paths) The soils in Bujika are clay sands, and in some places were of anthill soils. Igulwa has loam clay soils and a lot of underlying rocks and gravel. Hence Igulwa could construct deep wells and mines up to 30ft without the holes collapsing.

Kahama has a tropical climate and its vegetation is of savannah grassland with Miombo forests and is well covered by Palms (Mahama) and mangoes (See plate 1,2 and 3). For example the sub-villages of Businda, Bulangwa and Katente in Igulwa were in the middle of undisturbed forests. However, the forest was being cleared in

exploration for gold and more settlements. Most of the Mango trees were reported to be growing on their own otherwise the mango trees found lining the streets as in Nyandekwa near Bujika and Igulwa sub-villages are reported to have been planted respectively by Arab slave traders and the white missionaries.

2.2 Health

Except for Igulwa, Bujika had no health centre. The nearest health centre for Bujika was in Iboja about 16km from the village. The health centre (clinic) in Igulwa provided antenatal services. Due to easy accessibility and easy transport people in all the villages can go to hospitals in Kahama, Shinyanga and Mwanza. The common health problems in both villages included malaria, diseases of the eyes, diarrhoea, cholera intestinal worms, snake bites, bilharzia and dysentery. Both villages and especially Bujika lacked adequate antenatal and family health/welfare services. For example, during this study a woman who was advised in Iboja to attend and deliver her baby in Kahama Hospital was forced to walk about 36 kilometers to Kahama before and after a safe delivery. It was discovered later in Kahama that the woman did not have the complications referred to by the medical staff in Iboja. Also a woman in Bujika who had felt that her baby was too young (less than 1 year) was forced to undergo a local forced abortion in her 5th month pregnancy and she almost died from complications of abortions. In Igulwa, twice, two expecting mothers died on the way to Kahama hospital due to delivery complications which were not identified in time and for lack of proper guidance.

It was generally observed that health care was commonly received from the local healers and traditional medicine men. Consultation of traditional healers and medicine men was done for all illness especially snake bites and mental disorders.

Snake bites are treated using local herbs and phorus stones. It was common practice for patients to consult the local medicinemen and for the majority going to Government hospitals was a last resort. Paying tribute and associating certain illnesses e.g. mental disorders with a violation of the ancestral norms was common. Ancestral houses as those in plate 4 (fenced by sisal plants) were a common feature in the villages.

2.2.1 Health problems associated with water

All the intestinal problems, vomiting, worms, diarrhoea, dysentery, cholera, bilharzia and eye problems were associated with water. The villagers believed that their water sources had unsafe water for drinking and even bathing as they were open to contamination by plant and animal refuse. The villagers believed that once these water sources have been improved through construction of water pumps etc, they felt that these health problems would cease. However the villagers were also aware that sanitation problems for example lack of proper hygiene like washing hands, faces, lack of digging and using latrines properly and lack of proper feeding could also contribute to health problems. But the villagers main worry and scapegoat was water. And they were eager to get improved wells which they believed would improved their health. There is therefore a need to educate the villagers on the health problems common to them, their causes, indicators, prevention and cure. Creation of awareness and training of the traditional healers is essential in order to minimise trial and errors in identification and treatment of illness and to create a smooth relationship between the traditional and conventional medicinemen.

2.3 HOUSEHOLD FOOD SECURITY

The villagers visited could afford a balanced diet of carbohydrates (starch) protein

(animal foods) vitamins (vegetables and fruits) and minerals as the main food crops grown could provide enough of the balanced meal. These included maize, rice, sweet potatoes, finger millet, beans, peanuts, green vegetables such as, pumpkin leaves, ladies fingers (bamia), spinach, sweet potatoes leaves (matembele) and fruits. Mangoes, pawpaws and lemons trees were found in plenty in the villages. Milk in form of fresh and sour milk was a common drink in most or all households. Peanuts, peanut butter and peanut oil was the main and daily medium of cooking. Fish and *dagaa* were commonly eaten. Fish and *dagaa* was mainly obtained from lake Victoria through Mwanza and Shinyanga and from Lake Tanganyika through Kigoma and Kibondo. A green vegetable comprising of pumpkin leaves, and ladies fingers in peanut butter (mlenda) was a common source. Other foods and vegetables included mushrooms, honey from bees, green and yellow bananas and cassava.

Whether a family continued to have enough of these foods throughout the year was determined by the behaviour of a household. For example in our visits in Bujika the minimum number of sacs of rice harvested by most households was 10 bags of rice and 10 bags of maize. Each family had at least a shamba (about 1 acre) of sweet potatoes and cassava while mangoes, pawpaws and lemons were in plenty. One man had harvested 100 bags of rice and 20 bags of maize, while another one had harvested 50 bags of rice and 20 bags of maize.

By the time we left the village that is within two weeks they had been left with 10 bags of rice and about five bags of maize each. They had sold the rest. Some people had constructed granaries. For example one man in Bujika had harvested 50 bags of rice and 20 bags of maize. He constructed a granary and even bought more rice off the neighbours and had accumulated about 200 bags of rice and 100 bags of maize. It is most probable that his fellow villagers are now already resorting to buying from him and those who hoarded the foods in granaries or from town-markets. Hence money

earned is quickly spent again on food purchase but at higher prices than they had sold. There was reported to be periods of plenty (immediately after harvest during dry seasons) and periods of scarcity that is when the food reserves were reported and noted to dwindle very fast.

2.3.1 Food shortage - causes

(a) Storage problems

Most houses did not have granaries or food stores. Rice and maize were threshed and put in 50 kg. Sisal bags and were then heaped in sitting rooms and even bedrooms. But most maize was stored as cobs in their skins and hung on tree stands in the compounds (see plate 5). Some of the maize was kept in containers made from tree barks (Mahamba) see plate 6. These could accommodate about two bags of un threshed maize. Such storage systems gave a false picture to the households that they had plenty of food and such harvests were talked about. For example "Mr X has had a good harvest , he has 100 bags of rice and 50 bags of maize". This situation would have been different if the products were stored away in a granary. Direct exposure of the foods rose the temptation to sell the harvest for money and also to create space in the house. Also refusing to sell to the potential buyers when they (buyers) could see the food in sacks heaped around the house was not easy.

(b) Types of food grown and temptation to sell

Various varieties of rice were grown, but the variety locally called "India" and "Super" were very marketable and a sack of 50kg cost about Tsh 5000-6000/=*. These varieties were popular because they were reported to remain whole on threshing unlike other varieties e.g. mudundiko which are reported to break on threshing. Hence growing of these varieties was another temptation to sell all the harvest. Potatoes were also very marketable in Kahama town and the chances of farmers selling off this

produce as whole shamba was high because the measure of selling sweet potatoes was a bag full at about Tsh 300/= a bag. Hence to raise considerable income from the potatoes the farmers (mainly women) were tempted to sell whole fields.

(c) Marketing process and behaviour and its effect on food security

Most foods were sold to raise income. Some especially during harvests were sold to create room in the house (incase of high harvests). Rice, tomatoes, onions and maize had now become fast selling commodities especially because cotton (the main cash crop) does not generate immediate cash due to the ineffectiveness of the Tanzania cotton marketing board and its agents to pay farmers in cash for their cotton. Also private agents follow the food items to the villages offering good prices and transport and this raises high temptation among farmers to sell the foods. For example the traders hire mango trees in fruits. A good harvest of a mango tree could fetch about Tshs 5000/= - 6000/=. Selling fruits this way made the fruits totally unavailable to the family unlike in situations where villagers pick and sell fruits. Some fruits would be available to he family and children. Once all the fruits on the a tree are hired even approaching the tree is prohibitive. The practice of traders going direct to villages encourage development of hoarders at the village level As these were acting on their own or became agents of the outside traders.

(d) Selective Feeding

Families were selective in their eating habits. Most households regarded maize as the main food while rice was termed a luxury food and claimed that it does not satisfy hunger. Fruits like lemons were not utilized except in porridge for children. Lemons were rotting in the fields, when they could have been used for juice, spices or sold. Such attitudes encouraged the farmers to sell the rice and even grow rice for the market only. Rice was slowly becoming a men's crop grown mainly for cash.

(e) Pests

Harvests were reported to be destroyed by pests after a short time especially in the house. These included beetles for rice, beans, nuts, and *dudumizi* for maize. Preventive measures included sprinkling of kitchen ash on the maize and beans. However this method was effective for a short period if at all. Some farmers used artificial pesticides and insecticides but then, they were not ready to consume such treated foods. Hence farmers had a tendency to sell off their food in order to avoid losses through pests

(f) Food Preservation, handling and processing:

Common methods of food processing and preservation was solar drying. Drying in the sun was limited as the compounds were very stonny (had a lot of gravel). This encouraged threshing crops like maize and rice in sisal bags. Considerable drying directly on the ground was done for limited amount of food e.g. beans. This was done on some parts of the compound which was smeared with cow dung to reduce gravel. (See plate 7) smearing compounds with cow dung or mud was cumbersome, time consuming and yet temporary. Hence some farmers would sell their produce e.g. peanuts without threshing hence fetching low prices.

Potatoes were cut into thin slices before or after boiling and dried in the sun on racks or on the cowdung smeared compounds. Green vegetables e.g. leaves of beans (kunde) , mlenda were boiled and dried in the sun. Fruits and milk products were not preserved. Honey was usually boiled and kept in five litres metal tins or half litre bottles (usually Konyagi bottles).

