WATER AND VILLAGE DEVELOPMENT

Social survey from Songambele village, Kasulu district, Kigoma region Phase 1:June1988

Regional Water Engineer, ~~Kigoma~~

CONTENTS

PART 1: BACKGROUND INFORMATION

1. Introduction

To provide a Tanzanian village with water of a good quality close to peoples homes is regarded as an important step towards development and progress for the village.

NORAD has assisted the water supply and sanitation programme in Kigoma since 1979 with the regional Water Master Plan and implementation of new water schemes since 1983. Approximately 115,000 villagers have benefited from improved water supply for domestic demands in this period.

The water and sanitation development programme in Kigoma is carried out mainly to achieve:

- better health for the people
- enhanced social welfare for the people
- reduced burden of work for women and children

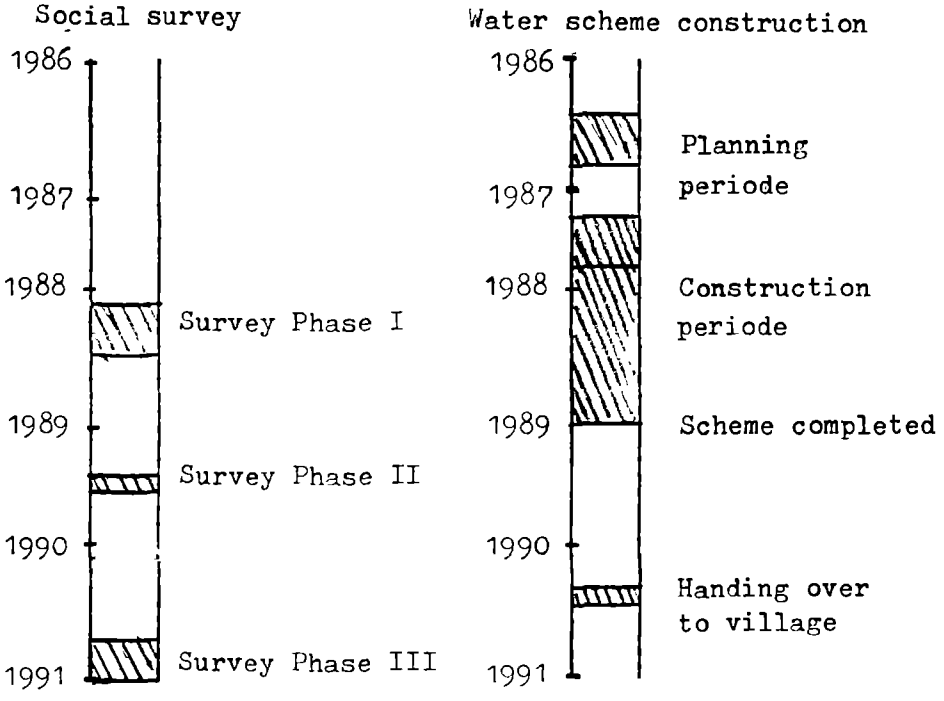
There has been no attempts to evaluate if and in what way these achievements have been reached. And the development given by a new water scheme in a village has never been qualified or quantified.

In the report from the Joint annual review of the water supply and sanitation development in Kigoma region 1988 it is several times asked for a stronger evaluation and monitoring - of technical implementation, operation and maintenance and the water development in a broader social context.

The section for Community Participation and Health Education (CPHE) under Regional Water Engineer consists of members from Maji, Afya, Maendeleo and UWT. This section is the main responsible for the social sides for the water development. It is therefore natural that the social survey and research is carried out and supervised by the CPHE-section.

To reach NORAD - personell with little experience and background knowledge on Tanzanian rural life, there are explanations and discussions in this report that might seem obvious to Tanzanians.

The village Songambele has today no improved water supply, but the villagers are collecting water from traditional sources and rivers. The new water scheme will hopefully give water from 17 domestic points with water taps througout the village by the end of 1988. These time related bars show the progress plans for the social survey and the construction of the water scheme in Songambele.



The survey presented in this report compiles data from one village, Songambele in Kasulu district. The village will get a new water scheme in end 1988. The same research lay-out can be repeated in other villages at a later stage.

The sectors investigated are health, use of time, use of water, water quality sanitation, house construction, gardening, private economy, and village priority and planning. To measure any development in these sectors they must be seen over a span of time. Therefore the survey in Songambele village is organized in several phases. Phase one before the village has got a new water scheme is now completed, phase two and three when the scheme is completed will be carried out in 1989 and 1990/91. The water scheme in Songambele is now under construction and will hopefully be completed by the end of 1988.

The main objectives for this research programme in Kigoma called "Water and village development" are to:

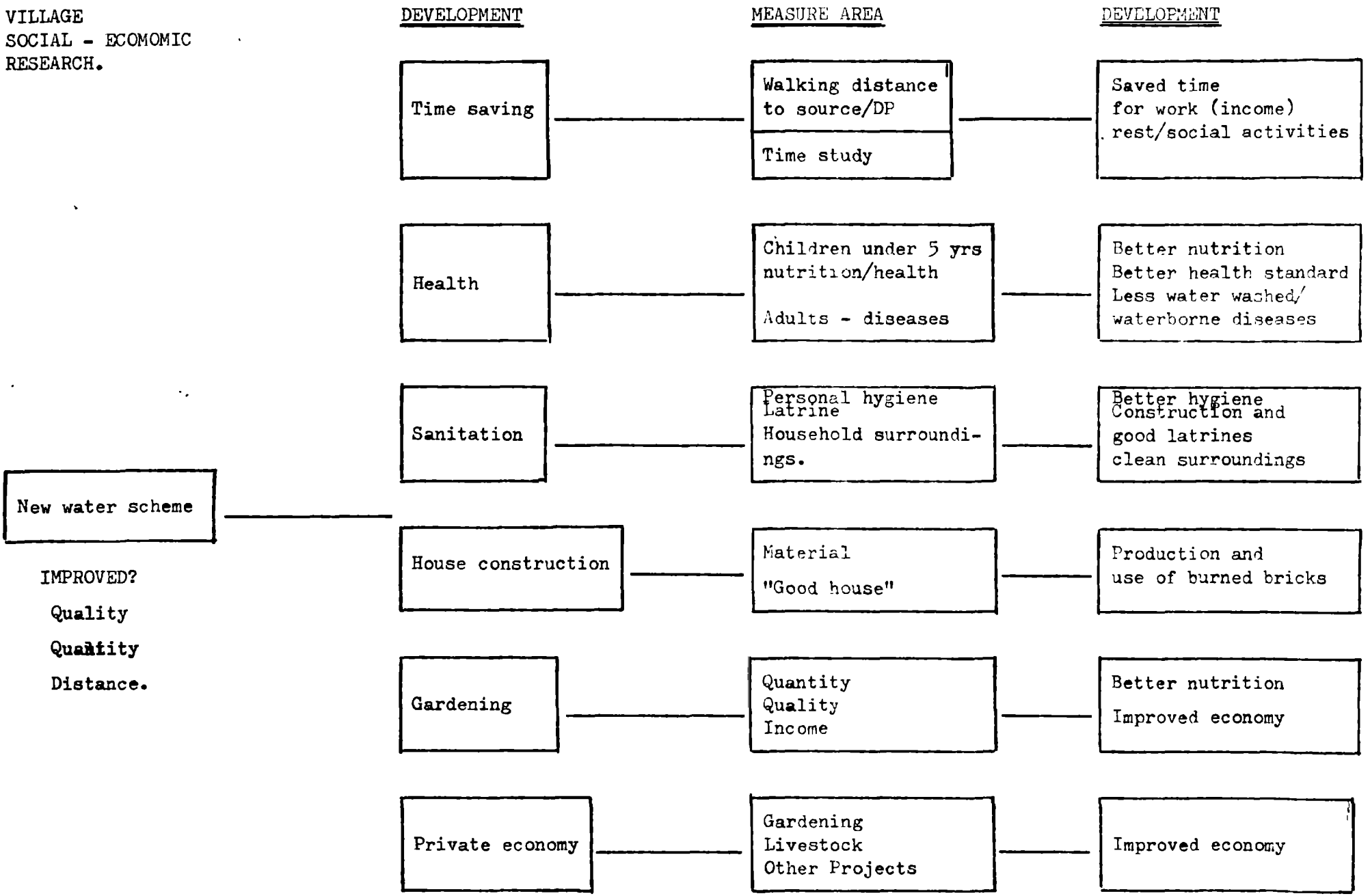
1. Collect data on the socio-economic situation in the villages.
2. Qualify and quantify the development given by a new water scheme in the village.
3. Give practical training in how to plan, carry out and analyse a social survey.

COMMENTS

This report is meant to be distributed to party and governmental authorities in Kigoma region and Kasulu district. The report will be of special attention for staff working with water, health and community development.

The study is also a part of the monitoring of the water project to the donor organization NORAD and background material for the NORAD-staff working with the water project and those to be recruited in the future.

VILLAGE
SOCIAL - ECOMOMIC
RESEARCH.



2. The Village Songambele

The Village Songambele is situated on the flat highland at an altitude of 1440-1500 meters along the mainroad between Heru Juu and Manyovu. The driving distance to the district town, Kasulu is aprox. 40 minutes and to the regional headquarter in Kigoma between 2 and 3 hours.

Songambele was organized in a modern Ujamaa Village in 1973 - 74. Then the primary school was constructed, the agriculture was organized to give income to the village community (cooperative).

Today the Village Songambele is regarded to have reached a very low level of development and progress according to national political aims. The village has no common shamba, no cash crop, no maize mill no shop, no transport facilities no dispencary and no CCM part Office (only one small temporary). The village has a market days three times a week offering a very small selection at commodities. In connection with the market there is a sale of local brew "pombe". The Village gets an income from salesduty on market and pombe-"bar".

The cash-flow in the village is very little, but most families are keeping a small livestock of two, three cows and a few goats as a value reserve. To total livestock of cattle in the village is estimated to be 230.

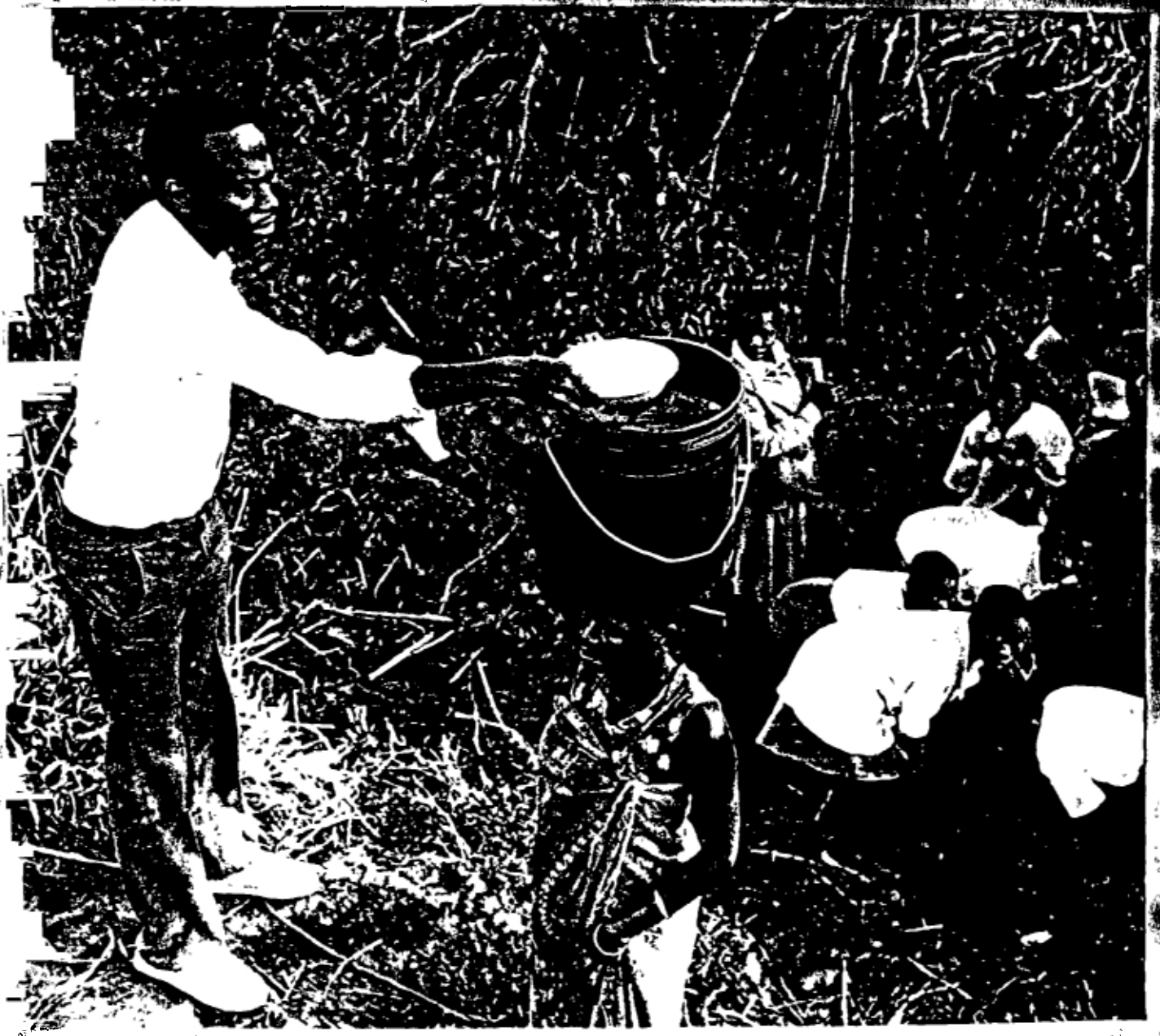
The primary school is in bad condition and needs maintenance and a rehabilitation. Some of this work is already done through village self-help. The new party (CCM) Office should also have been constructed on self-help base but the work has now stopped with the foundation walls one meter over ground level.