However the villagers especially the women groups had been taught better preservation methods for green vegetables by CD and HARSHI. That is, they were taught to boil and dry leaves in cellophane bags.

Processing of maize and rice was done through pounding using mortars and pestles and sometimes several women/girls assisted each other. (See plate 8). In Bujika some women took their grain to Iboja for milling but during this study the machine got spoiled. Vumilia group was anticipating to obtain a milling machine in the near future. It is however useful to note that milling machines are expensive as they are obtained through loans. The amount of maize/rice milled in the village is not enough to meet the costs and maintenance of the machines. Food processing could be improved by provision of hand operated machines at individual households. These are cheaper to buy maintain and can be shared in small groups at family or sub-villages levels. This could be obtained through a revolving fund.

Improper food use

Foods like honey, maize were used in making local brews. Although this generates income, it erodes food reserves. Local brews were in plenty during the visits and this was reported to be highest during harvests. Making of the brews involves a lot of boiling of maize porridge and as such it also involves a lot of fire wood in the form of tree logs and this leads to environmental degradation. There is a need to encourage the tree seedling project in the villages like that started in Bujika by HARSHI to cater for the replacement of felled trees.

During harvests as was observed in our time of study there were en-mass festivals in villages comprising of competitions in traditional ngomas. During these festivals a lot of food was consumed and it is reported that these festivals are usually followed by famine.

Recommendations to solution of food shortages

There is need to educate the villagers on food security measures. The cotton marketing authorities should pay farmers in time so as to reduce the temptation for the farmers to sell food crops especially as the cash and food crops are harvested at the same times. Purchase of foods from villages by traders should be discouraged as this erodes the villages of all its food reserves. There is need to enforce the communities to the construction of granaries and food stores this will discourage hoarding by some farmers. Food preservation skills which were imparted on the women groups should be extended to all households. There is need to provide pesticides and to train the farmers into identification and control of pests in stored grains. Better methods of beer fermentation should be developed for example through use of yeasts to avoid heavy use of fire wood and grain in beer brewing.

Women should be taught proper nutrition for example food formulas for children and family. The villagers requires to be taught a general health programme for food and feeding. Training into food handling and processing is also required for example the villagers could be taught to dry foods on mats made of the palm fronds which occur in plenty in the village. The villagers could also be trained to preserve fruits like mangoes and lemons which are plenty, so that they can be available during off season times.

2.4 Housing and Sanitation

The houses had two bedrooms opening into a small square sitting room. Some houses had separate kitchens. Others had shelters made of sticks and palm fronds constructed against one of the front walls of the house. Stores were not constructed and grains were stored as described before and firewood was stuck against the walls on verandas, (see plate 22). Some houses were made of mud or unburnt bricks while others were made of tree poles and mud. The roofs were of grass which had to be

wholly or partly rethatched at least once a year and the grass for thatching was cut and stored usually during the dry seasons (see plate 4) rethatching or mending roofs was done before the rains by men . In Bujika only three houses were reported to have an aluminium roof. Lack of aluminium roofs means inability to harvest rain water.

Most latrines were shallow and fenced with palm fronds. General construction of the latrines was poor. It appeared that children and toddlers were not expected and did not by practice use latrines for fear of falling in the pits.

House construction was carried out by both men and women. Both men and women collect water for making bricks, smearing the walls. carrying the grass for thatching. However digging of latrines and thatching of roofs was done exclusively by men. Due to farming practices around the homesteads most households were far from each other resulting into scattering of the villages. The distance between houses varied between a few meters to 1/4 km.

2.5 Education

Each village had a primary school with 1-7 classes. Adult classes were not given in the villages. In Igulwa parents were constructing a private secondary school. Both villages reported high rates of abscondment, absenteeism and general drop out by pupils from the schools. School drop out was attributed to transfers of the parents from village, pregnancy among female pupils and the realisation that the chances for students to be selected to secondary schools are few. Also it was revealed that in Igulwa for instance mining of gold, selling of water to gold mines was more profitable than schooling. Also marriage appeared to be the major goal for a girl (daughter) and bride price the biggest benefit from a girl child.

About 90% of the men in the workshop could read and write as these were able to write their names. Illiteracy was noted to occur mostly amongst young and the aged

females. Old people who knew how to read and write claimed to have learnt the skill during adult classes which were no longer given for lack of money to pay the adult class teachers. Also most men claimed to have learnt reading and writing in their places of work like Zanzibar, Dar es Salaam. Hence exposure of the men reduced their illiteracy while the women because they were home bound had less opportunities to break illiteracy. It is therefore important that training and education facilities be available for the women especially now that adult classes are non-existent. However adult classes should be resumed if the target groups are to be well aquinted and to participate in the project. Training is required in management, leadership especially for groups who run or will be expected to run income generating activities e.g. milling machines, horticulture projects etc.

2.6 Income generation

The main cash crop in both villages was cotton. But rice, beans, peanuts, sweet potatoes, mangoes, tomatoes and onions were becoming fast selling products as these earn direct cash unlike cotton where the farmers are not paid cash on delivery. Gold had become a lucrative business in Igulwa. However most of the mines belonged to traders from outside the villages. The villages benefited by selling their labour, foods and water. High income generating items such as cotton, rice, beans, tomatoes, onions, cattle were sold by men. Also when items were to be sold on a large scale they were usually sold by men either to traders who came to the villages or by taking them to the markets on bicycles. This was the case for potatoes, in Bujika. Beans and peanut in both Bujika and Igulwa, although these crops are normally grown and sold by women because of the high markets they are being taken over by the men.

Women sold items on small scale such as vegetables, potatoes, and clay pots. Women could only sell crops such as rice, cotton, which they have grown on land that was given to their sons. Hence women with grown up sons could be expected to have

access to incomes from cash crops. An example of income generating activities engaged in by the women summarised below:-

Activity	Initiator	Donor and progress
1. Horticulture e.g. (tomatoes)	themselves	Agriculture officer gave them seeds. The project started in 1990. Not progressing well for lack of pesticides and spray pumps
2. Rice growing	Themselves	CDTF provided a loan of TShs 75,000 to purchase an oxen and plough. Project started in 1991. The project is progressing well. They had 400 Kg of rice in stock.
3. Fruit tree seedlings	HARSHI	HARSHI was providing seedlings and personnel. The project was progressing well. They are grafting orange trees on lemon. They are growing, spinach.
4. Grain milling machine	Themselves	OXFARM gave them a loan to purchase the machine and construct a shelter for a machine. The project is progressing well. The shelter is complete. They hope to build a hand water pump near the project site.
5. Shops	Themselves (Igulwa)	The women groups in Igulwa owned shops. The project failed for lack of capital and managerial skills.

6. Sell of foods	Themselves (Igulwa)	Women sell foods; rice and beans, meat and tea in women stalls in the trading centre and on market days. Successful but men were reported to be taking over the activities and employing the women especially girls as assistants.

The major sources of income were as follows:-

Source of income

- Crops:- cotton, maize, beans*, pea nuts*, sweet potatoes* and finger millet*
- Fruits and vegetables:- mangoes, tomatoes, onions, spinach*, tree seedling* (mainly in Bujika).
- Livestock: cattle, goats*, fowls (chicken and ducks).
- Animal products : milk*, honey, eggs*.
- Handicrafts: clay pots, wooden vessels (mahambas) mats*.
- Others: Local brews*, cooked foods*, gold, water (mainly in Igulwa).
- Hired labour: in towns, on shambas and gold, water. *[1]

Women did not raise enough income from agriculture and animal husbandry activities although they are the main participants. Women were forced to find alternative income generating activities such as making clay pots, growing cotton on their grown up children's shambas. Activities such as vegetable growing which used to be income generating activities for women were slowly being taken over by the men as these (men) have more time to market the products in towns and village.

It was reported that the women who belonged to the groups tended to develop

economically. One of them had used the income to buy goats. The husband took the goats and paid bride price for a second wife with the goats. It appears that some husbands assumed that women earned good incomes from the groups and they ceased to give them financial support for clothes and household items. Hence some women were forced to resign from groups in order not to forfeit the husbands financial support. Hence men's behaviour has an influence on the women's development. It is important to create awareness amongst men on the importance of groups. In Igulwa women (UWT) were engaged in keeping shops and where possible men groups could be encouraged and funded. For example for marketing horticulture. Alternatively mixed groups of women and men should be encouraged. Such as: Handicrafts industry should be encouraged and developed as a major activity in the villages especially, pottery and mat making, baskets. Men could be encouraged to become members of the groups in order to reduce harassments of the women by the husbands and male leaders.

Plate	1	Village and women group leadership
	1-3	Vegetation status-Savannah grassland, tall trees, palm and mango trees.
	1-2-	Irrigation practices rice (Plate 1), (bananas plate 2)
	2-3	Gender roles in water activities women and female children involved in fetching water for domestic use.
	1-2	Instruments for drawing and storage of water pans, basins plastics and metal buckets guards.
Plate 4		-Ancenstral Houses (Fenced by sisal plants in main compound).
		- House made of tree poles and grass thatched
		- grass cut during dry seasons for rethatching before rain seasons.
Plate 4		- Food storage - maize cobs in husks hung over fire place or in compounds or tree.
Plate 6		- Interocens in homes and work places canimator-Vicent Pima interocens man at work.
		- Instruments made of barks of trees used for food storage -varies in size depending on use.
Plate 7		Compound smeared with cow-dung (white patch) to reduce gravel and stones surface for drying seeds and cereals.

Plate 8 -Food processing-women pounding in mortar and pestle-collective efforts.

- Firewood stacks against wall.

Plate 1

Plate 2

Plate 3

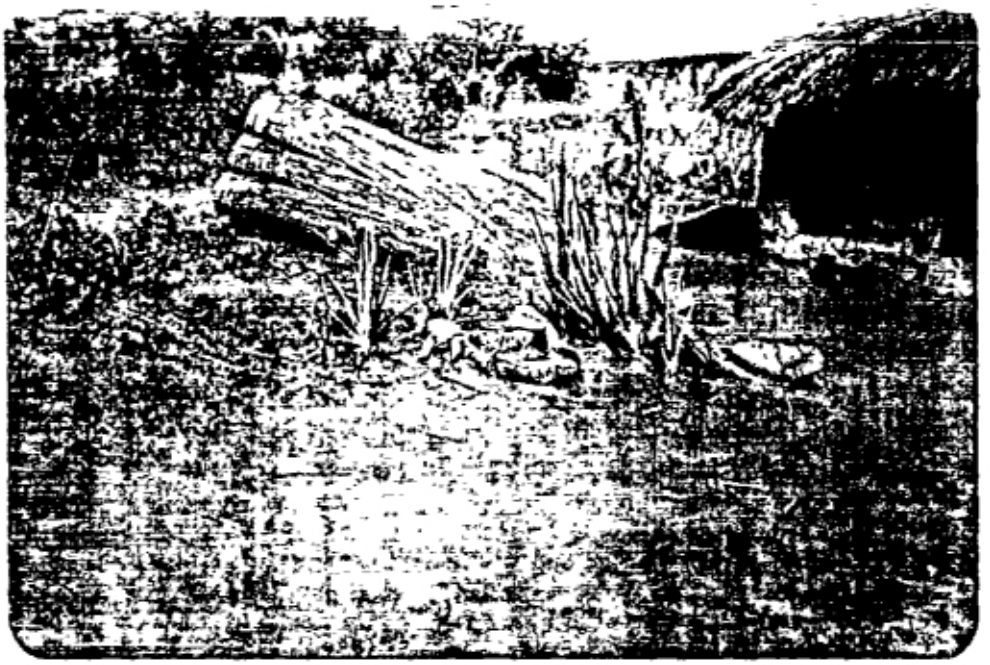


Plate 4

Plate 5

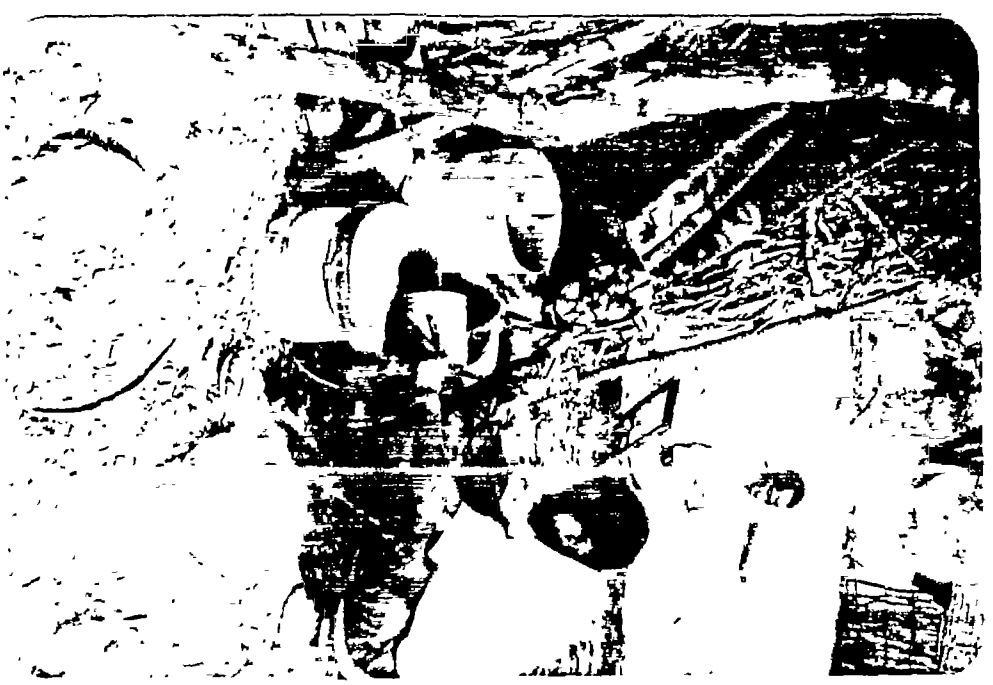


Plate 6

Plate 7

Plate 8

III. METHODOLOGY

3.1 SAMPLE

The sample included one Village near and one furthest from the District Headquarters in order to study the effects of proximity of the District, Headquarters on village water programmes. These were Bujika and Igulwa respectively. The two villages had no water programme before. The study was conducted by a team of eight people including one district coordinator, two District research teams and four animators (two for each village). The team was assisted by two District resource persons and was under the supervision of a regional coordinator.

The Gender Impact Study sought to identify gender-related gaps that still exist in plans to implement the Domestic water Supply programme. It was thus two-pronged, concentrating both on gender issues and on water availability and use.

In relation to gender, the study sought to establish the people's awareness, attitudes and perceptions of gender issues, assess the position of women and gender relations in the programme area and solicit views on how gender issues can be put on everybody's agenda and thus create space for women to become effective planners, implementors and monitors of village development activities in general but more specifically of the water programme.

With regards to water, GIS sought to determine whether women were aware of the programme and if that awareness will have any impact in their participation in the programme. The study also sought to identify appropriate locations for new water points and where possible plans and programmes of the well construction by the user groups.

The GIS also sought to find out about water itself as a commodity quality, quantity, sources, availability, adequacy of supply and how it is utilised by the users in the project areas, all in relation to women's activities. In order to get in-depth results a variety of participatory methods were employed, as follows:

3.2 Workshops, Discussions , Briefings and Meetings

The study started with a briefing of the team by the Embassy in Dar es Salaam. It was followed by 6 workshops two each at the regional, district, and village levels. The first being for briefing, data collection. The GIS team got to know the village leadership worked out the research programme and procedure. The second workshops was for debriefing purposes. The leadership met included all or any of the following:

The CCM Ward Secretary (Katibu Kata wa CCM)

The Government Secretary (Katibu Kata, Serikali)

The CCM Chairman (Mwenyekiti wa CCM)

The Chairman of the Village Government (Mwenyekiti wa Serikali ya Kijiji)

Women leaders of groups.

Traditional leaders (Wasalama)

Agricultural Officer

Community Development Officers

Health Officers

Religious leaders

Sub-village leaders

Any other official recomended by the village leadership.

Discussions were held with these leaders and they also took the team around the

village to visit water points (see plates 9). The village workshops were preceded by sub-village meetings and discussion or mini-workshops (see Plates 10-12). Ten representatives including five women and five men were selected from each sub-village for the village workshop. This procedure was determined by the large size of the villages. It was felt that people and particularly women would be more relaxed and would give full participation when met in their surroundings that is sub-villages.

3.3 Chapati Game

During the first District Workshop in Meatu all the research teams members were requested to introduce each other in pairs. They were asked to find out from each other names, personal particulars, short histories including professions and prospects, etc. The method enabled the team to relax and get to know each other and encouraged an atmosphere of friendliness, ease and full participation which stimulated a spirit of unity and good co-operation even when we had dispersed to our respective villages. This was not possible at the sub-village and village workshops because of the great numbers of participants and the limited time and tight schedules. However, self detailed introductions by the workshop participants assisted to break the ice and encourage full participation of the villagers. Also because these people had already been met in their sub-villages and homes, at the village workshops we were not strangers to each other.

3.4 Group discussions

In order to encourage freedom of expression and generate representative information, group discussions dominated most of the the workshops. Break-up into groups of sub-villages and gender (men and women) was done in mapping, pocket chart voting in choice of new water points of technologies.

3.5 Pocket chart voting

This was used to enable the participants define the types of water sources available in the villages and sub-villages and it also enabled the participants to give their opinions and select technologies of their own choice. The method included identification of the various water sources and technologies from a collection of pre-prepared drawings of water sources for example, pumps, piped water, rain water harvesting etc.(see plate 13). The types of the water sources were coded and recorded on flip charts and participants then voted for the type of water points, technologies they desired. This included voting for old and new or both technologies which they identified on the charts such as shallow wells, piped water. Voting was done in sub-village groups and the colour code papers for men (white) and women (yellow) enhanced efficiency and identification of men's and women's preferences and choice.

3.6 Use of Flip Charts and Marker Pens:

These were meant for efficiency purposes but they had the by-product of holding the attention of participants especially at village level. This was expressed both verbally and on workshop evaluation forms. They also enhanced team spirit among the Research Team since everybody had to help out either by putting up the charts, writing or replacing filled up papers.

3.7 Mapping:

This technique was employed to involve villagers in location of existing water points and identifying locations for new ones. This served to enhance gender participation in planning and decision-making and created the participant's confidence in their ability to draw as a way of self-expression. The exercise also served to reveal hidden talents among villagers who hitherto had belived they could not draw anything let alone a village map. The success of this exercise served to enhance the self-image of

both men and women.