The number of primary school pupils is estimated to 625. The head master of the school says that propably more than 100 village-children in school age are not attending school and several others not attendening regulary.

The 1988 census will give the exact population in Songambele. The population in 1988 is estimated to be between 3000 and 3200.

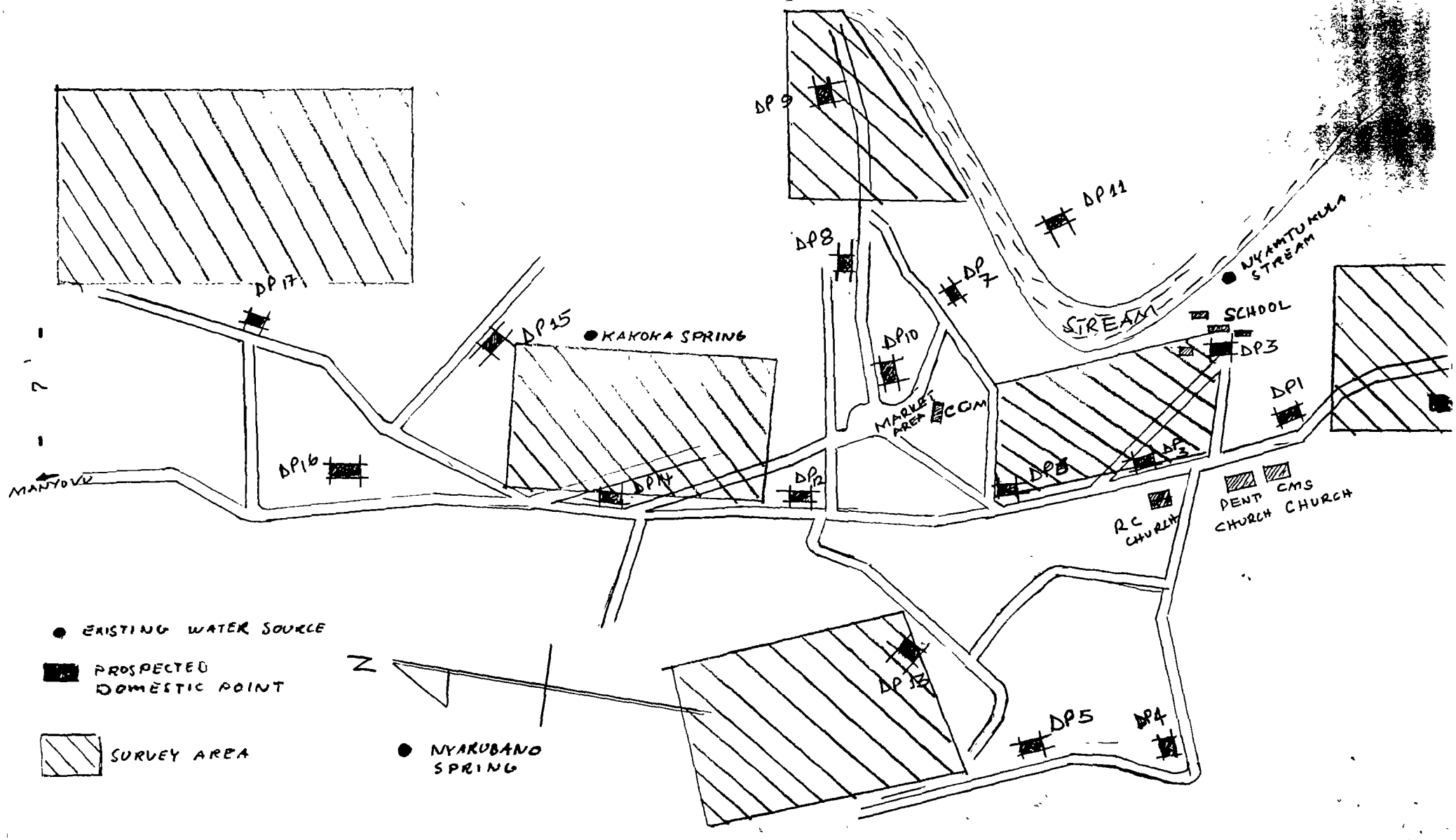
[redacted] Songambele means "push forward". In joking expressions [redacted] is often called Songa chini "push down" because of the [redacted] development efforts. For party and governmental institutions [redacted] the village Songambele is seen as a problem and an example of failed planning and bad organizing.

How "under-developed" Songambele is compared to other villages in the district can only be seen when similar studies are taken in other villages. Still there are reasons to belive that the situation in Songambele in several fields also are typical for several villages in the district and region.



The water laboratory "source to mouth" study examines water samples from one family. The first sample is taken when water is collected from source in the early morning (picture). The rest of the water samples are collected in the water storeage container at home.

SUNGAMBELE VILLAGE



3. The water scheme

The main effort for the water development in Kigoma since the NORAD support of implementation activities started, has been to construct and rehabilitate sustainable gravity based water schemes. These schemes are collecting water from an intake (river of source) at high level, bringing it through a main line to a storage tank at medium level. The water is brought to the villagers through a distribution net with water taps at domestic points (DP) scattered throughout the village at the low level. The schemes are expencive to construct, but give a good service to all villagers and give the possibility for a village based maitenance. One intake might serve several villages with water (group scheme).

The priority list for implementation of water schemes in the region is finally approved by the steering committee, and regional development committee. A priority has been given to rehabiliitation of existing water schemes, but there has also been several new constructions during the last years. The basic idea is that the villages should promote their need of an improved water supply to the DEDs, through their wards who bring it up through the steering committee. Also technical implications and working capacity of the District Water Engineers (DWEs) and Regional Water Engineer (RWE) will affect the priority of villages given a new scheme.

For the village Songambele the situation is quite special. Mulela and Buhigwe, the two villages westwards on the way to Manyovu have since long asked for an improved water supply. They were put on the priority list for implementation last year. The best water-intake area for Mulela and Buhigwe was found five kilometers east of Songambele. The gravity main pipe to Mulela and Buhigwe would therefore pass Songambele. Since the intake area gave suficient water supply to three villages, it was natural to supply also Songambele.

The plans for the new water scheme was presented to the village leaders in Songambele in the middle of 1987. They showed a great interest in the new plans and made it clear they were willing to participate fully in the self-help activities needed to dig the ditches and clear the intake area.

The construction work including a big load of self-help activities started in September 1987. In spite of low participations and several problems of organization the villagers managed to dig the five kilometers long gravity main trench on self-help. The intake area was completed in 1987 and the tank this year under responsibility of Maji. In July villagers from Mulera and Buhigwe started to dig their gravity main from the Songambele tank. The villagers in Songambele will start to dig the ditches for the distribution net in the village.

The village water committee, composed of three men and three women, is working together with the village leadership (only men) to organize and comment on plans and implementation of the new water scheme. They are all made aware of that, the scheme will be handed over to the village one year after completion and that the cost of operation and maintenance should be covered by the village in the future.

Today the villagers in Songambele are collecting water from three main sources, all three reliable both in rainy and dry season. The walking distance for the villagers to the nearest source varies from 200 til 2000 meters in a steep and hilly area.

The new water scheme in Songambele will propably give water through the domestic points in the last part of this year.

COMMENTS

Even if the situation for Songambele is special, the water development planning in the region is seldom seen in a broader rural development context. The project planning and preparation only contains technical data, not social. The village possibility for future caretaking of the scheme is not evaluated before the construction starts.

4. Organization of the research

The research has been conducted by the CPHE-section under RWEs Office with assistance for the CPHE-district teams and Mother and Child Healthcare (MCH) Kasulu district. The ward secretary in Munyegera ward and the village leaders in Songambele have also been involved in the planning and survey periode. The water quality and "source to mouth" study was carried out by the regional water laboratory at RWEs office.

The organization of the research can be put into five working areas:

Overall planning:	Ms. H. Super,	Community Dev. Officer (CPHE) Coordinator and supervisor.
	Mr. P. Lunden,	CPHE - adviser supervisor.
Village survey:	Ms. S. Banyura,	Community Dev. Field Ass. (CPHE) Kigoma.
	Ms. H. Sisay,	Community Dev. Ass (CPHE) Kasulu
	Mr. M. Barongo,	Community Dev. Tech. (CPHE) Kasulu
	Ms. O. Bikola,	UWT - secretary (CPHE) Kasulu
	Mr. N. Ngika,	Health Ass (CPHE) Kasulu
	Mr. H. Rubeba,	Water Tech. (CPHE) Kasulu
Health Survey:	Ms. Mayombo,	MCH i/c, Kasulu
	Ms. Zuberi,	MCH, Kasulu
	Mr. Shija,	MCH, Kasulu
	Ms. V. Mhanyi,	MCH, Kasulu
	Mr. U. Gikanka,	MCH, Kasulu
Water quality:	Mr. P. Kiliho,	Reasarch Officer, Water Lab. Kigoma
	Mr. M. Majenge,	Tech. Water Lab. Kigoma
	Mr. M. Shemweta,	Tech., Water Lab., Kigoma
	Ms. T. Njama,	Water Lab., trainee
	Ms. S. Hussein,	Water Lab., trainee.
Other info. collection	The supervisors.	

The processing of data from the questionnaires was carried out by a group of regional Maji Office staff together with CPHE unit. Final analysing and report writing is done by the two supervisors with input from all involved in the resarch.

The study was carried out from 13th to 17th of June 1988 in Songambele village with activity from early morning til late evening. But the study has also involved a long planning and analysing period.

Planning: Preparation of research lay-out, aims and questionnaires.
Comments from regional heads Maji, Maendeleo, Afya.
Presentation of the research for the village and ward.
Training of staff, discussions on methodes
Pretesting of questionnaires.

Survey: Organizing in groups
Transport

Analysing: Processing of data
Analysing of data
Writing of draft report
Comments from regional and district heads Maji, Maendeleo, Afya.

COMMENTS

Most of the Maji, Maendeleo and Afya staff in region and districts have little or no experience in working with a social survey. This study has proved to be a good experience for the involved personnell. First as a practical training in how to plan, carry out and analyse a social survey, but also to get more relavant facts about people at village level These facts should be used for future planning and village development approach.

The different sections and departments have proved to work well together.

Advise and comments are collected from:

Mr. C.W. Maheri, Regional Water Engineer (RWE)

Mr. F.A.S. Mshote, Regional community Development Officer (RCDO)

Dr. F.S. Rwebangila, Regional Medical Officer (RMO)

Mr. M.R. Mabula, Health Officer CPHE i/c

Mr. T. Kahesha, Water Technician, Operation & Maintenance

Mr. A.I. Helland, Engineer, P.P & P (Maji).