Mapping was conducted in the first village workshop and men and women in sub-village groups were each requested to draw their maps and locate the existing and new water sources.

Drawing of maps started for some groups by drawing on the ground. (see plate 14) which they later transferred on paper. However some groups drew on rough paper and later transferred on the flipchart papers. The maps drawn were then presented by the respective men and women from each sub-village (see plate 15-19) and a consensus was reached as to whether the types, number and location of the traditional and new water sources was accurate. These maps were also discussed in the 2nd sub-village meetings for final presentation in the 2nd and final village workshops. Fig. 2 and 3 indicate the final maps reduced in scale without any changes (see plate 20). Efforts were made to ensure that location for water points would be accepted by the community. Hence avoidance of an unacceptable site locations such as sacred places, grave yards were avoided. In order to do that the sub-village participants at the village workshop included two old people, two youths and sub-village leaders. This was done in order to avoid placement of water points in places unacceptable by the villagers which was done by previous programmes as a result of not consulting the people to locate the points themselves.

3.8 Interviews

3.8.1 Structured Interviews and Household Surveys:

These enabled the team to collect data from individuals in their familiar surroundings at home and at well sites. Information on self-image, decision-making and division of labour was collected by this method. Most of the baseline statistics were also collected during the interviews.(see plates 6, 21-24).

3.9 Evaluation Interviews

The villagers were requested to give their views on the methodologies used in this study and the approaches of the new programme. These views were discussed at the house, sub-village and village levels.

Plate 9	Water hole (Dimbwi) in Bujika village Leadership and research team on village tour of water sources.
Plate 10-12	Sub-village workshops (meetings)
10-11	Kitongoji cha Nhalambo-Nhalambo sub-village
Plate 12	Kitongoji cha Shininga-Shininga sub-village
Plate 13	Pocket chat voting-picture of a sample of a water source.
Plate 14-20	-Mapping exercise drawing on the ground (Plate 14); men and women draw separate maps (Plates 15-17). -Map presentation by males and females (18,19). -Reduce map in size at Regional Headquarters (Plate 20).
Plate 21-23	Structured interviews at home (Plate 21 and 6), at well sites (Plates 22-23)

Plate 9

Plate 10

Plate 11

Plate 12

Plate 13

Plate 14

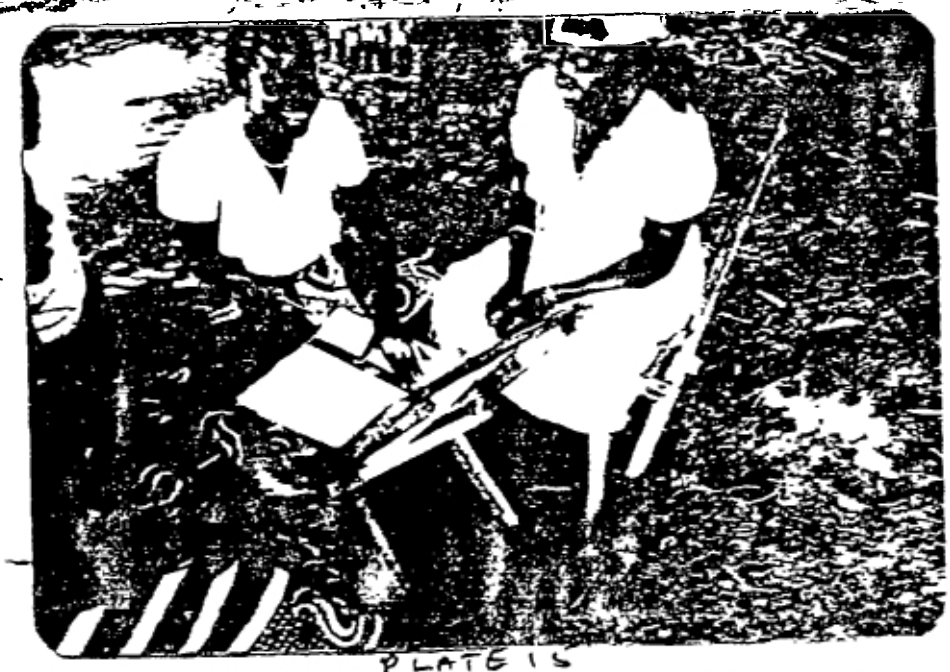


PLATE 15

PLATE 16

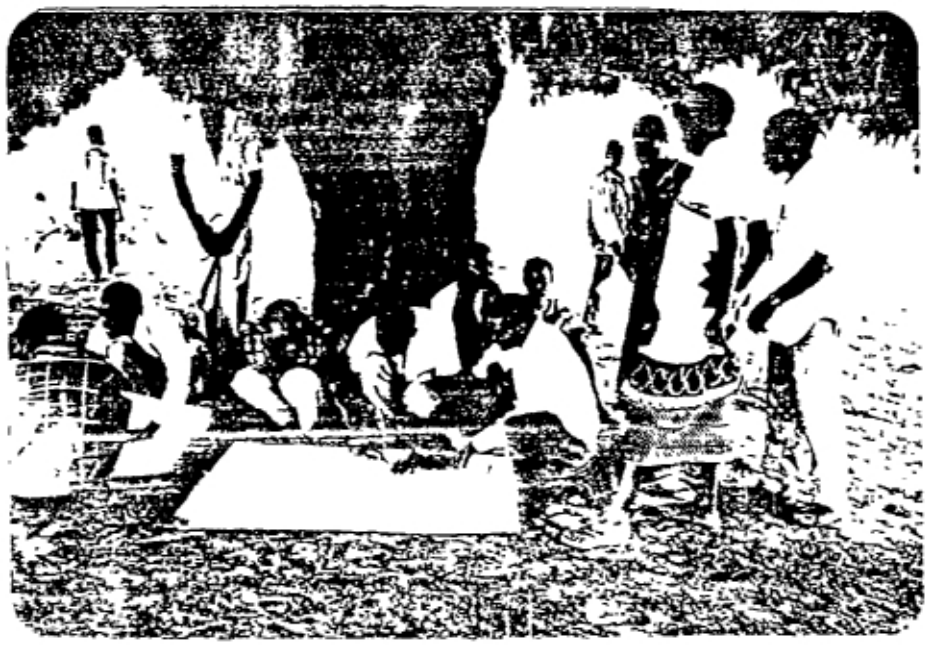


PLATE 17

Plate 22

Plate 23

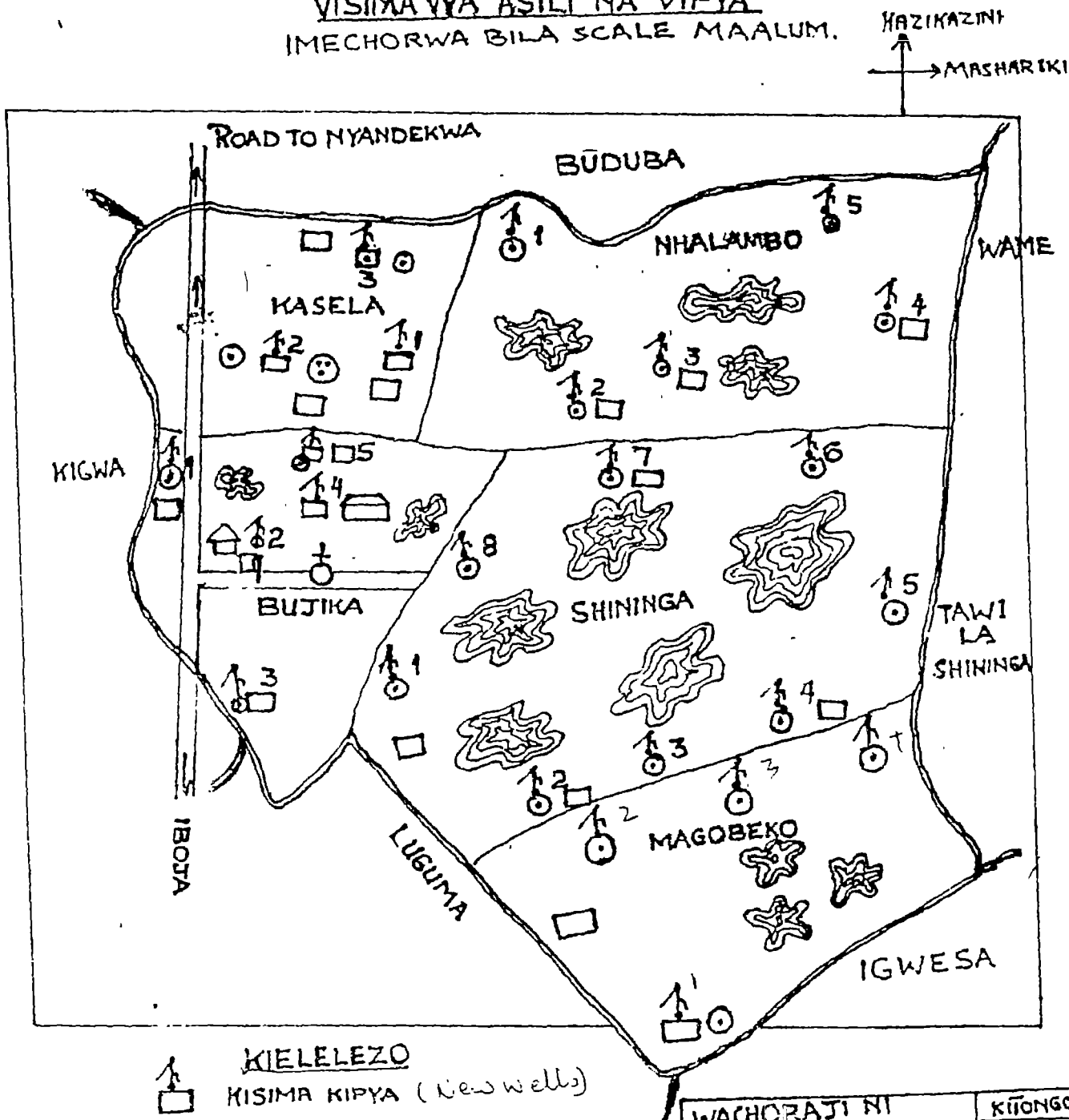
Plate 21

Plate 20

Fig 2

RAMANI YA KIJIJI CHA BUJIKA KUONYESHA VISIMA VYA ASILI NA VIPYA

IMECHORWA BILA SCALE MAALUM.



KIELELEZO

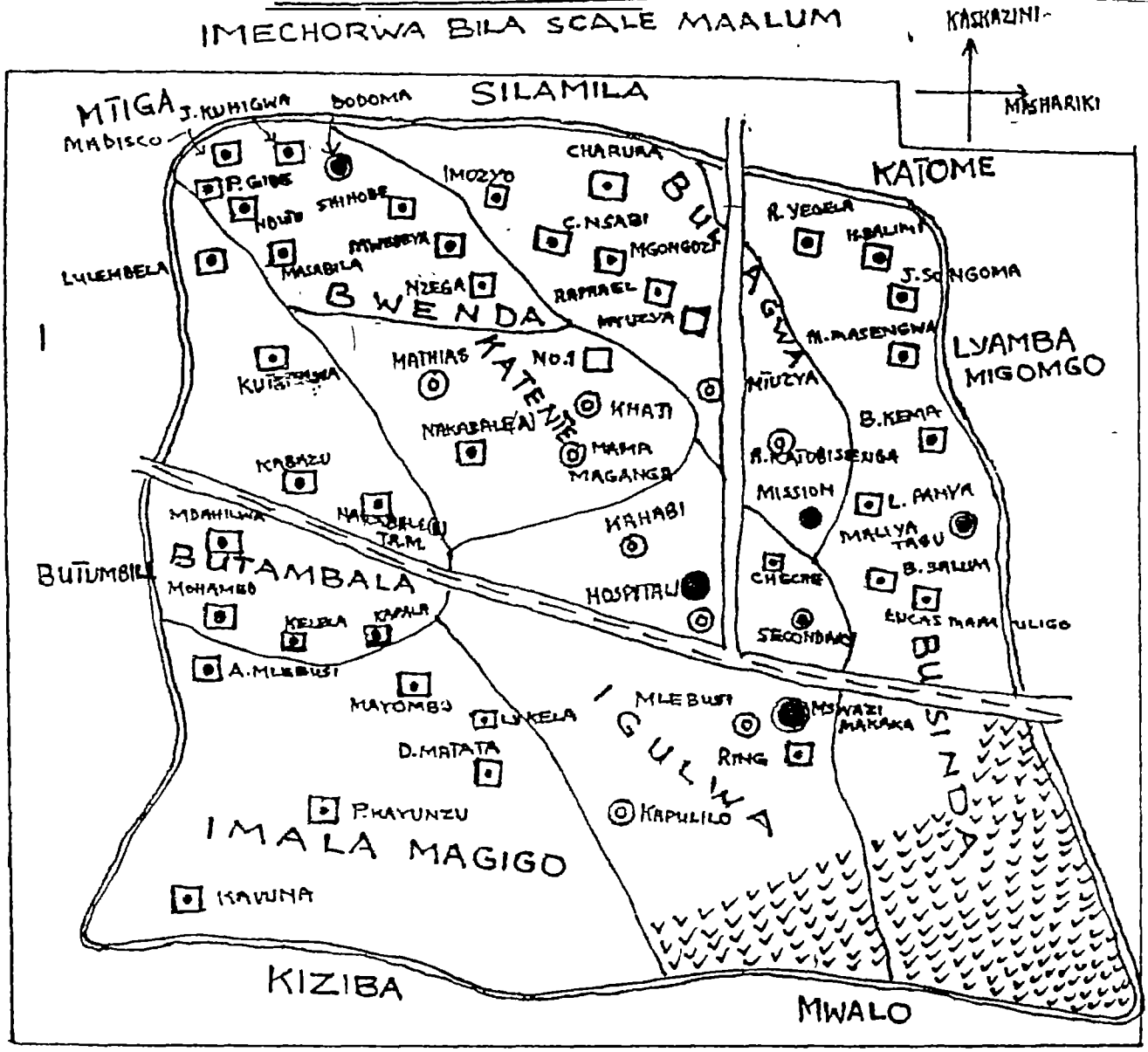
- KISIMA KIPYA (New wells)
- DIMBWI
- CHEMICHEMI
- BWAWA
- MLIMA
- SHULE
- OFISI
- MASHINE
- BARABARA KUU
- KANISA
- MPAKA WA KITONGOJI
- MPAKA WA KIJIJI

	WACHORAJI NI	KITONGOJI
1.	JUMA MAZIKU	SHININGA
2	FIKILI ELIAS	BUJIKA
3	CHRISTINA KASHINDYE	BUTIKA
4	KAMULI NDILANHA	NHALAMBO
5	MAGRETH MTEMGWA	NHALAMBO
6	RAMADHAN OMARY	KASELA
7	LEA MALALE	KASELA
8	LIMBU GOJONGO	BUJIKA

Fig3

RAMANI YA KIJIJI CHA IGULWA KUONYESHA VYANZO VYA MAJI

IMECHORWA BILA SCALE MAALUM



KIELELEZO

- MIPAKA YA KIJIJI
- BARABARA KUU YA RAMI
- BARABARA NDOGO YA MITAANI
- MIPAKA YA VITONGOJI
- VISIMA VIPYA (Newwells)
- VISIMA VYA KUDUMU
- UCHIMBAJI [UKARABATI]
- MBUGA
- VISIMA VYA MAZINGARA

WACHORAJI		KITONGOJI
1.	OSWALD MATHEW	KATENTE
2.	ANASTAZIA MPILIMO	BULANGWA
3.	SYLIVESTER M. MGALLA	BUTAMBALA
4.	DAUDI MATATA	IMALAMAGIGO
5.	ANTHONY P. SIZYA	IGULWA
6.	MATHIAS DOFFU	BUSINDA
7.	MAZIKU MATUGILO	BWENDA
8.	ALOYS MBULUMATALE	BWANA MIEUGO

IV THE STATUS OF WATER AND WATER SOURCES IN THE VILLAGES

The villages of Bujika and Igulwa were not in the Domestic water supply programme. However the villagers were conversant with the failures and successes of water programmes in other villages and utilized such experiences in their discussions based on what they had seen in other regions and villages.

4.1 Previous experience with water projects

As stated before, in 1967 the Government had started a water programme. Wells were built in Bujika village but they were all left incomplete. Likewise in Igulwa two wells were constructed but left incomplete in the Migombani area. One is being used but the second was abandoned after an animal fell and died in the well. Both villages associated the failure of these projects to the non-involvement in identifying the needs of the user group. Hence the villagers appreciated and acknowledged this present approach whereby the villagers were being requested to identify their water problems and work out plans of solving these problems.

4.2. Rain water harvesting and shadoof wells:

A good demonstration of rain water harvesting could be found in the catholic mission in Igulwa. Rain water was collected in large metal tanks and to these tanks were connected pipes and the mission used piped rain water for all purposes, including bath room showers. Deep wells (shadoofs) were also dug within the premises of the mission and one had been left for public use. Both are about 25 metres deep and were

103 years old.

The wide spread practice of digging deep wells of a shadoof type in Igulwa is believed to have been influenced by the mission's building of their deep wells. These were even selected for the next phase of the programme. The failure to adopt rain water harvesting can be associated with lack of aluminium iron roofed houses in Igulwa. With increasing number of aluminium roofed houses it is expected that rain water harvesting will be easily adapted. Also despite the villagers choice for shadoof type wells, it would be advisable for the project to provide safer sources like hand pumps or bore holes because the shadoof wells are open holes prone to contamination and hence the water is not safe for use. It is useful to note that villagers can easily copy and adopt technologies. The new water programme could build a few demonstration wells (pumps) and then introduce a revolving fund to enhance building of more pumps.