5. Research methodology

The study is using a set of different survey methods in different sectors. All should give data on village development in connection with water.

This first phase of the study is giving only a static picture of the social-economic development reached by the village before the introduction of a new water scheme. The survey must be repeated over a time span of several years to find any causuality between the general village development and the new water scheme.

For Phase 1 the data collection can be split in these fields:

1. Questionnaire and observation on water collection and consumption, sanitation, development-periority, private economy and village economy priority.
2. Weighing, medical examination and questionnare on childrens health and nutrition and adult's health.
3. Interview with village chairman and secretary. General observation in village.
4. Chemical and bacteriological examination of water quality

Songambele village consists of 23 Ten-cells (balezi). Six of these ten-cells were selected for the survey. They represent approximately 22-24 per cent for the number for households and inhabitants in the total village.

A sample is needed because of limited resources. The aim it that the findings from the sample should be representative for the whole village.

In Songambele there are very small socio-economic differences between people. There is a great simularity in income, accumulated capital/goods, house-standard, health and family structure in all ten-cells. The wealth (or poverty) is distributed equally among the village household and there are no "east-side/west-side" tendencies. Neither seems the households close to the mainroad to be better off than the others. A simple random would therefore be suitable for a representative sampling in the village.

Since walking distance to the existing water sources and the new domestic points is essential to comment the findings a stratified or systematic sampling was necessary still with a random element. The village chairman and secretary were told to pick out six ten-cells situated in several parts of the village. These ten-cells where pointed on the village map and they proved to be on average walking distance from the existing water sources.

In the six selected ten-cells there were 112 households with 212 children under five years, 197 children/youth between five and 17 years and 375 adults, a total of 784 persons.

All the households were visited twice, by a MCH-team and a team of the socio-economic survey. The MCH-team worked in a team with five members with one weighing scale (last day two teams and two scales). They spent approximately 25 minutes in each household and also took time to give advise on nutrition and childrens health.

The social-economic part was covered by three teams of two members each (one man, one woman). Each team covered two ten-cells each and they spent in average one hour in each household. Women and men were interviewed seperately.

The water-quality study concentrated on two different households and their water sources. Samples were taken from the sources in the mornings and the water storage containers at home at several intervals throughout the day.

All teams had at least one member speaking the local language Kiha. That proved to be very important for communication and confidence, especially among the women.

The ten-cell leader followed the teams to every household.

COMMENTS

Control effects

The villagers in Songambele are not used to surveys or any social investigations, expt the national census(last 1978, new 1988). Still the village has a good control system through the ten-cells.

Through the village leaders and ten-cell leaders the villagers were told to give a true picture of the situation and living conditions and as far as possible give the needed information. A large part of the socio-economic survey consisted of both observation and questions and a double check on the reliability was possible.

A systematic control effect could be possible in two directions

1. Trying to give impression of a better situation than the present in order to avoid criticims from party and governmental institutions for not having fullfilled the development goals.

2. Trying to give impression of a worse situation than the present in order to attract sympathy and funds from authorities and donors.

There is no proof to see a bias in ahy of these directions in this study.

Response errors:

There may occur response errors on several levels. The questions might not be understood or misinterpreted by the respondents. The interviewers and observers might not understand or misinterpret by the response and they might also misinterpret the intentions and aim of the whole survey.

There might also be a certain boycot-tendency from respondents and staff because of in conveniences, hard work, lack of interest incentives etc.

Throughout the whole survey periode all the staff were in close contacts with the supervisors and the questionnaire and methodology were discussed several times. Response errors were not always avoided, but made clear.

Both villagers and staff participated well in the whole survey periode.

There are a few reponse errors presented under the different findings, but in the whole the reliability on the survey seems to be quite good.

There might be a small variation in the total number of respondants. That is because the figures for "no answer" or "unclear answer" etc, is taken out of the total sum.

The conception of development

The definition and conception of development is relative to culture, economy, material standard etc. The sector involved in this research (time saving, health, sanitation, house construction, gardening and economy) are all central in the Tanzanian development policy and the donor-policy. The sectors are only to some effect qualified, discussed and evaluated. To link the conception of development to "life-quality", "the good and happy life", "harmony with culture and history", etc. is interesting, but must in this connection be left to other personell with the approach of social antropology.

Analysing of survey findings done by [illegible] Sofia Kanyura [illegible] and Hilda Suger (coordinator)

PART 2: THE FINDINGS OF THE STUDY IN SONGAMBELE

6. Improved water supply?

Before going into the several areas of possible development, it is necessary to evaluate it, what ways the new water scheme means improvement for the villagers.

Our definition is that an improved domestic water supply should mean water of good quality and sufficient quantity at a short walking distance from the homes of the villagers.

It is necessary to find the data on the existing traditional water supply in the village, to measure the improvements in these sectors:

1. Walking distance from home
2. Water quantity
3. Water quality

6.1 Walking distance from home

TABLE 1:

Who are collecting water?

	DRY SEASON		RAINY SEASON	
	NR	%	NR	%
Women	96	76,2%	55	64,7%
Female children 0 - 17 years	24	19,1%	24	28,2%
Male children	5	3,9%	6	7,1%
Men	1	0,8%	0	0

The findings show as expected that to collect water is the work of women. This corresponds with all other findings in Tanzanian villages. Also CPHE Mwandiga, Kagongo 1977. A reduced walking distance to the water source will therefore mean time saved for the women in the village.

TABLE 2:

Where is water collected today?

	DRY SEASON		RAINY SEASON	
	NR	%	NR	%
TRADITIONAL SPRING/SOURCE	87	78,4%	76	77,5%
RIVER	23	20,7%	22	22,5%
WELL	1	0,9%	0	0

This corresponds to the present water availability in the village surroundings.

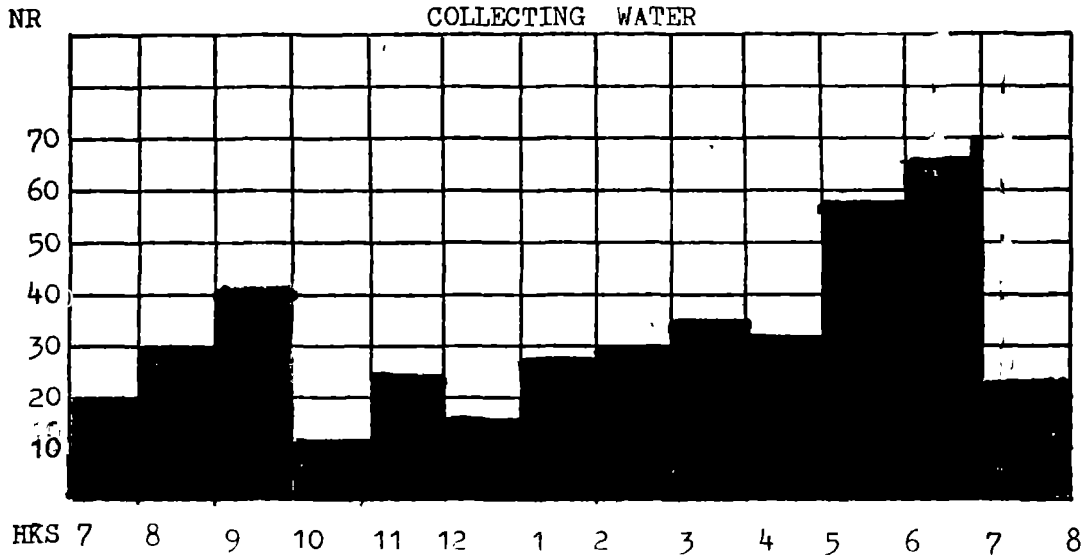
TABLE 3:

How many times do you collect water per day?

	DRY SEASON		RAINY SEASON	
	NR	%	NR	%
ONE TIME	14	14,4%	11	12,9%
TWO TIMES	27	27,8%	29	34,1%
THREE TIMES	28	28,9%	34	40,0%
FOUR OR MORE TIMES	28	28,9%	11	12,9%

A one day observation was done to see when people visited the most. Used water source. The results is illustrated in the bar charts separated on collecting water, bathing/body washing and washing clothes. From other surveys (CPHE Mwandiga, Kagongo 1987) the most busy hours at the sources/ domestic are from 6.30 til 8.30 in the morning and from 17 til 19 in the evening.

TABLE 4:



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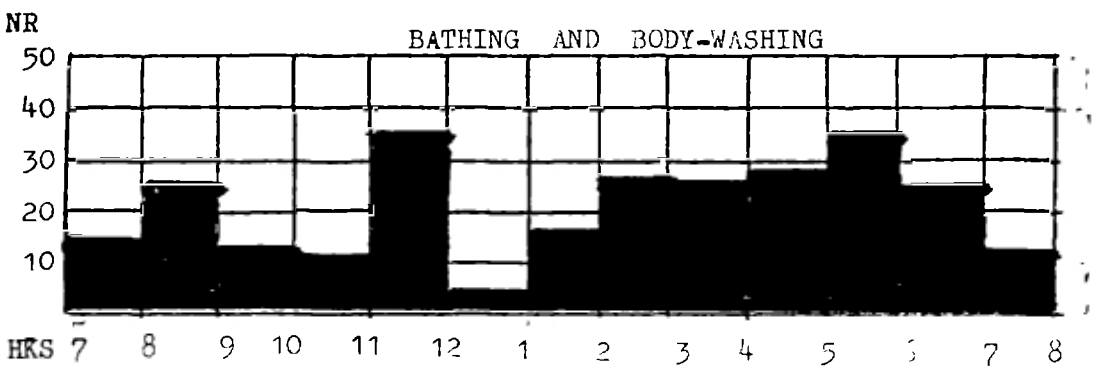


TABLE 6:

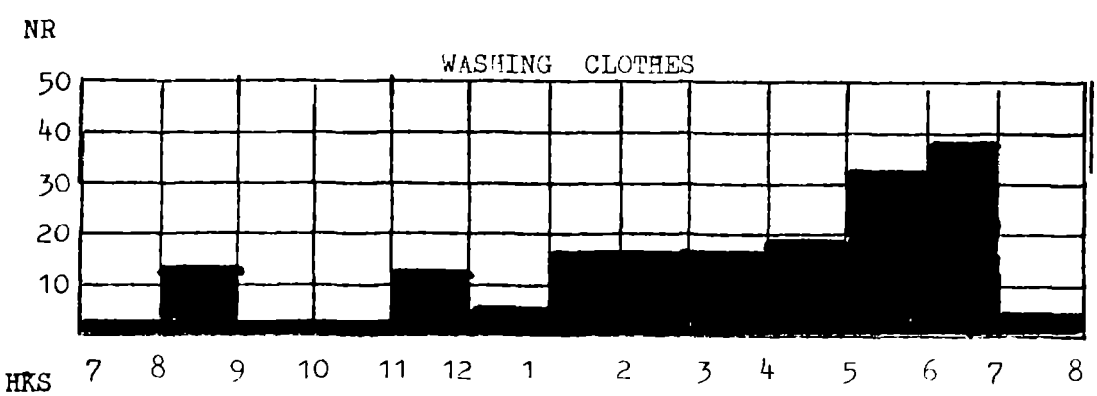


TABLE 7:

Distance to nearest water source from home in meters (one way) .

	DRY SEASON		RAINY SEASON	
	NR	%	NR	%
0 - 200 METERS	11	9,9%	13	18,1%
200 - 400 M	22	19,8%	29	40,3%
400 - 1000 M	26	23,4%	23	31,9%
1000 - 2000 M	43	38,7%	5	6,9%
MORE THAN 2000 M	9	8,1%	2	2,8%
	111	99	72	

Based on the average of each response alternative (more than 2000 = 3000 M) the average walking distance will be:

DRY SEASON 1067 meters

RAINY SEASON 550 meters.

The national aim of a village water supply is that noone should walk more than 400 meters from the household to collect safe water. This is also the intention with the layout plan for the new distribution net in Songambele.

Today the villagers have three main giving water during the whole year and several additional sources giving water only in the rainy season.

TABLE 8:

Time spent for walking from household til nearest water source with return.

	DRY SEASON		RAINY SEASON	
	NR	%	NR	%
0 - 10 MINUTES	2	1,8%	3	3,9%
10 - 20 MIN	11	9,9%	19	24,7%
20 - 60 MIN	37	33,3%	35	45,4%
60 - 90 MIN	52	46,9%	20	26,0%
MORE THAN 90 MINUTES	9	8,1%	0	0

Based on the average of each response alternative (more than 90 min - 120 min) the average time spending is:

DRY SEASON 60 minutes

RAINY SEASON 41 minutes.

In the rush hours in morning and evening it can be from 5 to 15 minutes waiting time at the source to collect water. The sources today is also often used for body-washing and bathing (mostly children/youth) and washing of clothes.

The new water scheme will give almost all in the village a shorter walking distance to the nearest water source (DP) and will therefore mean saved time for the women. The women were asked howe they would spend this excess time.

TABLE 9:

Do you think you will get excess time affter completing the new water scheme?

	NO	%	
YES	101	99%	
NO	1	1%	

TABLE 10:

How will you use the excess time?

(possibilities for more than one alternative for each respondent)

RANK	NO	%
1. CULTIVATING HOUSEHOLD GARDEN	80	24,5%
2. HOUSEHOLD ACTIVITIES	65	19,9%
3. REST AT HOME	53	16,3%
4. SHAMBA - WORK	53	16,3%
5. TAKE CARE OF CHILDREN	45	13,8%
6. VISIT RELATIVES AND FRIENDS	21	6,4%
7. STARTING INCOME - BRINGING PROJECTS	5	1,5%
8. OTHER ACTIVITES	4	1,2%

RESPONSE ERRORS

It is not easy to ask the villagers in Songambele for an accurate estimate of meters and hours. Most people have no watch and a distance is usually characterzed as "not far" or "very far".

The respeopendents had to point out their water source. If any confusion occured, the distance was walked together with the interviewer. Still the figures in minutes and meters are absolutely approximate. There are no sign of systematic over-or underestimation, but the walking distance seems to be a bit on the "long" side.

COMMENTS

The Tanzanian women in the villages are heavy loaded with work, as fetching water, firewood, growing the garden and shamba, taking care of children and preparing food. The situation in Kigoma is typical, rather worse than the national average. Women are having duties from early morning till late night, while the men are taking care of more or less obscure "projects" and often devoted to drinking of local brew and small talking with friends in the shadow. Still the man remain the head of the household with the righ to direct the women to their duties.

The new water scheme will give excess time for women. The question is, if womens efforts only will be moved over to another field of hard work.

NEXT PHASES

1. It should be quanitified how much time the women saves when the new water scheme is introduced.

2. It should be investigated how the women spend their excess time, if its more hard work or rest/pleasure or if she has got better possibilities to choose her daily activities.

3. It should be investigated if the villagers still are using their traditional water sources in addition to the new DPs, and if so find the reasons for it.

4. It should be investigated if the new DPs are suitable for the womens needs, not only to fetch water in a bucket, but also to wash clothes, bathing, body washing etc.

6.2 Water quantity (consumption)

TABLE 11:

How much water is collected per day?

	DRY SEASON		RAINY SEASON	
0 - 20 LITERS	10	9,1%	18	18,4%
20 - 40 LIT	20	18,2%	21	21,4%
40 - 60 LIT	32	29,1%	34	34,7%
80 -100 LIT	34	30,9%	15	15,3%
100 -150 LIT	14	12,7%	10	10,2%
MORE THAN 150 LIT	0	0	0	0

The average percapita consumption is:

DRY SEASON 9,1 lit

RAINY SEASON 7,2 lit

The per capita estimate when dimentioning the consumption for a new water scheme is 30 lit. A survey carried out by CPHE - Kigoma in 1987 (Mwanga/Kagongo villages, close to the urban centres in Kigoma) give an per capita consumption between 15 and 10 lit from the DPs.

TABLE 12:

Do you get enough water for domestic consumption?

	DRY SEASON		RAINY SEASON	
	NO	%	NO	%
YES	32	28,1%	48	63,2%
NO	82	71,9%	28	36,8%
	124		76	

TABLE 13:

If there is not enough water, water is lacking for?

RATE		DRY SEASON		RAINY SEASON	
		NO	%	NO	%
1	COOKING/PREPARING FOOD	114	31,7%	58	31,4%
2	DRINKING	101	28,1%	62	33,5%
3	WASHING UTENSILS	82	22,8%	31	16,8%
4	BATHING/PERSONAL NYGIENE	43	11,9%	6	3,2%
5	WASHING CLOTHES	15	4,3%	22	11,9%
6	SMALL SCALE GARDENING	5	1,4%	6	3,2%

These figures reflects both where there is felt a need for more water and a rating of different fields of water consumption.

RESPONSE ERRORS

The survey was made three weeks into the dry season, and there should not be any problems to remember their consumption both in dry and rainy season.

The measurement in litres were done by the interviewers after inspecting the container used to fetch water.

COMMENTS

Water is easier available in the rainy season, still the consumption is smaller than in the dry season. Why?
The possible reason may be that the climate is colder in the rainy season and the frequence of bodywashing/bathing and therefore also water consumtion is going down.

NEXT PHASES:

1. To find the water consumption per capita and investigate if the villagers need of water is covered.

6.3 Water quality

TABLE 14:

How is the quality of the water used for drinking/cooking?

	DRY SEASON		RAINY SEASON	
	NO	%	NO	%
GOOD	52	46,4%	45	64,3%
DIRTY	52	46,4%	22	31,4%
BAD TASTE	4	3,6%	3	4,3%
CARRING DISEASES	4	3,6%	0	0

These figures reflect the villager's own evaluation of the water quality. Surveys from villages with an improved water supply shows that very few complains about the quality of the piped water (Mwandiga, Kagongo 1987).

The "source to mouth" study carried out in two different households shows that the water is contaminated while collecting water and most of all by storing and consumption in the household. This is also confirmed by other source to mouth studies taken by the water lab in Kigoma (Kalela 1986, Mgaraganza 1987).

Information and training in how to fetch and store water safe in the households is given by the CPHE-section in villages with water scheme.

Contamination in the households is caused by dirty containers, no cover of the container, water is taken from the container with dirty cups, people are putting their fingers and hands into the drinking water, water is unprotected for children etc.

TABLE 15:

How do you store water at home?

	No	%
CLAY POT	117	81,8%
BUCKET	14	9,8%
CARABAS	9	6,3%
DEBE/GALLON	2	1,4%
PLASTIC JARRYCAN	1	0,7%
ALLUMINIUM POT	0	0
DRUM	0	0

The clay pot (contains approx 20-50 lit) is the most common water storage container in the households. It protects and cools the water well and is not more easy contaminated that more "modern" containers if cleaned regulary and covered with a lid.

TABLE 16:

Do you cover your water storage container at home?

	NO	%
NO	105	99,1%
YES	1	0,9%
SOMETIMES	0	0

TABLE 17:

If the water is contaminated, where do you think it is contaminated?

	NO	%
DURING USE/STORAGE AT HOME	68	64,8%
IN THE SOURCE	26	24,8%
WHEN CARRING HOME	5	4,8%
BEFORE IT REACHES THE SOURCE	4	3,8%
WHEN COLLECTING FROM SOURCE	2	1,9%

TABLE 18:

Do you boil drinking water?

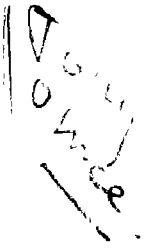
	NO	%
NEVER	68	86,1%
ALWAYS	4	5,1%
SOMETIMES	7	8,8%

RESPONSE ERRORS

It is not given any definitions to "good water" and "dirty water" and the classification has been up to the respondants.

Most villagers know the boiled water is a safer drinking water, but in Songambele, like a lot of other villages, there is a great lack of firewood.

Several villagers responded that they always boiled there drinking water but corrected their answers when the interviewer asked for a glass of boiled drinking water.



COMMENTS:

Quality of drinking water is a matter of on going discussion withing Maji According to international and Tanzanian standards most surface water is contaminated. The improved water scheme in Kigoma are also collecting surface water for their intakes and this water should be chlorinated to reach the national standard for good and safe water.

The water lab. in Kigoma gives the estimate of water quality according to numbers of fecal coliform bacterias and fecal streptococcus bacteras found in the water. This gives a good indication on the level of contamination, but there is not a simple correlation between the number of bacterias and the risk of having water related diseases - even if it usually is a connection.

Only a few of the based water schemes in Kigoma today have a chlorination of the water. The policy is to find an intake area having a reasonable good water quality and educate the villagers to protect the area from contamination. That means keeping and livestock activities away from the area, including the upstream area.

A lot of the bacterias in the water die when water is stored. Storing at home as well as in the new village water tank might have a positive influence on the water quality.

FOR FURTHER INFORMATION PLEASE SEE THE COMPLETE REPORT FROM THE SOURCE TO MOUTH STUDY WITH COMMENTS IN APPENDIX.

NEXT PHASES

1. To compare the quality of the water from the new DPs with the quality of the water in the sources used today by taking water lab samples and interviewing the villagers.

2. To see if the new intake area is contaminated by livestock or people.

3. To see if health education on water and sanitation has any effect.

Survey team at work in a family household.

7. HEALTH

7.1 Childrens health

There are several possible ways to measure health standard of children (under five years of age) and there will almost always be a close relation between health and nutrition. Some of the methodes are:

1. Child mortality
2. Examination of weight (or mid arm circumference when age is not known) correspondige to age. A standard national methode used on the childrens growth chart. (The growth chart should be plotted regulary from the birth until the child reaches the age of five. Indicates the weight in per cent of the normal. Classified in normal, underweight and malnurished).
3. A general health examination done by qualified health staff, includes weight, signs of diseases as marasmus, kwashorkor, (oedema) scabies etc, liveliness and reactions of child.

Kigoma region is know to have the second highest child mortaly rate of all the regions in Tanzania (163 out of 1000, figures from the 1978 census) New figures should be collected in the 1988 census. The tencell-leader should keep records for his tencell. To find the child mortality rate for the tencells in Songambele would mean a lot of work, possibilities of offending and hurting peoples feelings and no reliable findings. Figures for child nortality is therefore left out of this survey.

The examination of weight relating to age seems to be most appropriate for this survey. It is a well known exercise both for villagers and the health staff and relates to national (and international) standards. For statistical purposes a one time examination will give compareable results. For medical examination it is not sufficient. The weigh and growth should be seen over a period over at least four months. If the child has an increasing growth it is a healty sign even if the weight is in the cathegory "malnurished". A child loosing weight is more serious, even in the child's weight is estimated as " normal".

The general health examination depends on a strict definition to be directly compareable. If not a lot will be left to the assessment for the health staff. This can partly be avoided if the same group of the health staff is repeating the survey. The advantages of this examination are that variations in the growth over time (dropping or fluctuating)

and diseases like kwashiorkor and marasmus can be registered.

The aim for the district medical authorities and the Mother and child Health care is to reach all children regulary, carry out the vaccination programme, plot on the growth chart and give information on health and nutrition in addition to curing diseases. Even if health facilities are available, the mothers are often not bringing their children to the health staff. Reasons mentioned by the health staff are:

- The mother is occupied with other work and have no time left to bring several children to the clinic.
- The mother is afraid that the vaccination injections will harm the child and give her fever.
- The mother is afraid of exposing her malnourished children to governmental health staff, but stays home and seeks advise from neighbours and traditional healers.

The MCH-work has therefore a double aim. First to supply the facilities, medicine, staff etc, but also to educate the villagers to visit the clinic regulary with their children. In most villages the mothers visits the clinic or dispencary regulare for vaccination of the small children under one year. Then they also start to plot on the growth chart. When all vaccinations are completed the mother tend to visit the clinic only when the child is sick. Especially in the periode when the monthers stops breastfeeding this can be crucial and the growth and nutrition is not followed up.

In Songambele there is no village dispencary. There is a walking distance of about seven kilometer to the nearest dispencary in Buhigwe. This dispencary is not well equipped with medicine. Dispencaries of better conditions are the ones in Mulera (mission) and Heru Juu, both more than 15 kilometers away.