Water availability in the villages

The villages had rich sources of water. The status of the water sources in the village is given in Table 2

Table 2: The status of water sources in Igulwa and Bujika villages

Village/sub-village	STATUS OF WELLS						
	A	B	C	D	E	F	G
IGULWA							
Bulangwa	19	12	5	2	7	8	49.4
Igulwa	34	3	30	1	28	8.9	65.1
Imaramagigo	6	6	-	-	-	20	126
Businda	11	10	-	1	-	12.5	78.8
Butambala	10	9	-	1	4	12.8	80.6
Katente	4	4	-	-	4	88.8	559.4
Bwenda	9	8	-	1	8	56.8	357.8
TOTAL	93	52	35	6	51		
BUJIKA							
Shiniga	6	6	-	-	-	18	113
Magobeko	4	4	-	-	-	13.6	85.7
Nhalambo	5	5	-	-	-	18.4	115.9
Bujika	6	-	-	-	-	9	56.7
Kasela	2	-	-	-	-	16	100.8
TOTAL	23	15	-	-	-		

Key to status of wells
A = Total number of wells/domestic water sources in sub-villages
B = Number of Public wells
C =- Number of private wells
D = Number of clan (ukoo) wells controlled by Watemi clan leaders
E = Number of seasonal wells
F =Average number of households per well
G = Approximate number of people/well based on 6.3 average number of people in households (1988 National Census)

Table 2b: The types of water sources in Bujika village

Sub-village	Type and number water source		
	Dimbwi	Lambo	Chemichemi
Shininga	6	8	-
Bujika	6	2	-
Magobeko	5	7	-
Nhalambo	5	8	-
Kasela	-	1	1
TOTAL	22	26	1

Igulwa had about 93 wells of which 35 were privately owned, six (6) belonged to clan families (ukoo) and 56 were public wells. The private/clan wells were distributed as follows:-

Sub-village	Number owned
Bulangwa	One for Mtemi Lunde
Igulwa	One for Mtemi Makala
Businda	One for Nabwana
Butambala	One (spiritual well)
Bwenda	one Mtemi Lunde

Bujika had about 48 water sources all of which were for public use of these 22 were Madimbwi, 26 Malambo and 1 Chemichemi.

4.3 Water collection/pottage/storage

Women and female children were involved in harvesting/drawing water for all purposes like domestic use, agriculture and building. However water for drinking, cooking, bathing, laundry was exclusively drawn by females. Men drew water but mostly for the purposes of selling to public places like bars, restaurants, guest houses, private homes or for the gold industry. At home the men drew water for building and vegetable and fruit irrigation. Women and children used pans, basins, guards, 10 litre metal and 20 litre plastic buckets. Men mostly used jerricans to draw water although some used the 20 litre plastic buckets. (see plates 2, 3, 23,24)

4.4 Amount of water used

The amount of water used by the households which were close to a water source was about 60 - 300 litres of water per day. This amount was also the average amount of water used by the households which were making local brews or had babies and young children. Households which lived far from the water sources reported to used about 20 -60 litres of water per day. This is because bathing and laundry which was done at home by households closer to the water sources was done at the well sites by the people who lived far from the water sources. Hence it appears that proximity to water sources encourages water wastage or extra use of water or frequent calls to water sources (wells).

Men drew 240-960 litres of water per day. They were requested to fill 1-4 drums of water (240 litre drums) per day for public houses like guest houses, etc. In the gold industry some men were required to draw about 1000 litres of water (50 jerricans) per day for washing/sieving gold dust. This means that women were required to visit the wells 2-15 times a day assuming that water was being drawn by one person. Women and children carried the water containers on their heads and were therefore able to carry only one container at a time. At any rate most women would also be carrying babies

on their backs. Men carried water on bicycles whereby they were able to carry about six jerricans at a time. That is four at the carrier in a rack and two were tied at each side of the carrier near the peddles. Men also carried water on wheel barrows and they could carry 4-6 jerricans/buckets, that is about 120 litres of water per trip. Men could draw water on foot but they used wooden beams (bar of moments), whereby the beam was carried across the shoulder with the shoulder acting as a fulcrum and four buckets were suspended on it, two infront and two behind. This means that a man who drew water for public houses and gold industry could visit the well 7-8 times a day only. While those who carried water on beams visited the well about 12 times to fill 4 drums.

4.5 Distances and Time spent on water

The distances from the houses to the water points varied between 0.5-1.23 km. Women reported that they spent 0.5-1.0 hours a round trip to the water source and the men reported half this time. However this time varied and was shorter during the rains or where the water source had a deep water as in the Kasela spring (plate 25) or where the water was drawn from a deep well (shadoof) as the one at the mission in Igulwa. In cases where the water was scant as was in some water sources or during the dry seasons where, the population per well was high (see plate 24). The period spent in one trip to and from wells increased. This was because too much time was spent queuing for the water (drawing water in turns) or waiting for the water to accumulate. Under such circumstances women could spent whole morning hours at the wells. Hence women spent 0.5 -1 0 hours for one trip of water during normal seasons. But they could also spend up to 4 hours in one trip of water during dry seasons. Men reported to spend about 2 hours to draw water and this was spent as 1 hour in the morning and 1 hour in the afternoon or evening. Comparatively men spent less time but drew more water and earned money for it. Hence men had more time on their

hands to do other activities. The men who drew water for sell reported that they did not usually draw water for their homes. This they said was because most of the water they sold was not fit for domestic use but it was also because they felt it was a faminine job to draw water for the household. In order to avoid the long ques men and women tended to visit wells with more water or less people even when it meant travelling longer distances. For example men from Butambala or Katente could drew water from Igulwa at the mission well. This means that men and women saved time of waiting at the wells, also from the inconveniences of squating (difficult for pregnant women and women carrying babies at backs) and possible squibbles. However the time saved was spent on walking longer distances especially for those (women) who fetched water on foot.

4.6 Types of water sources

(1) Deep wells (- Visima vya kuchimba (shadoof))- found mainly in Igulwa.

(2) Springs - Chemichemi. (see plate 25, 26 and 27)

(3) Water Holes - Dimbwi. (see plate 9)

(4) Water Holes - Lambo/Bwawa. (plate 28)

The name Lambo, Dimbwi and Bwawa appear to have been interchangeable. However it was finally agreed at the workshop that a Dimbwi was a water hole from which water for cooking and drinking was drawn, while the water from a Lambo was mainly used for bathing, washing, agriculture, Livestock. Bwawa are larger water bodiers or ponds. The average size of the Dimbwi's was about 1-2m wide and 1.5-2m deep, while shadoof wells were about 1 metres wide and 6-10m deep.

4.7 Seasonality of the water

Most wells were surrounded and protected from drying by plants such as water lilies, elephant grass large trees such as "Mikuyu and mahama". All the wells in

Bujika had water the year round although the water level sometimes dropped.

4.2.7.1 Seasonality

(a) Annual variation

All the water sources in Bujika had water all the year round except in Kasela and Mogobeko where some of the wells had to be dug deeper to increase the amount of water. In Igulwa 51 water sources or about 55% were seasonal. The highest number of seasonal wells were found in the sub-village of Igulwa. Bwenda and Katente whereby about 82% of the wells in Igulwa were seasonal and about 100% of the wells in Katente were seasonal and about 88% of the wells in Bwenda were seasonal. The wells in Igulwa were seasonal for two months. Those in Bulangwa were usually dry between July and November while those in Bwenda were seasonal for six months. The wells in Katente were seasonal but could be dug deep for water.

(b) Daily variation

Water for Domestic use (drinking , cooking and beer brewing) was being drawn only in early morning hours or late evenings. For most villagers this had become habitual. According to the observations and evaluation of the researcher (Author) this trend appear to be regulated by the clearness and contamination of water. The open wells and springs tend to have growths of green algae which tend to come to the surface during mid mornings and afternoons. To avoid this slimy algae villagers regulated water collection in the morning and evening when the algae would be settled.

This time schedule involve women and children to go to wells before or after the shamba work and this results in their going to shambas when they are already tired and force them not rest after shamba work. It also meant that people tended to visit wells at the same time, creating queuing of people at well sites.

(c) Quantity and quality variations

All the villagers confirmed and identified various problems of their water and water sources. All claimed that their water was not safe for human and animal consumption and also that some of the water was sometimes not suitable for bathing and laundry. The unacceptable water qualities included

(a) colour - Green, cloudy/milky, muddy and yellow and blackish waters,

(b) Quality - Heavy muddy or coloured.

- Mixed with water plants e.g. water lilies, mosses, snails, frog eggs mosquito larva and algae.

(c) Smell/Odour - Smells mud/dust, humus, animal urine.

These characteristics were mainly associated with open water holes (dimbwi, Lambo) and became more intensified during the dry seasons. The water sources in which the water level fell sometimes became too muddy and turned green and water was not fit for consumption (see plate 27). The situation leads to:

(a) Consumption of contaminated water by humans and animals.

(b) Shifting i.e seeking alternative wells. This means travelling longer distances.

(c) Monopolizing of better water sources which happen to be in the private farms.

The amount of water in wells changed with seasons or intensive use. Prolonged dry seasons lead to evaporation and lowing of the water level. Intensive use was due to increased population on the well. This led to widening or deeping of the well by continual digging in search for more water. This either lead to more evaporation, and reduction in water capacity (see plate 24). This situation was more prevalent in Igulwa where the villages were expanding and population on wells increasing due to the gold mines which consume a lot of water.

4.8· Traditional Regulation of water Quality/Quantity

Mystical

Some water sources eg the spring in Kasela (plate 25) and Dodoma (plate 26) were protected from contamination and intensive use. According to legends these water sources for example Dodoma was only to be cleaned by a thorny bush not a hoe and the spring in Kasela could only be cleaned at specific times in the presence of the elders governing the well. Water collection from these points was also limited to certain types of instruments and water use from the wells was for domestic purposes only bathing, washing near these water points was prohibited. In a way such cultural practices were a guard to safe and careful use of the water and infact these had the cleanest and most protected natural water sources.