The MCH department of Kibanga hospital (mission) has a mobile clinic passing Songambele reagularily. The villagers are informed through the tencell-leaders when the clinic is coming. The clinic is stationed at one central spot in the village, and are not going from door to door. All mothers are told to bring all their children under five years to the clinic.

All the three neghbourhood dispencaries were visited by the survey team. The dispencary records give no good indication of the health and nutrition stuation in Songambele. People from Songambele are in minorty at these dispencaries, but they usually bring children with more severe problems. This can be explained by the long walking distance.

The reliable and up-dated statistics on childrens health and nutrition are scarce at all levels within the health department. For Kasulu district no compareable statistic was available for the last to years periode.

7.2 Children under 5 years - nutrition and health

The Kabanga Mobile MCH clinic keeps statistics for all the villages they visit. They use the official nutrition standard registration when comparing weight and age. A weight between 80 and 100 per cent of normal is "normal". Between 80 and 60 per cent of normal weight is "underweight" and under 60 per cent of normal is "malnurished".

TABLE 19:

The Kabanga MCH figures for 1988 up to April are:

	NO	%
NORMAL (80 - 100%)	90	39,3%
UNDERWEIGHT (60 - 80%)	124	54,1%
MALNURISHED (UNDER 60%)	15	6,6%
	229	

Looking at the Kabanga statistics for 1987, 1986 and 1985 we see large variations. The per cent for malnurished in 1986 was 2, 8 while it was 9 the year before. In 1987 it was 3,8%.

TABLE 20:

The results from the survey in Songambele.

	NO	%
NORMAL (80 - 100%)	48	41,7%
UNDERWEIGHT (60 - 80%)	43	37,4%
MALNURISHED (UNDER 60%)	24	20,9%
	115	

To include other standards than only weight, a general examination of the total health condition aws added. The MCH standard is used:

TABLE 21:

General health condition

	NO	%
GOOD	60	52,2%
FAIR	37	32,2%
POOR	18	15,6%
	115	

TABLE 22:

The mothers were asked what diseases their children have had the last 14 days.

	NO	%
DIARRHOEA	11	9,6%
HIGH FEVER	11	9,6%
SKIN DISEASE	7	6,1%
NOIVE	86	74,7%
	115	

Out of the 115 children examined 18 (15,6%) were referred to clinic and their same number given advise on improved food and nutrition. The MCH team also updated the growth charts and gave new charts to the mothers lacking these.

RESPONSE ERRORS

Nutrition standard on weight compared to the normal of each age group is very simple and good if the mothers remember the ages of there children. For Songambele the approximate age (to nearest month) was set with efforts from the mother, other family, neighbours and the MCH-team.

The examination of general health condition is more reliable of the estimate of the examinor and the general definition is not easy to obtain.

Problems to diagnose diseases and rememberance might influence on the records of diseases during last 14 days.

The vital question in this survey is WHO are examined. This will be discussed under next point.

COMMENTS

If the number of inhabitants in the six tencells in representative, there should be approximately 800 children under 5 years of age in the total village. In 1987 and first half of 1988 the Kananga MCH mobile clinic reached 215 and 229 children espectively. In average that is 27.8 per cent of all children

The MCH survey team reached 115 out of 212 children under 5 in the six tencells. That makes 54,2% of all the children in the tencells.

For the Kabanga mobile clinic all mothers and children should go to the CCM-office. The mothers have a chance to stay home, even if thay are urged to go. According to the MCH-staff there are reasons to beleave that the children not attending these mobile clinics have a health condition poorer than the average.

The house to house survey in the six tencells still only reached 54 per cent of all the children. Mothers and children were told to stay home for the survey and households were vistited several times to try to see the children. For the same reasons as mentioned earlier there are reasons to beleave that the children not seen have a health condition poorer than the average. The difference from the average might be quite small.

More than 20 per cent children with malnutrition out of a total is alarming. Still the survey was done a few weeks after the rainy season. The rainfall and crops in the village had been normal.

A malnutrition percentage of 20 might still be "normal" for the villages in the district. Because the real figures are not found in any statistics.

When compareing the Kabanga MCH figures with other villages, the resultas in Songambele is rather good:

TABLE 23:

Kabanga MCH figures Songambele village 1987:

	NO	%
NORMAL (80 - 100 %)	128	59,5%
UNDERWEIGHT (60 - 80%)	79	36,7%
MALNURISHED (UNDER 60%)	8	3,8%

TABLE 24:

Kabanga MCH, Heru Juu village 1987:

	NO	%
NORMAL		40,2%
UNDERWEIGHT		54,8%
MALNURISHED		5,%

TABLE 25:

Kabanga MCH, Kitema village 1987:

	NO	%
NORMAL		45%
UNDERWEIGHT		48,2%
MALNURISHED		6,8%

TABLE 26:

Kabanga MCH, Kanazi village 1987

	NO	%
NORMAL		48,4%
UNDERWEIGHT		47,6%
MALNURISHED		4,8%

TABLE 27:

Kabanga MCH, Kabanga village 1987

	NO	%
NORMAL		38,7%
UNDERWEIGHT		52,1%
MALNURISHED		9,2%

TABLE 28:

Kabanga MCH, Msambara village 1987

	NO	%
NORMAL		43,9%
UNDERWEIGHT		46,9%
MALNURISHED		9,2%

NEXT PHASES:

1. Ask the district and regional health and MCH authorities to provide compareable statistics on nutrition among children.

2. Repeat the survey on nutrition and health condition to see any changes.

7.3 Health standard for children over 5 years and adults

The survey of nutrition and health among children under 5 years was given priority compared to the health of the adults. Therefore the health survey of the persones over 5 years is quite superficial, but still compareable if repeated by the same personell.

TABLE 29:

General health conditon for personers over 5 years

	NO	%
GOOD	339	64,3
FAIR	173	32,8
POOR	15	2,8%

527

TABLE 30:

Diseases last 14 days:

	NO	%
HIGH FEVER	16	3%
SKIN DISEASE	14	2,8%
DIARRHOEA	12	2,7%
NO DISEASE	485	91,5%

REPONSE ERRORS

Same problem with strict de definitions as mentioned under last chapter.

COMMENTS

92,1% of all the children over 5 years and adults in the six tencells reached.

NEXT PHASE

1. Repeat the survey to see any changes.

8. Sanitation:

Water supply and sanitation is linked together. A poor sanitation standard can destroy the health effect of an improved water supply. The drinking water might be contaminated by bacterias from human and animal feaces. The most crucial negative effect of this pollution is diarrhoes among small children.

Sanitation can be described in terms of:

1. Personal hygiene
2. Cleanliness of household surroundings
3. Construction and use of good latrines

The first point is directly influenced by easier availibility of water, The two others should be promoted together of just after the introduction of a new water supply.

8.1 Personal hygiene

The standard of personal hygiene is observed by the survey team and discribed through a common definition involving cleanliness of skin, hair and clothers, skin deseases etc.

TABLE 31:

Personal hygiene standard Songarbele

	NO	%
GOOD	3	2,8%
FAIR	44	40,3%
POOR	62	56,9%

Poor handwashing can easily spread bacterias into food and drinking water.

TABLE 32:

On what occation do you wash your hands? (open question)

	NO	%
BEFORE TAKING FOOD	94	51,1%
AFTER TAKING FOOD	43	23,4%
IN THE MORNING	34	18,5%
ANY TIME	9	4,9%
AFTER WORKING	3	1,6%
AFTER COMING FROM THE LATRINE	1	0,5%

Water, good sanitation and knowledge are the ways to avoid diarrhoea. Cholera is not common in Songambele. Diarrhoea is linked to the sanitation and hygiene in the household, not to epedimics.

TABLE 33:

Do you know what cause diarrhoea? (open question)

	NO	%
WATER NOT CLEAN	39	37,1%
DIRTY SURROONDINGS	39	32,4%
DO NOT KNOW	16	15,2%
DISEASE	9	8,6%
SWOLLEN SCROTUM (MSHIPA)	4	3,8%
WEATHER CONDITION	2	1,9%
HOUSE - FLY	1	0,9%

TABLE 34:

What do you do to prevent diarrhoea to your children? (open question)

	NO	%
BOILING DRINKING WATER	40	40,8%
SEND CHILDREN TO HOSPITAL	39	39,4%
DO NOT KNOW	12	12,2%
CLEANING HOUSEHOLD SURROUNDINGS	3	3,1%
CLEAN THE CHILDREN	3	3,1%
COVER THE STORED FOOD	1	1,0%

TABLE 35:

If your children have diarrhoea, how do you help them? (open question)

	NO	%
SEND THEM TO HOSPITAL	101	98%
GIVE THEM WATER WITH SALT/SUOAR	2	2%

8.2 Household surroundings

TABLE 36:

Observation of household surroundings, characterized according to standard definition:

	NO	%
GOOD	3	2,75%
FAIR	44	40,4%
POOR	62	56,9%

TABLE 37:

Do you have a rubbish pit close to your house?

	NO	%
YES	7	6,7%
NO	97	93,3%

TABLE 38:

Do you have a stand for utensils outside your house?

	NO	%
YES	0	0%
NO	104	100%

8.3 Latrines

Tanzania health authorities are promoting construction of the socalled VIP-latrines (Ventilated Improved Pit latrine). This latrine has a solid superstructure and a good, cleanable slab over a deep pit There is also a ventilation pipe from the pit. In Kigoma these latrines are introduced only in a few villages.

The CPHE section has conducted several sanitation surveys (Janda 1986, Mugombe, Kanazi 1987). The variation of the resultas are quite big. From 16 to 26% with Good or fair latrine, 50 to 54% with poor latrine and 19 to 37% with no latrine.

TABLE 39:

The latrine standard of Songambele

	NO	%
GOOD LATRINE	8	6,3%
FAIR LATRINE	22	17,3%
POOR LATRINE	76	59,8%
NO LATRINE	21	16,5%

TABLE 40:

If you do not have a latrine. Why? (open question)

	NO	%
CARELESSNESS	5	38,5%
NO FUNDS	4	30,8%
BAD SOIL CONDITION	4	30,8%

TABLE 41:

If you have a latrine. Are all adults using it?

	NO	%
YES	89	79,5%
NO	23	20,5%

TABLE 42:

If you have a latrine. Are all children using it?

	NO	%
YES	80	88,9%
NO	10	11,1%

TABLE 43:

Where do you usually dispose of the faeces of the young children? (open question)

	NO	%
LATRINE	51	79,7%
PIT	11	17,2%
IN THE SHAMBA	2	3,1%

RESPONSE ERRORS

The observations of hygiene and sanitation standard involves a personal evaluation, but still within well know definitions.

The questions on peoples behaviour in the field of hygiene and sanitation might as well bring the answer on what people know they should do, not what they are actually doing. Still the results gives us an indication of the level of knowledge.

COMMENTS

Improved sanitation in promoted by a combination of information and practical implementation. The personal hygiene is dependant of a good water supply and the latrine construction needs a certain amount of funds and skill.

The aim for the sanitation programme conducted by CHE under coordination of Afya is to prevent bacterias to pollute food and drinking water. The aim is to have villagers to construct the VIP-latrines. There is also made efforts to have households without any latrines to construct suitable latrines and to get people to improve their traditional latrines.

The VIP latrines might seem quite expencive and sophisticated for the villagers, but can be made at a low cost.

The sanitation standard in Songambele seems to be on the average for the rural areas of the district. The number of households without any latrine is quite low.

NEXT PHASE

1. Investigate how better access to water is improving the personal hygiene.

2. See if health information is giving improvements on the general standard and level of knowledge.

3. See if the new water scheme gives people better possibilities to construct good latrines.

9. House construction

Construction of a good, durable house is a central aim in the Tanzanian development policy. The good, permanent house is constructed of bricks or blocks with enought room and windows. The roof should be of iron sheets, but this is usually an investments beyond the reach of villagers in Kigoma region.

Production of loval bricks or blocks is depending on water in the construction periode. In Songambele villagers are collecting water in buckets from the sources and storing in wooden troughs at the building site. The need of water depends on the quality of the soil. The house-constructors in Songambele estimate that approximately 100 liter of water is needed to made 100 mud-bricks. Approx. 2500 bricks is needed for the construction of one house. That means a total consumption of 2500 liters in the construction periode.

TABLE 44:

House condition in Songambele

	NO	%
GOOD	2	1,9%
FAIR	45	42,9%
POOR	58	55,2%

TABLE 45:

Construction material of houses

	NO	%
MUD	63	64,3%
BRICKS	35	35,7%

TABLE 46:

Roof material

	NO	%
GRASS	97	100%
IRON SHEET	0	0

TABLE 47:

It there water enough for brick-making in the village?

	NO	%
YES	1	0,9%
NO	111	99,1%

TABLE 48:

Do you have plans to construct a brick house?

	NO	%
YES	98	87,5%
NO	14	12,5%

RESPONSE ERRORS

No new remarks

COMMENTS

Construction of a good house in the aim of most Tanzanian villagers. Water is necessary to make bricks, but a certain skill and initiative is also needed and lack of water might be used as an excuse for not starting to make bricks.

When the water scheme is handed over to the village, the village leaders can deside the use of the scheme. The DPs should be available for all, but it is possible for the village to agree on connections of water hoses for short periodes. The village can also purchase a water hose for the use of villagers making bricks.

There are no houses with iron sheets roof in the six tencells, nor in the village as a hole (exept the teachers staff houses).

This is a good indication on the level of income and development in the village.

There is a big varition in the number of brick-houses in the villages. In some villages the soil is not fit for brick-making. Earlier surveys (Janda 1986, Msambara, Mugombe, Kanazi 1987) shows a variation from 23 to 54 per cent of brick houses in the village. The results from Songambele (35%) is about the average.

NEXT PHASE

1. To see if more people are making local bricks for construction of good houses.

2. To see if the new water scheme is appropriate for water supply for the brick making.

10. Gardening

The new village water scheme has no possibilities for irrigation for the agricultural areas in the village outskirts. But there are possibilities to water the small garden that most families have at their household. This can be irrigated either by bringing water in buckets or containers from the water source or connecting hoses to the DPs.

Small gardens can also be made close to the DP's. The need of water to the irrigation of household gardens is limited to the dry season. The amount of water needed is totally dependant on the size of the garden and what is grown there.

The household garden have to main benefits for the villagers:

1. Improve the nutrition standard, especially among children.
2. Give a surplus of crop for sale.

TABLE 49:

Work in the household garden, is the work of whom?

	NO	%
WOMEN	40	76,9%
WOMEN & MEN	8	15,4%
[illegible]	3	5,8%
HIRED HELP	1	1,9%

TABLE 50:

Do you have any irrigation in your household garden?

	NO	%
NO	83	80,6%
YES	20	19,4%

TABLE 51:

What are you growing in your household garden?

	NO	%
MAIZE	78.	70,3%
BEANS	66	59,5%
PIGEON PEAS (MBAAZI)	64	57,7%
POTATOES (VIAZI,MAGIMBI)	51	45,9%
BANANAS	33	29,7%
CASSAVA	29	26,1%
PINEAPPLE	6	5,4%
SPINACH (MCHICHA)	1	0,9%
GROUND NUTS	1	0,9%
NOT GROWING ANYTHING	6	5,4%

The main crops from the shamba outside the household is cassava, maize, beans and bananas.

Meat and fish is very scarce in the village and the same is fruit. Milk and egg is available too a very limited extent and at high price fo the villagers.

The basic food for all is ugali, maize, cassava, sweet potatoes or bananas served with beans.

TABLE 52:

Children foor:

Break fast:

	NO	%
UGALI	57	41,6%
SWEET POTATOES	55	40,1%
CASSAVA	15	10,9%
BANANAS	10	7,3%

TABLE 53:

Lunch:

	NO	%
UGALI	44	49,4%
SWEET POTATOES	29	32,6%
CASSAVA	13	14,1%
BANANAS	3	3,4%

TABLE 54:

Dinner:

	NO	%
UGALI	49	62%
SWEET POTATOES	15	19%
CASSAVA	10	12,7%
BANANAS	5	6,3%

Most of the meals are served with beans.

TABLE 55:

Do the children get another food besides ugali, cassava, sweet popatoes, bananas and beans?

	NO	%
YES	21	31,8%
NO	45	68,2%

RESPONSE ERRORS

A chance that respondants are saying what the children ought to eat instead of what they are actually eating.

COMMENTS

The high figures for malnurished children in the village proves that the children either get too little food or too poor food or most probably a combination of this.

Most villagers in Songambele say they have food enough for their families most of the year. Interviews with mothers and children in the households proves that the adult men, later adult women are served first by the meals, and there might be very little left for the small children.

Some children also refuse to eat the rich food, because they are not used to it. The food given to the children in Songambele might be almost sufficient on energy (cassava) but scarce on body-building and protective content (proteins, vitamines).

NEXT PHASE

1. Find to what extent the new water scheme has increased the possibilities for irrigation in the household garden.

2. Measure the quantity and quality of the growth in the household garden.

11. Private economy

The income of the private households in Songambele is not easy to estimate. The cash flow is very small, as the saving of cash money. People are interchanging commodities without any payment. Most people grow their own food and the expences for seeds, fertilizer and tools are very moderate.

The span of income in the six tencells in Songambele is from zero to 20,000 TAS per family per year. The average per family is 3268 TAS per year. This income is usually from sale of bigger items like one or several bags of maize, grountnuts etc. The small day to day gaining is equalized by the same daily spending. Songambele village has no shop and most of the selling and buying is going on the village marked where people invest their sale profit immideately in other commodities.

There are only a few villagers in Songambele with a fixed official salary (teachers, village secretary etc). The rest have mainly these possibilities to get income:

1. Selling agricultural products from the garden and shamba on the market in Songambele or other villages/towns.
2. Keeping of livestock. Sale of living animals, meat, milk and eggs.
3. Sale of local brew (pombe)
4. Transport and/or sale of other commodities brought from outside the village.

11.1 Agricultural products

The agricultural production is related to the water supply, but the new water scheme can only partly cover the irrigation needs for the small household garden.

TABLE 56:

What are you selling on the marked?

	NO	%
BEANS	53	47,7%
MAIZE	31	27,9%
CASSAVA	23	20,7%
POTATOES	16	14,4%
BANANAS	10	9%
PEAS	9	8,1%
SPINACH (MCHICHA)	4	3,6%
TOMATOES	3	2,7%
GROUNDNUTS	3	2,7%
PINEAPPLE	3	2,7%
CHINESE CABBAGE	2	1,8%
SUGARCANE	1	0,9%
NOT SELLING ANYTHING	50	45%

11.2 Livestock

Keeping of livzstock is water-dependant. Today most of the **livestock** owners bring their cattle to a nearby river and source. In the same area where they also find the grass. Water can be stored at home for feeding at night. The household storeage of water for livestock can be improved by the new water scheme.

TABLE 57:

Do you have water storeage for livestock at your household?

	NO	%
YES	27	33,8%
NO	53	66,2%

TABLE 58:

What livestock are you keeping?

	NO	%
CATTLE	44	39,6%
CHICKEN	35	31,5%
GOATS	23	20,7%
SHEEP	20	18%
BEES	1	0,9%
NO LIVESTOCK	34	30,6%

The importance of cattle-keeping in the private economy is a bit unclear. Most people keep cattle as an investment and a mean of payment. The cattle in Songambele is giving very little milk and only slaughtered when they are very old of age or badly ill. The average number of cattle in the households (with cattle) is two to four. Goats/sheep four to seven and chickens/hens from 10 to 15.

11.3 Local brew

Production and sale of local brew should not be underestimated as a source of income neither as social problem in Songambele and several other villages in the district. The amount produced and sold is not easy to find. The pombe is usually made and sold by the women. Thus giving them an income in cash money. The negative effects are that time, land and resources are used to grow raw materials (mostly a kind of bananas). This could insted be utilized for food production. Another negative effect is that men (the main consumers) have a chance to consume cheap alcohol from early morning. This resulting in poor contribution in work, alcoholism and social problems.

The production of local brew is depending on water, and the new water scheme might have an increasing effect on the production.

11.4 Transport/sale of commodities

A village like Songambele needs to bring several commodities from outside to the village for sale. The village has no common transport or shop so this is taken care of private persons.

TABLE 59:

What are you buying at the market? (Expenditure of cash)

	NO	%
CLOTHES	20	28,2%
SOAP	17	23,2%
LAMP OIL/COOKING OIL	12	16,9%
SALT	7	9,6%
FOOD	5	7,0%
MATCHES	3	4,2%
HOES	2	2,8%
HOSPITAL EXPENCES	3	4,2%
SAVING	2	2,8%

RESPONSE ERRORS

This part of the survey is only felling what people or growing and selling, not how much. This was to simplity the survey.

COMMENTS

The income of the villager in Songambele is very little, but his expences can not be compared to a person living in urban areas. Cash money use is only a part of the trading system in the village. Level of income is then only partly measuring the development level in the village.

The effects of production and consumption of local brew and its effects on the village development in the district and region might be the aim of another survey. The effects are defenitly severe and negative on the social side, but giving cash income to the women.

The survey only investigates the private economy. The common village economy is consisiting of salestax from the market and pombe - "bar" pluss the return of the yearly development tax. As a total this is quite modest.

The survey shows that the village Songambele will have small resources to mantain the scheme in the future.

The operational cost is rather small in the first years after the handing over, but will in the coming years probably raise to more than 50 000 TAS a year. If the village Songambele is not raising their income and savings they will defenitly not be able to meet the cost

of operation and maintenance of their water scheme. This should be a matter of further discussion with the Maji-organization in Kigoma.

NEXT PHASE

1. See if the water scheme gives any effect on the private economy, increases the agricultural production and the number of livestock.

12. Village development - priority

The villagers should have a chance to influence on the development policy and priorities. The regional water department (Maji) is only offering water and no other development projects. Villagers and village leaders in Songambele were asked if the village neede a new water scheme and all responded positive.

TABLE 60:

What is the benefit/progress for the villagers from the new water scheme?

Question posed to 105 WOMEN Songambele. Ranking of five fixed alternatives from one to five. Score from one to five, with one as highest score.

RATE		SCORE
1	BETTER PERSONAL HYGIENE	2,52
2	SAVING TIME	2,57
3	IRRIGATION OF SMALL GARDEN	2,67
4	CONSTRUCTION OF GOOD HOUSES	3,67
5	BETTER HEALTH	3,86

TABLE 61:

Progress/benefit of new water scheme?

Question posed to 107 MEN Songambele

RATE		SCORE
1	CONSTRUCTION OF GOOD HOUSES	2,28
2	IRRIGATION OF SMALL GARDEN	2,66
3	BETTER PERSONAL HYGIENE	3,01
4	SAVING TIME	3,35
5	BETTER HEALTH	3,96

TABLE 62:

Progress/benefit of new water scheme?

Question posed to 5 village leaders (men) in Songambele

RATE		SCORE
1	CONSTRUCTION OF GOOD HOUSES	1,80
2	BETTER HEALTH	2,40
3	IRRIGATION OF SMALL GARDEN	2,80
4	BETTER PERSONAL HYGIENE	3,60
5	SAVING TIME	4,40

TABLE 63:

Progress/benefit of new water scheme?

Question posed to 18 village leaders in Kasulu district (14 men, 4 women) from CCM, adminstration, planning, development, Health and water.

RATE		SCORE
1	BETTER HEALTH	1,83
2	BETTER PERSONAL HYGIENE	2,78
3	CONSTRUCTION OF GOOD HOUSES	3,22
4	SAVING TIME	3,28
5	IRRIGATION OF SMALL GARDEN	3,78

But is the water scheme what the villagers really want? The villagers, village leaders and district leaders were asked how they best would spend 2,5 million TAS for the village. This sum is a modest estimate for the cost of the Songambele water scheme.

The fact that the villagers in Songambele already knew that they would get the water scheme would propably influence on their priority. Therefore a simular question was posed in two other villages that at the moment had no plans for a new water scheme.

TABLE 64:

The best way of spending 2,5 mill TAS for the village? Question posed to 105 WOMEN i Songambele. Raking of 10 fixed alternatives. Score from one to ten with one as the highest score.