4.9 Containers used for drawing/storing water:

Water for Domestic use was mainly carried in plastic and aluminium buckets, basins, pans and guards. At home water is stored in the same instruments that are used for collection. Water for drinking is kept in clay pots as these are believed to keep the water cool. (see plate 29). These containers are far too small for the water requirements or needs of the family for more than 11/2 days.

The small size of storage containers contribute to frequency of drawing water by both the households and public houses. It will be a worthwhile procedure if storage containers like drums and tanks are introduced for households and public places respectively. The project could train the villagers in construction of clay and cement water tanks.

5. Ownership and control of the water sources

(a) Privately owned or constructed but for public use:

This was the case for all the water sources in Bujika and some water sources in Igulwa as the case of one of the parish wells. One individual digs a well for domestic use or Agriculture but does not put any restrictions on its use. Later the village residents contribute by cleaning and re - digging it. Finally it is regarded and treated like it was a public well.

(b) Privately owned and used:

These were only found in Igulwa. For example in guest houses, offices e.g. CCM, the catholic parish . The wells were constructed within their vicinities and these were for use by themselves or immediate customers. In other cases the water points belonged to a certain clan (Ukoo) or families and these were used or expected to be used by such clans/family/traditional chief (Mtemi). There were about 30 wells reported to be privately owned by individual public house or family in Igulwa. There were also six wells belonging to clans (Ukoo).

(c) Privately owned but for selected public use:

These wells were dug by individuals for the purpose of domestic and agriculture but the owner of the water source sold the water descriminatively e.g. to gold mines, or those irrigating vegetable for commercial sells. This was found only in Igulwa.

(d) Public water sources controlled by individuals:

This included almost all the water springs e.g. Kasera in Bujika Dodoma in Igulwa These were natural water sources with mystical legends. All were controlled by a family of elders in the village who could determine what and what should not be done on the water sources.

5.1 Problems associated with water use:

Artificial Fertilizers in irrigated shambas:

Active irrigation and use of artificial fertilizers and pesticides can result in contamination of open water because of back flow as the land is flant.

There is a need to promote and train the locals in the use of local fertilizer (manure). The villages could successfully utilize animal manure from cattle, goats and plant manure from grass, rice, and maize husks. Utilization of these sources of natural manures will reduce un necessary fires in burning grass (maize and rice stems) in the shambas. Also most kitchen and other refuse will be utilized in production of manure and indirectly people will be forced to dig compost peats which will improve the sanitation status of the village.

5.2 Use of different water sources

The sources of water for cooking and drinking are different due to the water quality. This means that a woman has to make more than one trip in order to provide a home with water for drinking, cooking and bathing that is she may have to visit a dimbwi and a lambo.

It is envisaged that building water pumps will not solve health problems unless the programme is associated closely with training and creation of awareness in environmental sanitation and hygiene procedures, such as construction and proper use of appropriate latrines, body hygiene such bathing, washing and improved nutrition for example eating balanced diets and receiving health (medical) attention and antenantal clinics and other maternal and child health care.

5.3 Benefits associated with the traditional water source:

Presently water is mainly used for the following purposes:-

-Domestic purposes -Drinking, cooking, laundry

-Irrigation - Mainly, rice bananas, fruits and vegetables growth Animal husbandry

-Income generation - Through irrigation where the produce is sold Direct sell of water to public houses (bars restaurants) and gold industry and private houses.

-- Beer brewing.

5.4 Expected benefits from the Domestic water sources/points or from the water programmes:-

- Reduction or Total eradication of Diseases such as Diarrhoea Malaria, through coverage of wells and reduction in contamination.

-Relaxation and comfort to be experienced by water users from drinking clear (colourless) Water , Psychological satisfaction and peace to be obtained from pumps which they say would be free from local charms by additional Ngoma groups in their endeavour to win admires.

- Safety for all people e.g. incidence of children, people and animals falling in the wells will be minimal.

-Seasonality and reduced quantities are expected to improve with introduction of the water programme and building of water pumps.

- Improved or increased horticulture is expected to increase incomes of the villagers.

- Drawing water for all purposes from one water sources is expected to

reduce time spent on fetching water, queing, and squatting .

5.5 Realities of the Water Programme

1.Time Budgets

The Tanzania policy which aims at providing water to all households at distances of 400m per household and to 250 people per water source can be partly realised in the villages visited as they had a lot of water. The number of households being served by the local water sources as is indicated in Table 2 is low. It ranged 8 - 88.8 households. Hence building of a few but planned water sources can meet this requirement in the village. The distances will not change because the new water sources are likely to be in the old sites. It is worthwhile noting that time budgets was not the water users main problem, their concern was water quality and quantity. However, if the programme can conduct surveys that will locate new water points in sites with a good water supply throughout the year, and free from salt, colour then time spent on queuing, will encourage use of one water sources for all purposes and will eliminate searching alternative sources in different seasons. Time will also be saved through improved methods such as use of bicycles, trolleys by women and men and through improved storage methods such as use of large containers such as drums and tanks. Time and energy can also be saved through use of alternative water sources like exploiting rain water during rain seasons and storage of rainwater.

This can be realized though development from grass to aluminium or sal convent pendulous roofing materials.

2 Improved Health

Possible through combined programmes and training in proper hygiene and Sanitary procedures such as use of and proper construction of latrines. This can be achieved through the continued efforts of the programme to construct demonstration latrines at such places like schools, women's milling machines. The health status will also be improved through Creation of awareness on nutrition, food security maternal and child health care . That is, the water users should become aware that pumped water is not necessarily clean, it may require boiling, safe storage and that proper hygiene such as washing, bathing proper diets and proper medical attention contribute to a persons good health and well being.

Income generation is expected to improve with better use of water in irrigation. Selling of water and through improved health. However it is important to note that improved water systems requires maintenance and water users are expected to contribute for construction and maintenance. They also require training and skills. Lack of which may lead to poor participation, and management by the water users and may lead to inability of the water users to take over and to sustain the projects. For improved sustainability of the project, the water users should be well aquinted with costings such as construction, short and long term maintenance. The water users should also receive skills in management of their project as this may include management of a revolving fund for maintaining the water sources. Skills are also required in fields such as mechanics and sanitary measures.

Plates25 -28 Water sources spiritual springs; Kasela (Plate 25), Dodoma (Plate 26), Butambala (Plate 27) Lambo (Plate 28).

Plate 29 Water storage.

Clay pots with cover in a house corner for drinking water.

Plate 25

Plate 26

Plate 27

Plate 28

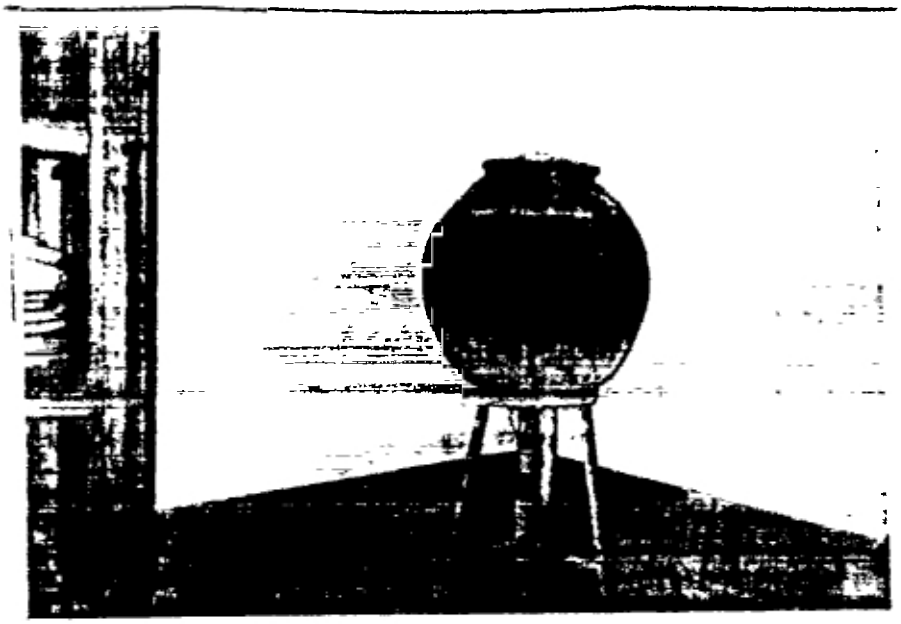


Plate 29

VI WOMEN'S EMPOWERMENT DECISION MAKING, LEADERSHIP AND POSITIONS

Land and cattle were the major assets in the villages visited. Wasukuma, Wanyamwezi and Wasumbwa were the most dominant tribes in the area and these are patrilineal societies. According to their culture and customs women had no access to ownership or inheritance of cattle, land or permanent assets such as houses. However they could own such assets through granted rights of occupancy through purchase, release or allocation by party/government organs. Women's use of land was a duty rather than a right because women were expected to know that their principal duties was to cultivate food and cash crops and in some cases daughter in laws were expected to graze cattle. The measure of a good woman (wife) was one who could till the land to maximum and the measure of a good daughter was one who could fetch the family dowry cattle.

Cultivation of food crops such as potatoes, maize, rice, beans, green vegetables were a woman's responsibility. Women were also expected to cultivate cotton the cash crops. However unless a man had travelled, men assisted their wives in cultivating and harvesting rice, cotton and of late men were increasingly getting involved in cultivating and selling of vegetables such as greens, tomatoes, onions, etc.