RATE		SCORE
1	BUY 12 GRINDING MACHINES	2,29
2	CONSTRUCT A DISPENCARY	3,03
3.	CONSTRUCT A NEW WATER SCHEME	3,19
4	BUY 2 LORRIES	5,58
5	CONSTRUCT A NEW SCHOOL	5,99
6	BUY 2 TRACTORS	6,12
7	GIVE ONE COW TO EACH HOUSEHOLD	6,42
8	CONSTRUCT A NEW CCM OFFICE	7,14
9	GIVE ONE BICYCLE TO EACH HOUSEHOLD	7,32
10	GIVE 8000 TAS TO EACH HOUSEHOLD	7,80

TABLE 65:

Best way of spending 2,5 mill TAS 2

Question posed to 99 MEN in Songambele village.

RATE		SCORE
1	CONSTRUCT A DISPENCARY	3,09
2	CONSTRUCT A NEW WATER SCHEME	3,26
3	BUY 13 GRINDING MACHINES	4,48
4	BUY 2 LORRIES	5,22
5	CONSTRUCT A NEW SCHOOL	5,69
6	GIVE ONE COW TO EACH HOUSEHOLD	6,21
7	BUY 2 TRACTORS	6,26
8	GIVE ONE BICYCLE TO EACH HOUSEHOLD	6,77
9	CONSTRUCT A NEW CCM OFFICE	6,99
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TABLE 66:

Best way of spending 2,5 mill TAS ?

Question posed to five village leaders (men) in Songambele

RATE		SCORE
1	CONSTRUCT A NEW WATER SCHEME	2,20
2	CONSTRUCT A NEW DISPENCARY	3,40
3	CONSTRUCT A NEW SCHOOL	3,60
4	BUY 2 TRACTORS	4,60
5	BUY 13 GRINDING MACHINES	4,60
6	CONSTRUCT A NEW CCM OFFICE	4,60
7	BUY 2 LORRIES	5,00
8	GIVE ONE BICYCLE TO EACH HOUSEHOLD	8,20
9	GIVE 8000 TAS TO EACH HOUSEHOLD	9,00
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TABLE 67:

Best way of spending 2,5 mill TAS ?

Question posed to 17 district leaders in Kasulu district

RATE		SCORE
1	CONSTRUCT A NEW WATER SCHEME	1,29
2	CONSTRUCT A NEW DISPENCARY	2,94
3	CONSTRUCT A NEW SCHOOL	3,35
4	BUY TWO TRACTORS	3,94
5	BUY TWO LORRIES	4,94
6	BUY 13 GRINDING MACHINES	5,41
7	CONSTRUCT A NEW CCM OFFICE	6,76
8	GIVE ONE COW TO EACH HOUSEHOLD	7,47
9	GIVE ONE BICYCLE TO EACH HOUSEHOLD	9,00
10	GIVE 8000 TAS TO EACH HOUSEHOLD	9,88

RESPONSE ERRORS

The exercise of ranking five or ten alternatives might be confusing and difficult, still it is giving a good view of the public opinion on development priority.

The most confusing thing with the ranking in Songambele is the evaluation of the water scheme. The villagers know that they will get the water scheme, and then they put it further down on the list.

Therefore a simular survey was done in the two villages Nyansha and Nyantare, also in Kasulu district. The survey was conducted by Maendeleo in Kasulu. Still there might be a chanse that some villagers estimated that a good score on new water scheme, would be reported to Maji/Norad.

TABLE 68:

Best way of spending 2,5 mill TAS?
Question posed to 41 villagers (men and women) in Nyansha and Nyantare villages in Kasulu.

RATE		SCORE
1	CONSTRUCT A NEW WATER SCHEME	1,54
2	BUY 2 TRACTORS	3,88
3	BUY 13 GRINDING MACHINES	3,97
4	BUY 2 LORRIES	4,83
5	CONSTRUCT A NEW SCHOOL	5,76
6	CONSTRUCT A NEW DISPENCARY	6,10
7	GIVE ONE BICYCLE TO EACH HOUSEHOLD	6,17
8	CONSTRUCT A NEW CCM OFFICE	6,90
9	GIVE ON COW TO EACH HOUSEHOLD	7,46
10	GIVE 8000 TAS TO EACH FAMILY	8,95

The main finding of this test is that the priority of water scheme is much higher than among the villagers in Songambele.

The two villages used for the test are situated close to the urban area in Kasulu and already have a dispencary and CCM Office.

The private development incentives (cash money, bicycle, cows) are low on the list compared to the public development implementations. The respondents might have been considering political aims more than personal assets.

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COMMENTS

The different priorities given as alternatives to the villagers are mainly buildings and machines. A development programme in a sector will usually involve more, as information, training etc. The UWT-secretary in Kasulu givis this ranking for development projects that most can benefit the women in Songambele:

1. A tree planting programme giving women possibilities to collect firewood closer to their homes. Today they have to walk longer for firewood than water.

2. A new water scheme

3. One or two grinding machines in the village.

4. Training and funds for gardening of good and rich food for children.

Under any circumstances a water scheme is evaluated hight in all ratings. But the health impact of the new water scheme is ranked very low by the villagers.

NEXT PHASE

This exercise should not be repeated in Songambele, but could be used in other villages, especially in connection with a integrated rural development programme.

13. Concluding remarks:

To repeat from the introduction.

The water supply and sanitation programme in Kigoma has these main achievements:

- better health for the people
- enchanced social welfare for the people
- reduced burden of work for women and children.

For Songambele village any development given by the improwed water supply can only be shown after the next phases of the research. This first phase is giving the basic information of the present situation. Still a few concluding points can be mentioned related to the development so far.

1. Songambele village has a very poor tradition on cooperative village work. Today there are no income bringing cooperative units in the village. The construction of the water scheme seems to have been a reminder to the village that common self-help work still can be carried out with a good result. This might have given the village confidence to start new self-help activities.

2. The aim of the water development in Kigoma is to give the villagers an improved water supply for domestic use (drinking, bathing, body-washing, washing of clothes and utensils). The water schemes are also dimentioned for these purposes. Small scale gardening and brick-making are ranked as importents benefits of the water scheme for the villagers. This should be taken note on by planners in Maji.

3. Improved water schemes are much wanted by villagers and village leaders. Efforts in other development sectors should be promoted in connection with the water development to improve the total social welfare. Still the women in Songambele have to walk long distances to collect firewood and go to other villages to grain their maize and cassava.

4. The health impact of the new water scheme is regarded very modest by the villagers. The importance of the village health education should again be stressed. Childrens health must be seen in connection with nutrition and the possibilities of growing rich food in household gardens.

5. As mentioned in the introduction Songambele village is assumed to have reached a low development level. Still there are reasons to beleave that the situation in Songambele is typical for several other villages in the region.

Abbreviations and swahili words

Afya: Health
Balozi: Ten cell (leader)
CCM: Political party
CPHE: Community Participation and Health Education
DED: District Executive Director
DP: Domestic Point
DWE: Disctrict Water Engineer
MAENDELEO: Development
MAJI: Water
MCH: Mother and Child Health care
NORAD: Norwegian Agency for Internation Development.

Pombe: Local brew
P.P. & P: Project Preparation and Planning
RDD: Regional Development Director
RPLO: Regional Planning Officer
RWE: Regional Water Engineer
Ugali: Stiff maize porridge
Ujamaa: Tanzanian village socialism
UWT: Women's organization, Tanzania
VIP: Ventilated improved Pit Latrine.

A selection of sources and references

Kigoma Water Master Plan: Water Developement in Kigoma Region, volume 6, (1982)

Moser, Kalton: Survey Methods in Social Investigation (1971)

Wood, Vaughan, DeGlanville: Community Health, AMREF (1981)

Reports:

Report from the Joint Annual Review of TAN 055, Water and Sanitation Development in Kigoma region (1988)

CPHE-Kigoma: Domestic Point Investigation, Mwandiga and Kagongo villages 1987)

CPHE-Kigoma: Environmental sanitation survey, Msambara, Mgombe, Kanazi villages (1987).

APPENDIX 2

REGIONAL WATER ENGINEER'S OFFICE,
P.O. Box 105,
KIGOMA.

Ref. No. KG/WD/255/44 18th August, 1988

To : RWE, Kigoma.
ufs: P.P. & P i/c.
Fro: LAB. i/c.
cc.: CPHE
cc : Principal Secretary, Maji Dar es Salaam.

RE: REPORT ON THE SOURCE TO MOUTH STUDY OF SONGAMBELE VILLAGE BEFORE WATER SCHEME

1.0 LOCATION: This village is in Kasulu District.
2.0 PARTICIPANTS: Laboratory staff.
3.0 DURATION: The study lasted from 14-18th June 1988.
4.0 OBJECTIVE: The primary objective is three-fold.

4.1 To establish the nature and essence of pollution of drinking water among the village community before the introduction of piped water (gravity) scheme.

4.2 To compare these results and the impacts there of with the same after the introduction of piped water.

4.3 To quantify the achievements in terms of relevant socioeconomic and cultural parameters after the introduction of piped water scheme in the near future.

5.0 ABSTRACT:

The study showed that there is generally post-contanination of drinking water from the source through transportation to storage dictated by socioeconomic and cultural parameters.

6.0 PROCEDURE:

For technical reasons two families (households) were randomly choses for the purpose. Both drew drinking water from the same traditional source - Kakoka stream - through a linear distance of about 800 meters to and fro. Both the households comprised of 5 members each. One had however all of them adults while the other had 2 adults and 3 children. As a test control one sample (bacteriological) was taken from the source early in the morning before any member of the community had fetched water. Thereafter each drawer from the two families was allowed to draw water from the spring as usual. Samples were then taken each in the bucket (drawing container) just after filling it with water at the source, after arrival at home, after transfer into storage container and after 3 HRS interval of storage up to 18^{30}HRS. The last sample was taken from the storage contaner early the next morning.

7.0 RESULTS:

The results have been indicated graphically in the Appendix. Fig. 1 corresponds to household 1 while Fig. 2 corresponds to household 2

8.0 INFERENCE AND DISCUSSION

8.1 INFERENCE:

The source provides highly polluted water bacteriologicaly. In addition there is post contamination of drinking water at the following sites:

8.1.1 At the source itself during water collection.

8.1.2 On the way during transportation

8.1.3 On arrival at home

8.1.4 During storage in storage container - clay of earthen posts usually.

8.2 DISCUSSION & CONCLUSION

8.2.1 The source is a stream descending a few meters over a had rock from a spring. The village is situated just above this source. This means there is quite much human as well as animal activities at the at the source including defaecation and farming which contribute greatly to the high pollution of the stream (240 FC and 550 FS).

8.2.2 At the source contamination is manifested in 3 ways:

8.2.2.1 Certain leaves, plant material and other objects are being employed to direct the running water into the drawing/fetching container usually an iron bucket. No doubt these provide substantial contamination to the water.

8.2.2.3 There is no clear and district demarcation between washing (body and cloth) and drinking water drawing. The two processes are usually done interchangeably at the same time and place thus increasing the risk of contamination by spillage of 'dirty' water into drinking water.

8.2.3 During transportation contamination is effected when fingers and palms come into contact with the water filled to the brim in the bucket. The possibility of dusting by wind is also not ruled out. Sometimes also contamination is effected when certain leaves are placed at the surface of the water in the bucket to avoid 'splashing' and to improve balance during transportation e.g. using leaves of Annona senegalensis L. (writers own experience). This is because the women and children usually carry water containers on their heads filled to the brim dur to large distance from the source.

8.2.4 Contamination during storage occurs when the storage containers is not quite clean, not properly covered with lid and more importantly when it is poorly kept in a 'dirty' place. Dipping drinking cups or calabashes, sharing the same cups among family members etc only re-contaminates the water.

9.0 RECOMMENDATIONS:

In view of the pattern of drinking water contamination observed and the highly polluted source used by the community we recommend the following options for consideration:-

9.1 To protect the source at community level or to abadon the source in favour of an alternative one - which will be the pipe gravity water scheme - MAJI option. It will also minimise walking distance, hence contamination.

9.2 Educate the people on access to suitable vessels, decent housing, personal hygiene, sanitary education and ideal cultural practices which ensure suitable custody and use of drinking cups, demarcation of places and containers used for bathing, washing and drinking.