6.1 Control of income

Income that was considered large or which came in lumpsome was controlled by men. Such income included sales from maize, beans, groundnuts during harvest time or cash from hiring whole mango trees during ripe seasons. The sells from cotton and cattle were a man's control. However women with grown up children could control sells of cotton, rice which they grew on their children' is (sons) land or if she was given some land by another person. Women could sell such items as clay pots, mushrooms, beans, groundnuts, sweet potatoes. Women's income was neither regular

nor defined. Women therefore generated income through cultivation and animal husbandry but they had no access or control over that income. Women reported that there was no defined system at the family or in the culture of income distribution. For this reason the sharing of income was entirely on the man's decisions and a woman could not take a man to task over income sharing.

VI.1 GENDER ISSUES IN THE DOMESTIC WATER SUPPLY PROGRAMME.

7.1 .Attitudes towards gender and water at the village level.

The villages visited did not have a water programme hence they did not have water committees. However the village had an established guard system the "Wasalama" (Sungusungu) which had traditional leaders who held high respect in the village. The Wasalama were responsible for keeping peace and order in the villages. During this study it was assumed that the safety and maintenance of all water points would be the role of "Wasalama". Hence because the Wasalama is a male job automatically women would not be expected to join in because it involves watching out for people who would dismantle the pumps in search of nuts for wheel barrows, metal rods for the gold industry (pestles) or for ploughs. Hence security may involve day and night watching. The job is believed to be rough and tough. It may also be a job that require sending wrong doers e.g. those who would fail to contribute towards construction and maintenance of the water points to court. This task was totally believed to be amale's domain. While men can handle women wrong doers women would not be expected to handle male wrong doers. Women's role were to be in cleaning of the water sources and to cook for men during construction or heavy maintenance of the water points. Women, and especially women groups were expected to contribute cash by growing potatoes etc. This approach or participation of women creates an over burden on women. The women themselves were very reluctant to participate in water committees

as they felt they are too weak and that they are not ready to make enemies with wrong doers and their families. Hence during the workshops the women had accepted to contributing towards construction of wells by cash and cooking and by clearing the bush around the water wells. However it was agreed that women can comfortably participate more effectively as mechanics or as water users in irrigation. Otherwise they can easily be in water committees as figure heads.

Women could express themselves powerfully in public through traditional ngomas and as local medicine men. It is anticipated that if they are given the skills in cultivation (irrigation) of vegetables and fruits they should have a role in water programme.

Women had their own security committees (wasalama) which handled issues concerning women. These committee could be developed further through imparting skills in simple laws, leadership and management. In so doing the women can take active roles in the water committees.

7.2 Decision making

It was reported that men cannot sell anything without consulting their wives. Men had to consult their wives for all decisions to be made. However this appears to have been family or cultural protocols because women do not benefit from them. That is, although a woman has been consulted over the sell of say rice, the money all goes to the man. After all, men did not feel and reported that they are not obliged to consult their wives on how to spend the sells obtained from cotton, cattle or other produce. Women did not rely on men's incomes for purchase of items such as salt and sometimes even clothes. Hence women everywhere were struggling to raise incomes although these womens' husbands had or were to earn considerable incomes from gold, cotton, trade etc. We found it was a common practice for women to be solely responsible for children outside the marriages. That is a man was not expected to care for a child who was not his. That is clothing, school fees was entirely a mothers

responsibility. Such mothers were found to look for alternative income generating activities to raise and support such children.

Decisions at the household level can be said to have been entirely in the men's hands. Although it was believed and reported that women are responsible for the food in the household. From this study we could say that a man indirectly controls what is to be eaten and how much is saved as this will depend on how much of the produce a man sells. Now that even men are getting actively engaged in growing of vegetables, then food security at the household may run at stake because the men may take all the available areas for irrigation and sell most vegetables. It is therefore useful that the project ensures that women are given irrigation skills as early as possible in order not to loose their roles as vegetable (food) suppliers in the home.

7.3 Attitudes of Men/Women/Leadership towards the importance of the water Programme. for women

All the sectors realised the importance of the water programme for women and strongly believed that improved water sources would lead to high child survival and improved health for the households. The villagers were willing to contribute their labour, time and cash on the project. However there are possible conflict which can arise in the power, duty sharing in water sources managements. It is envisaged that empowerment of women by making them leaders or members of the water committees may not be useful as these can easily make them figure heads, women will be more powerful if trained in water use e.g. improved irrigation, village mechanics and or involved in revolving funds for improved food and water storage systems such as water tanks, drums, and granaries.

CONCLUSION

Based on the animation methods and participant observation used during this study it was observed that the water programme should go with a view that the technology which will be introduced should concentrate on solving the water quality and quantity problems. The programme should openly discuss the costs both during construction and for short and long term maintenance of the new water projects so that the villagers can make ample decisions and make appropriate plans. Methodologies used in this study were welcome by the women, youth and old men as the approach involved them in viewing their water problems and finding solutions to them. The men realised that women had a lot to contribute and that the youth and aged can also be very useful in discussing their village programmes. It was realised that village projects and programmes can be run by the people themselves . Before that the villagers said that they believed that decisions and major plans should come from the leadership. It therefore follows that womens leadership, decion making processes can be improved by creating forums such as discussions which actively involve women. It is envisaged that if the water programme will involve women and men to discuss water programmes at all stages a lot will be achieved and there will be chances for proper sustainability of the programmes. It is a worthwhile exercise to involve women in the sectors of the project especially for maintenance of the water sources and it appears hanging water use such as irrigation and proper storage facilities.

Major goals and requirements by the water users:

1. Safe and clean water

-Eradicate water colour - obtain colourless water for all purposes.

- Improve direct and indirect contamination of water

- Improve odour and test of water from salt to testless water free from humus, dust, mud and animal urine smells.

- Improve sanitation around the wells.

2. Quantity of water

- Decrease search for alternative wells during dry seasons.

- Reduce re-digging and deeping and widening of wells.

- Improve the water flow at each well.

- Improve seasonal distribution and occurrence of water.

3. Improved health

-Reduce incidences of diseases caused by dirty water - waterborne diseases.

- Reduce child mortalities.

- Reduce psychological stress due to use of contaminated and poor quality water.

- Improve hygiene at the household and village levels.

- Increase freedom to use all water sources with ease and comfort and for all purposes.

- Improved nutrition through improved income and vegetable and fruits consumption.

4. Improved women's workload

- Reduce incidences and trips to the wells.
- Reduce distances to the wells.
- Reduce periods spent at the well sites.
- Reduce queing for water.
- Reduce number of wells to be visited for different water uses.
- Improve storage capacity at the household.

5. Income generation

- Improve horticulture through irrigation
- Sell of water at project sites e.g. flour mills.
- Improved activities such as brick making and beer brewing.

6. EDUCATION AND TRAINING SKILLS

- Improved sanitation and environmental knowledge
- Improve knowledge on hygiene and nutrition.
- Improve skills in construction, maintenance and management of water points.
- Improve management and leadership skills.
- Improved participation in water programme e.g. irrigation schemes, management e.g. mechanics.
- Increase women's participation in water programmes.

RECOMMENDATIONS

1. Building of closed wells such as handpumps in improved and approved sites. Put into consideration the choices of the sites by men and women.
2. Conduct proper Surveys prior to construction of water points to ensure constant, regular Quality and quantity of water.
3. Create awareness through training and education and proper hygiene and

sanitation and nutrition.

4. Provide training in Food security measures processing, and handling and storage.
5. Provide training in management and Leadership skills.
6. Save the women from squating and, kneeling at water wells.

C STRATEGIES, IMPACTS AND CONSTRAINTS PARTICIPATION:

- Ready to contribute labour
-Willing to contribute security
- Willing to contribute cash.
-Ready to contribute technical skills, mechanics.

D CONSTRAINTS ON WOMEN

- Women's income control and generation very low. Hence contribution of cash may lead to burden and increased workload.
- Education, Training of women Low-Inability to participate in technical running of projects.

Cultural norms prohibitive to womens participation in security measures-hence women roles may he marginal.

Womens ability to push wheelbarrows or use beams and bicycles to carry water not feasible-hence improved portage not applicable.

E STRATEGIES

-- Train women as mechanics.
- improve their water uses in agriculture.

- Improve storage capacity by building of Tanks or provision of drums.
- Improve and introduce rain water harvesting techniques.

F. POSSIBLE NEGATIVE IMPACTS OF WATER PROGRAMME AND STRATEGIES

- Conflicts in power and leadership sharing of village and water programme personnel.

Strategy : Define objectives, roles and functions of leaders in water programme.

- Conflicts in leadership and roles of women in water commitees.

Strategy: Empower women in water use and the strategy is to improve their health and economic status not their power in leadership in villages.

- Failure of water programme failing to take off or failure to include the villages studied.

Strategy: Include the villages at least by building demonstration wells and latrines.

CONCLUSION OF RECOMMENDATION AND STRATEGIES

In order to make the water programme feasible and sustainable the researchers observed and recommended that, at the village level the programme could be introduced as a revolving fund programme whereby groups as Households, sub-villages or individuals could build their water points or engage in such water programme as rain water harvesting. In so doing each water point would act as a demonstration.