9.3 Advise the people on the importance of long-term storage of water (water not to be consumed immediately). Long term storage self-purifies water in closed containers. Normally there is up to 90% die - off for most becterial after 1 - 2 days of storage.

9.4 The process of boiling water meant for drinking should be encouraged but this is not feasible because of scarcity of fuel (socioeconomic factor) and also due to the fact that re-contamination during transfer to other containers for cooling and earation is inevitable.

9.5 Use of bioactive substances (disinfectants or antiseptic salts) can be introduced to the village community at household levels.

Paul P.K. Kiliho
RESEARCH OFFICER AND LAB I/C
KIGOMA WATER QUALITY LABORATORY

APPENDIX 2

OBSERVED CRAPH SIMILARITIES AND DIFFERENCES

1. Both households provide results indicative of the characteristic nature of growth of bacteria in a medium. There is a gradual rise in the No. of colonies of both FC and FS between the time of drawing water at the source up to the transfer into storage container at mid-day. This is because there has been a steady contamination throughout the way.

2. Between 9^{00} and 12^{00} the No. of colonies explodes to the highest record due to suitable temperature of incubation (=storage) until there is exhaustion of nutrient media in the water where the graph again falls down to level.

3. Faecal streptococci show a comapatively stronger nesistance and higher rate of reproduction than Paecal coliform in both cases.

4. Household II is better - off than Household I in terms of sanitary precautions exemplified by the comparatively small numbur of the indicative organisms FC and FS.

5. Growth of the bacteria is boosted after 18^{00} and throughout the night in household I probably due to re-contamination by children (3 as apposed to none in Household II).

6. There is an anomalous rise in the No. of FC colonies in Household II in the bucket water by the time it arrives at home. This is probably a more interaction with dust or other pollutants resulting in the water of other non-faecal coliforms e.g. Klebsiella and Citrobacter which can disturb the count of FC since they also grow at 44°c and produce indolene from tryptophan.

Graphs overlead .....

Fig 1 Household D_1

Key: same as for Fig 2 overleaf.

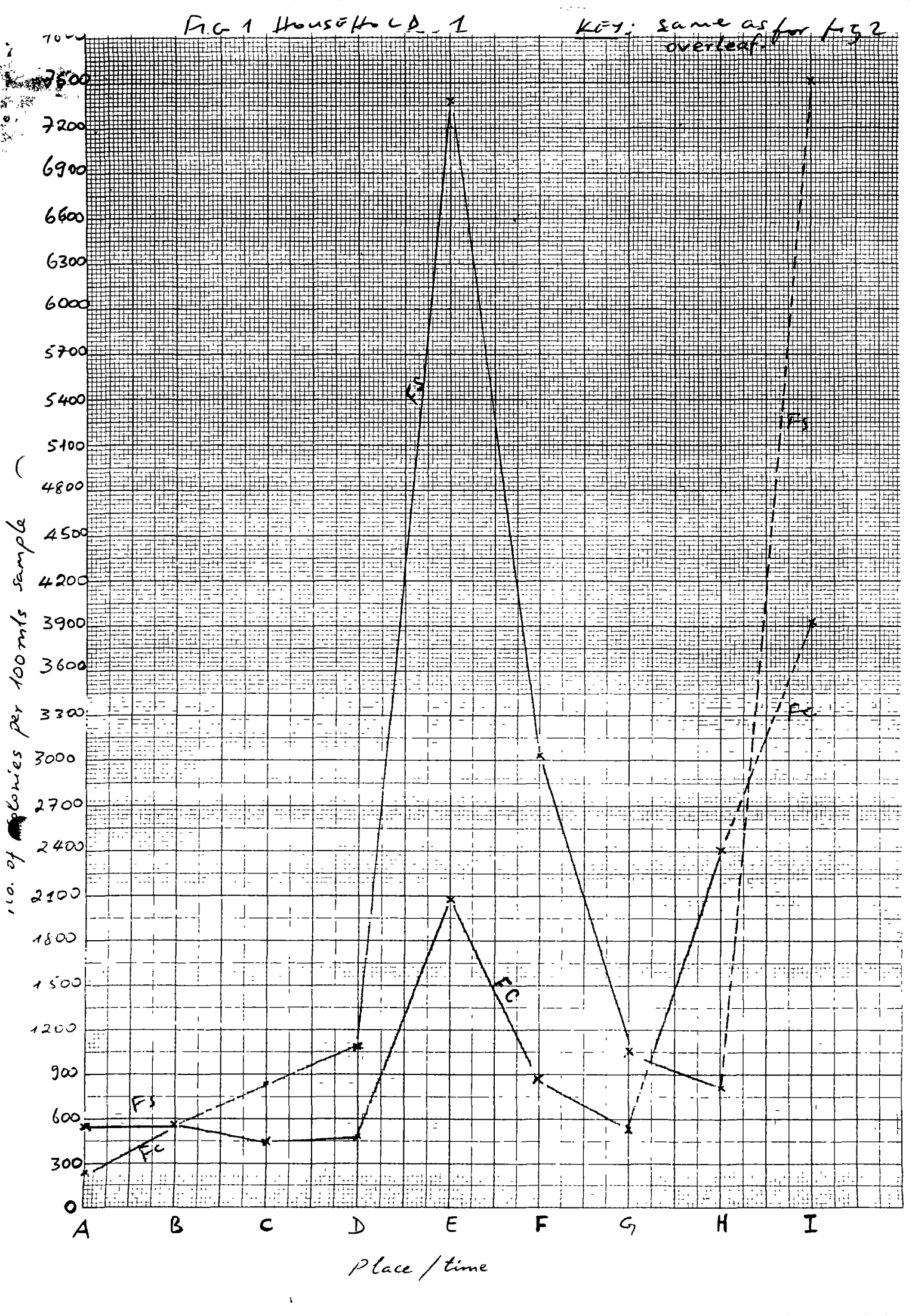
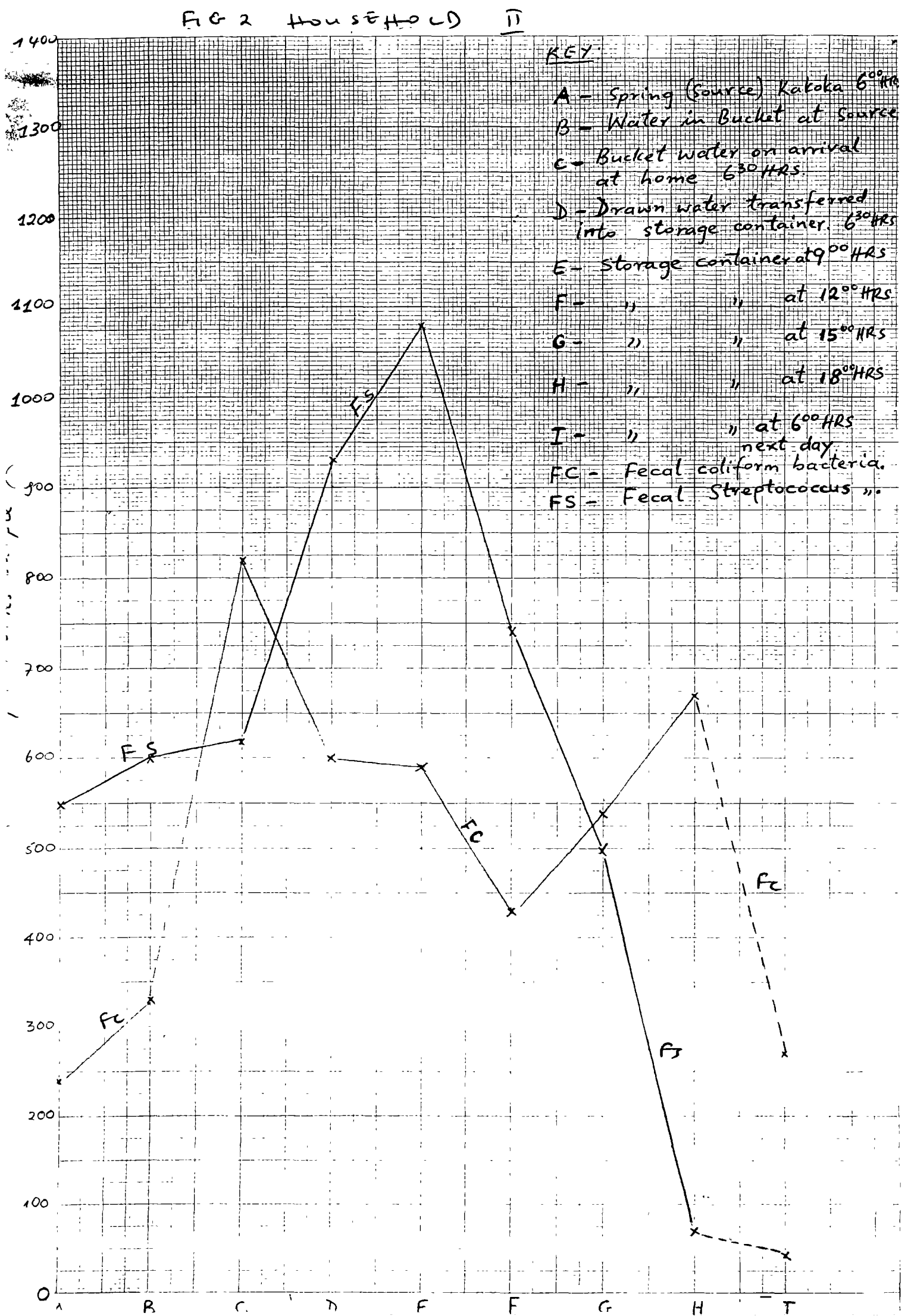


FIG 2 HOUSEHOLD II



APPENDIX 3

DEFINITIONS

GOOD LATRINE:

PIT:

Depth 10 feel minimum
20 " maximam

FLOOR:

- With cement aqualting slab.
- Pounded earth and murram or cow dung rammed to a smooth finish.
- Timbers or logs squalting slab.
- Puddled day stone or brick masonry.
- The hole of the latrine should be plong and 6" wide. With smooth side.
- Cover should be provided.

SUPER STRUCTURE:

- Well constructed with, temporary or permanent material.
- Should have good thatched roof, C I S tiles or any other suitable material. To cover the latrine to exclude rain and direct sunlight.
- Should here door and window to allow ventilation and light.
- Should have enough privancy.

FAIR LATRINE:

Depth - Below 10 feet

FLOOR - Mudy Soil squatting slab
- Not well pudded.

SUPERSTRUCTURE:

- Walls thatched, with thatched roof or without roof.

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A GOOD VILLAGE HOUSE:

- Be in good state of repair and built of permanent, semipermanent or temporaly material depending of what is available.
- WALLS - Should be well plastered and hard.
- ROOF - Water proof to keep out rain protect from heat or sun (C.I.S, tiles thatch etc).
- FLOORS- Hard floor preferable concrete or pounded earth and murram rammed to a smoth finish.
- LIGHT & VENT - Should have adequate ligh and ventilation.
- ROOMS - Adequate rooms with enough space to accommodety family.
- KITCHEN - Satisfactory kitchen for cooking and preparing food.
- LATRINE & BATH - Should have a good pit latrine and bathing shade.
- Should have separate accommodation for human and animals.
- REFUSE COLLECTION: Should have edequate method of refuse disposal.

A FAIR HOUSE:

- Be in fair state of repair.
- Walls mud and pole - fair conditions, inadequate Plaster.
- Floor - mud rammed inadequate.
- Roof Grass or thatch.
- Light and ventilation - adequate.
- Rooms - inadequate space.
- Kitched - separete - in fair condition.
- Latrine & Bathing shelter - in fair condition.

POOR HOUSE:

- Be in poor condition - Mud.
- Walls - mud and poles, grass, unplastered.
- Roof - leaking
- Floor - Mud and chipped.
- Light & Vent. No windows.
- Rooms - with small space, inadequate to accommodate the family.
- Kitchen - NIL
- Food store - NIL
- Latrine - in poor condition

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CLEANLINESS SURROUNDINGS:

GOOD SURROUNDINGS:

- Should be kept clean (compound front and roof.)
- Proper refuse collection and desposal
- To have rubbish pit.

FAIR SURROUNDINGS:

- Cleanliness - few refuse is left in the compond.
- Refuse collection is not satisfactory.

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